DOE/WIPP 01-3194
Rev. 13

CH-TRU WASTE CONTENT CODES (CH-TRUCON)

Revision 13
June 2006

This document supercedes DOE/WIPP 01-3194, Revision 12

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PREFACE

This document, DOE/WIPP 01-3194, CH-TRU Waste Content Codes (CH-TRUCON), Revision 13, has been revised to incorporate the following changes:

- Central Characterization Project, a new packaging configuration has been added to Content Code SQ 121/221.

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INTRODUCTION

The CH-TRU Waste Content Codes (CH-TRUCON) document describes the inventory of the U.S. Department of Energy (DOE) CH-TRU waste within the transportation parameters specified by the Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC). The CH-TRAMPAC defines the allowable payload for the Transuranic Package Transporter-II (TRUPACT-II) and HalfPACT packagings. This document is a catalog of TRUPACT-II and HalfPACT authorized contents and a description of the methods utilized to demonstrate compliance with the CH-TRAMPAC. A summary of currently approved content codes by site is presented in Table 1.

The CH-TRAMPAC describes "shipping categories" that are assigned to each payload container. Multiple shipping categories may be assigned to a single content code. A summary of approved content codes and corresponding shipping categories is provided in Table 2, which consists of Tables 2A, 2B, and 2C. Table 2A provides a summary of approved content codes and corresponding shipping categories for the "General Case," which reflects the assumption of a 60-day shipping period as described in the CH-TRAMPAC and Appendix 3.4 of the CH-TRU Payload Appendices. For shipments to be completed within an approximately 1,000-mile radius, a shorter shipping period of 20 days is applicable as described in the CH-TRAMPAC and Appendix 3.5 of the CH-TRU Payload Appendices. For shipments to WIPP from Los Alamos National Laboratory (LANL), Nevada Test Site, and Rocky Flats Environmental Technology Site, a 20-day shipping period is applicable. Table 2B provides a summary of approved content codes and corresponding shipping categories for "Close-Proximity Shipments" (20-day shipping period). For shipments implementing the controls specified in the CH-TRAMPAC and Appendix 3.6 of the CH-TRU Payload Appendices, a 10-day shipping period is applicable. Table 2C provides a summary of approved content codes and corresponding shipping categories for "Controlled Shipments" (10-day shipping period).

Unless otherwise noted, shipping category calculations shown in Table 2 are based on the following assumptions:

- Each filtered plastic bag has a diffusivity of 1.075E-05 moles per second per mole fraction
- Each filtered metal can has a diffusivity of 1.9E-06 moles per second per mole fraction
- Each pipe component has a diffusivity of 1.9E-06 moles per second per mole fraction
- Each 55-gallon drum has a rigid liner punctured with a 0.3-inch diameter hole
- Each 85-gallon drum used to overpack a 55-gallon drum has a diffusivity of 3.7E-06 moles per second per mole fraction
- Each standard waste box (SWB) used to overpack 55-gallon drums (SWB overpack) has a diffusivity of 7.4E-06 moles per second per mole fraction.

A content code is defined by the following components:

- A two-letter site abbreviation that designates the physical location of the generated/stored waste (e.g., LA for LANL). The site-specific letter designations for each of the sites are provided in Table 3.
- A three-digit code that designates waste generation relative to implementation of a formal certification program and the physical and chemical form of the waste (e.g., content code 117 denotes TRU Metal Waste generated under a formal certification program). The first number of this three-digit code is a "1" or "2," differentiating between "100 Series" and "200 Series"

waste. Payload containers in the 100 Series are generated under a formal certification program. Payload containers in the 200 Series are generated prior to site implementation of a formal certification program. The second and third numbers of the three-digit code designate the physical and chemical form of the waste. Table 4 lists the generic content codes that are used, the waste type for each code, and a brief description of each content code.

- Content codes are further defined as subcodes by an alpha trailer after the three-digit code to allow segregation of wastes that differ in one or more parameter(s). For example, the alpha trailers of the subcodes LA 117A and LA 117B are used to differentiate between LANL metal waste packaged within a maximum of four layers of plastic bags (LA 117A) and LANL metal waste packaged within a single plastic bag (LA 117B).

A "numeric" shipping category notation was introduced in June 1999. Sites may continue to use the old "alpha-numeric" shipping category designation. Cross correlation lists (alpha-numeric/numeric and numeric/alpha-numeric) are provided in Tables 5 and 6. Definitions and examples of the two shipping category notations are provided in Table 7.

As specified in the CH-TRAMPAC, sites have the option of taking credit for the use of dose-dependent G values based on matrix depletion for certain wastes (i.e., Waste Material Type II.1 and Waste Type III). These dose-dependent G values are reflected in the "YYYY" (G value) portion of the numeric shipping category and have no effect on the waste type ("XX") or resistance ("ZZZZ") portions of the numeric shipping category. All shipping categories listed in Table 2 may be used with either the dose-dependent or non-dose-dependent YYYY values, as applicable. Note: For waste described by an alpha-numeric shipping category, the site must first convert the alpha-numeric shipping category to a numeric shipping category, and then revise the shipping category to reflect the dose-dependent G value. A correlation of waste material types, G values, and numeric shipping category notation, both with and without credit for matrix depletion, is provided in the CH-TRAMPAC.

Table 8 is a list of acronyms and abbreviations used in this document.

Requests for new or revised content codes may be submitted to the WIPP CH-TRU Payload Engineer for review and approval, provided all CH-TRAMPAC requirements are met.

The format for content codes is as follows:

- Content Code
- Content Description
- Storage Site (if applicable)
- Generating Site
- Waste Description
- Generating Source(s)
- Waste Form
- Waste Packaging
- Assay
- Free Liquids
- Explosives/Compressed Gases
- Pyrophorics
- Corrosives
- Chemical Compatibility
- Payload Container Venting and Aspiration

- Additional Criteria
- Shipping Category
- Maximum Allowable Wattage.

CONTENT CODE: Identifies the two-letter site abbreviation that designates the physical location of the waste and the three-digit code that designates waste generation relative to implementation of a formal certification program and the physical and chemical form of the waste. Content code identifiers are defined in Tables 3 and 4.

CONTENT DESCRIPTION: Identifies the physical form of the waste (e.g., describing whether it is inorganic or organic, solidified or solid). This is similar to the waste material type titles in the CH-TRAMPAC.

STORAGE SITE: Provides the location of the waste, if the location is different than the generating site.

GENERATING SITE: Provides the location of waste generation.

WASTE DESCRIPTION: Provides basic information regarding the nature and main components of the waste.

GENERATING SOURCE(S): Lists processes and/or buildings at each site that generate the waste in each content code.

WASTE FORM: Provides more detailed information on the waste contents, how the waste is processed, and specific information about the chemistry of constituents.

WASTE PACKAGING: Describes, in detail, techniques necessary for waste packaging in a given content code. This includes a description of the waste confinement layers, the number of layers of confinement used in packaging waste, and the mechanism for bag, can, or container closure. This section contains the Waste Packaging Description Table that details the waste packaging configurations for all the codes under the content code (e.g., LA 117A, LA 117B, etc., under LA 117).

ASSAY: Describes the types of radioactive materials measurement techniques or other methods utilized to obtain fissile material content and decay heat values for a particular content code.

FREE LIQUIDS: Describes the authorized procedures used by the sites to ensure that the limits imposed on free liquids (<1% by volume) are met for each content code.

EXPLOSIVES/COMPRESSED GASES: Identifies the methods used to preclude the presence of explosives or compressed gases.

PYROPHORICS: Describes the controls in place at each site to ensure that nonradionuclide pyrophoric materials in TRU waste are excluded, reacted to render nonpyrophoric, or are immobilized prior to placement in waste.

CORROSIVES: Describes the controls in place to ensure that corrosive materials in TRU waste are either not present or are neutralized or immobilized prior to placement in a payload container.

CHEMICAL COMPATIBILITY: Describes the controls in place to ensure chemical compatibility for the waste contents and the TRUPACT-II and HalfPACT packagings. All chemicals/materials in the waste for a specific content code are restricted to the allowable chemical lists and the 5% limit on total materials not listed as specified in the CH-TRAMPAC. The approved chemical list for each content code in the

CH-TRUCON document is specified in Appendix A, List of Chemicals and Materials in CH-TRU Waste Content Codes.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers that have been stored in an unvented condition (i.e., no filter and/or unpunctured liner) must be aspirated to ensure equilibration of any gases that may have accumulated in the closed container. This procedure is required only for unvented waste. A detailed explanation of the procedures and, specifically, the options for deriving aspiration times are provided in the CH-TRAMPAC and in Appendix 3.7 of the CH-TRU Payload Appendices.

ADDITIONAL CRITERIA: Provides details on how the waste qualifies for shipment by meeting additional transport requirements (e.g., venting payload containers and liners).

SHIPPING CATEGORY: Shipping categories based on the above parameters for each content code are summarized in Table 2, which consists of Tables 2A, 2B, and 2C.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattage limit for each shipping category is determined in accordance with the CH-TRAMPAC.

Appendix B, List of Additional Flammable Volatile Organic Compounds Evaluated by the CH-TRAMPAC Methodology, has been added to provide a list of flammable volatile organic compounds that have been evaluated and determined to be allowed for shipment in the TRUPACT-II and HalfPACT shipping packages in addition to those listed in Table 5.2-2 of the CH-TRAMPAC.

TABLE 1
SUMMARY OF CONTENT CODES BY SITE

Content Code(s)[b]	Waste Generator/Shipper Site[a]											
	ANL-E	ANL-W	INEEL	LANL	LLNL	MOUND	NTS	ORNL	RFETS	RH	SNL/CA	SQ	SRS
111/211	X	X	X	X	X	X	X		X	X	X	X	
112/212			X	X					X	X		X	
113/213			X		X				X				
114/214			X	X					X	X		X	
115/215			X	X			X		X				
116/216	X		X	X	X	X	X		X				
117/217			X	X		X	X		X	X			X
118/218			X	X					X				
119/219			X	X	X		X		X				
120/220				X								X	
121/221		X	X						X			X	
122/222		X	X	X					X	X		X	X
123/223			X	X					X	X			
124/224			X	X	X				X				
125/225		X	X	X	X		X	X		X		X	X
126/226			X	X					X			X	
127/227		X	X						X				
128/228													
129/229	X												
130/230			X						X	X			
131/231							X		X				
132/232			X						X				
133/233							X						

[a] Refer to Table 3 for the complete name of each site.
[b] Refer to Table 4 for descriptions for each content code.

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TABLE 2
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES

Table 2 consists of the following tables:

- Table 2A, Summary of Approved Content Codes and Corresponding Shipping Categories for General Case (60-day Shipping Period)
- Table 2B, Summary of Approved Content Codes and Corresponding Shipping Categories for Close-Proximity Shipments (20-day Shipping Period)
- Table 2C, Summary of Approved Content Codes and Corresponding Shipping Categories for Controlled Shipments (10-day Shipping Period)

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TABLE 2A
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
AE 111A AE 211A	10 0160 0147	Drum	1.9	No layers of confinement
	10 0160 0111		3.7	
	10 0160 0207	SWB Overpack	1.9	
	10 0160 0172		3.7	
AE 111C AE 211C	10 0160 0168	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	10 0160 0133		3.7	
	10 0160 0229	SWB Overpack	1.9	
	10 0160 0193		3.7	
AE 116A AE 216A	30 0340 0127	Drum	1.9	No layers of confinement
	30 0340 0101		3.7	
	30 0340 0166	SWB Overpack	1.9	
	30 0340 0141		3.7	
	30 0340 0028	SWB	3.7	
	30 0340 0013	Direct Load TDOP	3.7	
AE 116B AE 216B	30 0340 0136	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag
	30 0340 0110		3.7	
	30 0340 0176	SWB Overpack	1.9	
	30 0340 0150		3.7	
	30 0340 0038	SWB	3.7	
	30 0340 0023	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
AE 116C AE 216C	30 0340 0306	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
	30 0340 0280		3.7	
	30 0340 0346	SWB Overpack	1.9	
	30 0340 0320		3.7	
	30 0340 0208	SWB	3.7	
	30 0340 0193	Direct Load TDOP	3.7	
AE 116D AE 216D	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0122		3.7	
	30 0340 0188	SWB Overpack	1.9	
	30 0340 0162		3.7	
	30 0340 0041	SWB	3.7	
	30 0340 0026	Direct Load TDOP	3.7	
AE 116E AE 216E	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0122		3.7	
	30 0340 0188	SWB Overpack	1.9	
	30 0340 0162		3.7	
	30 0340 0034	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
	30 0340 0019	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
AE 116F AE 216F	30 0340 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	30 0340 0302		3.7	
	30 0340 0367	SWB Overpack	1.9	
	30 0340 0341		3.7	
AE 116G AE 216G	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB Overpack	1.9	
	30 0340 0521		3.7	
AE 116H AE 216H	30 0340 0686	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	30 0340 0660		3.7	
	30 0340 0725	SWB Overpack	1.9	
	30 0340 0700		3.7	
AE 116I AE 216I	30 0340 0865	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag
	30 0340 0839		3.7	
	30 0340 0905	SWB Overpack	1.9	
	30 0340 0879		3.7	
AE 116J AE 216J	30 0340 1044	Drum	1.9	Maximum of 6 plastic bag layers, one of which is a liner bag
	30 0340 1018		3.7	
	30 0340 1084	SWB Overpack	1.9	
	30 0340 1058		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
AE 129A AE 229A	40 9999 0127	Drum	1.9	No layers of confinement
	40 9999 0101		3.7	
	40 9999 0166	SWB Overpack	1.9	
	40 9999 0141		3.7	
	40 9999 0028	SWB	3.7	
	40 9999 0013	Direct Load TDOP	3.7	
AE 129B AE 229B	40 9999 0306	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
	40 9999 0280		3.7	
	40 9999 0346	SWB Overpack	1.9	
	40 9999 0320		3.7	
	40 9999 0208	SWB	3.7	
	40 9999 0193	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
AW 111A AW 211A	10 0160 0408	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	10 0160 0373		3.7	
	10 0160 0469	SWB Overpack	1.9	
	10 0160 0433		3.7	
	10 0160 0286	SWB	3.7	
AW 121A AW 221A	30 0340 0143	Drum	1.9	Maximum of 2 filtered plastic bag layers, one of which is a liner bag
	30 0340 0117		3.7	
	30 0340 0043	SWB	3.7	
AW 121B AW 221B	30 0340 0133	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a liner bag
	30 0340 0108		3.7	
	30 0340 0034	SWB	3.7	
AW 121C AW 221C	30 0340 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	30 0340 0302		3.7	
	30 0340 0367	SWB Overpack	1.9	
	30 0340 0341		3.7	
	30 0340 0220	SWB	3.7	
AW 122A AW 222A	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000	SWB	3.7	
	20 0000 0000	Pipe Overpack	1.9	
	20 0000 0000		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
AW 122B AW 222B	20 0170 0143	Drum	1.9	Maximum of 2 filtered plastic bag layers, one of which is a liner bag
	20 0170 0117		3.7	
	20 0170 0043	SWB	3.7	
AW 122C AW 222C	20 0170 0133	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a liner bag
	20 0170 0108		3.7	
	20 0170 0034	SWB	3.7	
AW 122D AW 222D	20 0170 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	20 0170 0302		3.7	
	20 0170 0367	SWB Overpack	1.9	
	20 0170 0341		3.7	
	20 0170 0220	SWB	3.7	
AW 125A AW 225A	30 0340 0354	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0329		3.7	
	30 0340 0394	SWB Overpack	1.9	
	30 0340 0368		3.7	
AW 125AF AW 225AF	30 0340 0380	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag, and 1 filtered metal can
	30 0340 0354		3.7	
	30 0340 0420	SWB Overpack	1.9	
	30 0340 0394		3.7	
AW 125B AW 225B	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB Overpack	1.9	
	30 0340 0521		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
AW 127A AW 227A	30 0340 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	30 0340 0302		3.7	
	30 0340 0367	SWB Overpack	1.9	
	30 0340 0341		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 111A ID 211A	10 0130 0190	Drum	1.9	Maximum of 2 plastic bag layers, both of which are drum liner bags
	10 0130 0154		3.7	
	10 0130 0250	SWB Overpack	1.9	
	10 0130 0215		3.7	
	10 0130 0076	SWB	3.7	
ID 111G ID 211G	10 0160 0147	Drum	1.9	No layers of confinement
	10 0160 0111		3.7	
	10 0160 0207	SWB/85-Gallon Overpack	1.9	
	10 0160 0172		3.7	
ID 111H ID 211H	10 0160 0408	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a drum liner bag.
	10 0160 0373		3.7	
	10 0160 0469	SWB/85-Gallon Overpack	1.9	
	10 0160 0433		3.7	
	10 0160 0295	SWB	3.7	
ID 111I ID 211I	10 0160 0211	Drum	1.9	Maximum of 3 plastic bag layers, all of which are drum liner bags
	10 0160 0176		3.7	
	10 0160 0272	SWB/85-Gallon Drum Overpack	1.9	
	10 0160 0236		3.7	
	10 0160 0098	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 111J ID 211J	10 0160 0166	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag. Rigid liner with no lid.
	10 0160 0131		3.7	
	10 0160 0101		18.5	
	10 0160 0227	SWB/85-Gallon Drum Overpack	1.9	
	10 0160 0191		3.7	
	10 0160 0161		18.5	
ID 111K ID 211K	10 0160 0145	Drum	1.9	No layers of confinement. Rigid liner with no lid.
	10 0160 0109		3.7	
	10 0160 0079		18.5	
	10 0160 0206	SWB/85-Gallon Drum Overpack	1.9	
	10 0160 0170		3.7	
	10 0160 0140		18.5	
ID 111L ID 211L	10 0160 0190	Drum	1.9	Maximum of 2 plastic bag layers, both of which are drum liner bags
	10 0160 0154		3.7	
	10 0160 0250	SWB/85-Gallon Drum Overpack	1.9	
	10 0160 0215		3.7	
	10 0160 0076	SWB	3.7	
ID 111M ID 211M	10 0160 0669	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	10 0160 0634		3.7	
	10 0160 0730	SWB/85-Gallon Drum Overpack	1.9	
	10 0160 0695		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 111MA ID 211MA	10 0160 0168	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	10 0160 0133		3.7	
	10 0160 0229	SWB Overpack	1.9	
	10 0160 0193		3.7	
ID 111N ID 211N	10 0160 0151	SWB	3.7	Maximum of 2 plastic bag layers, both of which are liner bags, in a 55-gallon container fitted with a filter with a minimum hydrogen diffusivity value of 1.9 x 10^{-6} mol/s/mol fraction and lined with a rigid liner
	10 0160 0132	Direct Load TDOP	3.7	
ID 111P ID 211P	10 0160 0168	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag.
	10 0160 0133		3.7	
	10 0160 0229	SWB/85-Gallon Overpack	1.9	
	10 0160 0193		3.7	
	10 0160 0046	SWB	3.7	
	10 0160 0027	Direct Load TDOP	3.7	
ID 111Q ID 211Q	10 0160 0091	Direct Load TDOP	18.5	Maximum of 2 plastic bag layers, both of which are drum liner bags, in a 55-gallon drum with a rigid liner. The 55-gallon drum is overpacked in an 85-gallon drum. The 85-gallon drum, 55-gallon drum, and rigid liner are vented with one filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
ID 111R ID 211R	10 0160 0909	Drum	1.9	Maximum of 5 plastic bag layers, two of which are drum liner bags, in a 55-gallon drum. The SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	10 0160 0874		3.7	
	10 0160 0897	SWB Overpack	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 112B ID 212B	40 9999 0167	Drum	1.9	Maximum of 2 plastic bag layers, both of which are drum liner bags. No rigid liner. If overpacking 55-gallon drums, the SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0142		3.7	
	40 9999 0120		18.5	
	40 9999 0116		92.5	
	40 9999 0180	SWB Overpack	1.9	
	40 9999 0155		3.7	
	40 9999 0133		18.5	
	40 9999 0129		92.5	
	40 9999 0071	SWB	3.7	
	40 9999 0064		3.7 (4 filters)	
ID 112C ID 212C	40 9999 0191	Drum	1.9	Maximum of 3 plastic bag layers, all of which are liner bags. The SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0165		3.7	
	40 9999 0144		18.5	
	40 9999 0139		92.5	
	40 9999 0204	SWB Overpack	1.9	
	40 9999 0178		3.7	
	40 9999 0156		18.5	
	40 9999 0152		92.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 112D ID 212D	40 9999 0189	Drum	1.9	Maximum of 3 plastic bag layers, all of which are drum liner bags. No rigid liner. If overpacking 55-gallon drums, the SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/ mol fraction.
	40 9999 0163		3.7	
	40 9999 0142		18.5	
	40 9999 0137		92.5	
	40 9999 0202	SWB Overpack	1.9	
	40 9999 0176		3.7	
	40 9999 0154		18.5	
	40 9999 0150		92.5	
	40 9999 0093	SWB	3.7	
	40 9999 0086		3.7 (4 filters)	
ID 112E ID 212E	40 9999 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a drum liner bag. The SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0122		3.7	
	40 9999 0101		18.5	
	40 9999 0096		92.5	
	40 9999 0161	SWB Overpack	1.9	
	40 9999 0135		3.7	
	40 9999 0114		18.5	
	40 9999 0109		92.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 112F ID 212F	40 9999 0146	Drum	1.9	Maximum of 1 plastic bag layer, which is a drum liner bag. No rigid liner. If overpacking 55-gallon drums, the SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0120		3.7	
	40 9999 0099		18.5	
	40 9999 0094		92.5	
	40 9999 0159	SWB Overpack	1.9	
	40 9999 0133		3.7	
	40 9999 0112		18.5	
	40 9999 0107		92.5	
	40 9999 0050	SWB	3.7	
	40 9999 0043		3.7 (4 filters)	
ID 112G ID 212G	40 9999 0127	Drum	1.9	No layers of confinement. The SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0101		3.7	
	40 9999 0079		18.5	
	40 9999 0075		92.5	
	40 9999 0139	SWB Overpack	1.9	
	40 9999 0114		3.7	
	40 9999 0092		18.5	
	40 9999 0088		92.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 112H ID 212H	40 9999 0125	Drum	1.9	No layers of confinement. No rigid liner. If overpacking 55-gallon drums, the SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0099		3.7	
	40 9999 0077		18.5	
	40 9999 0073		92.5	
	40 9999 0137	SWB Overpack	1.9	
	40 9999 0112		3.7	
	40 9999 0090		18.5	
	40 9999 0086		92.5	
	40 9999 0028	SWB	3.7	
	40 9999 0022		3.7 (4 filters)	
ID 112I ID 212I	40 9999 0146	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag. Rigid liner with no lid.
	40 9999 0120		3.7	
	40 9999 0099		18.5	
	40 9999 0186	SWB/85-Gallon Drum Overpack	1.9	
	40 9999 0160		3.7	
	40 9999 0139		18.5	
ID 112J ID 212J	40 9999 0125	Drum	1.9	No layers of confinement. Rigid liner with no lid.
	40 9999 0099		3.7	
	40 9999 0077		18.5	
	40 9999 0164	SWB/85-Gallon Drum Overpack	1.9	
	40 9999 0139		3.7	
	40 9999 0117		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 112K ID 212K	40 9999 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags. The SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction
	40 9999 0144		3.7	
	40 9999 0122		18.5	
	40 9999 0118		92.5	
	40 9999 0182	SWB Overpack	1.9	
	40 9999 0157		3.7	
	40 9999 0135		18.5	
	40 9999 0131		92.5	
ID 113A ID 213A	40 9999 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are drum liner bags
	40 9999 0144		3.7	
	40 9999 0209	SWB/85-Gallon Drum Overpack	1.9	
	40 9999 0184		3.7	
	40 9999 0071	SWB	3.7	
ID 113B ID 213B	40 9999 0191	Drum	1.9	Maximum of 3 plastic bag layers, which are drum liner bags
	40 9999 0165		3.7	
	40 9999 0231	SWB/85-Gallon Drum Overpack	1.9	
	40 9999 0205		3.7	
	40 9999 0093	SWB	3.7	
ID 113C ID 213C	40 9999 0127	Drum	1.9	No layers of confinement. The SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0101		3.7	
	40 9999 0139	SWB Overpack	1.9	
	40 9999 0114		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 114A ID 214A	10 0040 0669	Drum	1.9	Maximum of 4 plastic bag layers, two of which are drum liner bags
	10 0040 0634		3.7	
	10 0040 0730	SWB/85-Gallon Drum Overpack	1.9	
	10 0040 0695		3.7	
	10 0040 0556	SWB	3.7	
ID 114B ID 214B	10 0040 0691	Drum	1.9	Maximum of 5 plastic bag layers, three of which are drum liner bags
	10 0040 0655		3.7	
	10 0040 0752	SWB/85-Gallon Drum Overpack	1.9	
	10 0040 0716		3.7	
	10 0040 0578	SWB	3.7	
ID 114C ID 214C	10 0040 0147	Drum	3.7	No layers of confinement. No rigid liner. The inner lid is fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
	10 0040 0207	SWB/85-Gallon Drum Overpack	3.7	
ID 114E ID 214E	10 0040 0571	Direct Load TDOP	18.5	Maximum of 4 plastic bag layers, 2 of which are drum liner bags, in a 55-gallon drum with a rigid liner. The 55-gallon drum is overpacked in an 85-gallon drum. The 85-gallon drum, 55-gallon drum, and rigid liner are vented with one filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
ID 115A ID 215A	20 0170 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are drum liner bags
	20 0170 0502		3.7	
	20 0170 0568	SWB Overpack	1.9	
	20 0170 0542		3.7	
	20 0170 0430	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 115B ID 215B	20 0170 0099	Drum	3.7	No layers of confinement. Rigid liner with no lid.
	20 0170 0077		18.5	
	20 0170 0139	SWB Overpack	3.7	
	20 0170 0117		18.5	
ID 115C ID 215C	20 0170 0101	Drum	3.7	Maximum of 1 filtered plastic bag, which is a liner bag with a filter with a minimum hydrogen diffusivity value of 5.375 x 10^{-5} mol/s/mol fraction, in a 55-gallon drum with a rigid liner with no lid
	20 0170 0079		18.5	
	20 0170 0140	SWB Overpack	3.7	
	20 0170 0119		18.5	
ID 116A ID 216A	30 0340 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are drum liner bags
	30 0340 0502		3.7	
	30 0340 0568	SWB Overpack	1.9	
	30 0340 0542		3.7	
	30 0340 0430	SWB	3.7	
ID 116B ID 216B	30 0340 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are drum liner bags
	30 0340 0144		3.7	
	30 0340 0209	SWB Overpack	1.9	
	30 0340 0184		3.7	
	30 0340 0071	SWB	3.7	
ID 116C ID 216C	30 0340 0707	Drum	1.9	Maximum of 5 plastic bag layers, two of which are drum liner bags
	30 0340 0681		3.7	
	30 0340 0747	SWB Overpack	1.9	
	30 0340 0721		3.7	
	30 0340 0609	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 116D ID 216D	30 0340 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
ID 116E ID 216E	30 0340 0099	Drum	3.7	No layers of confinement. Rigid liner with no lid.
	30 0340 0077		18.5	
	30 0340 0139	SWB Overpack	3.7	
	30 0340 0117		18.5	
ID 116F ID 216F	30 0340 0101	Drum	3.7	Maximum of 1 filtered plastic bag, which is a liner bag with a filter with a minimum hydrogen diffusivity value of 5.375 x 10^{-5} mol/s/mol fraction, in a 55-gallon drum with a rigid liner with no lid
	30 0340 0079		18.5	
	30 0340 0140	SWB Overpack	3.7	
	30 0340 0119		18.5	
ID 117A ID 217A	20 0170 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are drum liner bags
	20 0170 0502		3.7	
	20 0170 0568	SWB Overpack	1.9	
	20 0170 0542		3.7	
	20 0170 0430	SWB	3.7	
ID 117B ID 217B	20 0170 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	20 0170 0144		3.7	
	20 0170 0209	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0184		3.7	
	20 0170 0053	SWB	3.7	
	20 0170 0067	Bin Overpack	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 117C ID 217C	20 0170 0707	Drum	1.9	Maximum of 5 plastic bag layers, two of which are drum liner bags
	20 0170 0681		3.7	
	20 0170 0747	SWB Overpack	1.9	
	20 0170 0721		3.7	
	20 0170 0609	SWB	3.7	
ID 117D ID 217D	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB/85-Gallon Drum Overpack	1.9	
	20 0000 0000		3.7	
ID 118A ID 218A	20 0170 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are drum liner bags
	20 0170 0502		3.7	
	20 0170 0568	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0542		3.7	
	20 0170 0430	SWB	3.7	
ID 118B ID 218B	20 0170 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are drum liner bags
	20 0170 0144		3.7	
	20 0170 0209	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0184		3.7	
	20 0170 0071	SWB	3.7	
	20 0170 0085	Bin Overpack	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 118C ID 218C	20 0170 0707	Drum	1.9	Maximum of 5 plastic bag layers, two of which are drum liner bags
	20 0170 0681		3.7	
	20 0170 0747	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0721		3.7	
	20 0170 0609	SWB	3.7	
ID 118D ID 218D	20 0170 0886	Drum	1.9	Maximum of 6 plastic bag layers, two of which are drum liner bags
	20 0170 0861		3.7	
	20 0170 0926	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0900		3.7	
	20 0170 0788	SWB	3.7	
ID 118E ID 218E	20 0170 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
ID 119A ID 219A	30 0340 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are drum liner bags
	30 0340 0502		3.7	
	30 0340 0568	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0542		3.7	
	30 0340 0430	SWB	3.7	
ID 119C ID 219C	30 0340 0484	SWB	3.7	Maximum of 4 plastic bag layers, 2 of which are drum liner bags, in a 55-gallon container fitted with a filter with a minimum hydrogen diffusivity value of 1.9 x 10^{-6} mol/s/mol fraction and lined with a rigid liner

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 119D ID 219D	30 0340 0707	Drum	1.9	Maximum of 5 plastic bag layers, two of which are drum liner bags
	30 0340 0681		3.7	
	30 0340 0747	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0721		3.7	
	30 0340 0609	SWB	3.7	
	30 0340 0594	Direct Load TDOP	3.7	
ID 119E ID 219E	30 0340 0349	Drum	1.9	Maximum of 3 plastic bag layers, two of which are drum liner bags
	30 0340 0323		3.7	
	30 0340 0388	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0363		3.7	
	30 0340 0250	SWB	3.7	
	30 0340 0235	Direct Load TDOP	3.7	
ID 119F ID 219F	30 0340 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are drum liner bags
	30 0340 0144		3.7	
	30 0340 0209	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0184		3.7	
	30 0340 0071	SWB	3.7	
	30 0340 0056	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 119G ID 219G	30 0340 0686	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a drum liner bag
	30 0340 0660		3.7	
	30 0340 0725	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0700		3.7	
	30 0340 0587	SWB	3.7	
	30 0340 0572	Direct Load TDOP	3.7	
ID 119H ID 219H	30 0340 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a drum liner bag
	30 0340 0302		3.7	
	30 0340 0367	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0341		3.7	
	30 0340 0229	SWB	3.7	
	30 0340 0214	Direct Load TDOP	3.7	
ID 119I ID 219I	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a drum liner bag
	30 0340 0122		3.7	
	30 0340 0188	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0162		3.7	
	30 0340 0050	SWB	3.7	
ID 119J ID 219J	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0521		3.7	
	30 0340 0399	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 121A ID 221A	30 0340 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are drum liner bags
	30 0340 0502		3.7	
	30 0340 0568	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0542		3.7	
	30 0340 0430	SWB	3.7	
ID 121C ID 221C	30 0340 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
ID 121CD ID 221CD	30 0340 0035	100-Gallon Drum	18.5	No layers of confinement. The inner lid of the 100-gallon drum is fitted with a filter with a minimum hydrogen diffusivity value of 92.5 x 10^{-6} mol/s/mol fraction.
ID 121D ID 221D	30 0340 0019	SWB	18.5	No layers of confinement in the 100-gallon drum. The inner lid of the 100-gallon drum is fitted with a filter with a minimum hydrogen diffusivity value of 92.5 x 10^{-6} mol/s/mol fraction. The outer lid of the 100-gallon drum is removed. The 100-gallon drum is placed directly into an SWB.
ID 122A ID 222A	20 0170 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are drum liner bags
	20 0170 0502		3.7	
	20 0170 0568	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0542		3.7	
	20 0170 0430	SWB	3.7	
ID 122B ID 222B	20 0170 0865	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a drum liner bag
	20 0170 0839		3.7	
	20 0170 0905	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0879		3.7	
	20 0170 0767	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 122C ID 222C	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB/85-Gallon Drum Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000	SWB	3.7	
ID 122D ID 222D	20 0170 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
ID 122E ID 222E	20 0170 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a drum liner bag
	20 0170 0481		3.7	
	20 0170 0546	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0521		3.7	
	20 0170 0408	SWB	3.7	
	20 0170 0393	Direct Load TDOP	3.7	
ID 122F ID 222F	20 0170 0707	Drum	1.9	Maximum of 5 plastic bag layers, two of which are drum liner bags
	20 0170 0681		3.7	
	20 0170 0747	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0721		3.7	
	20 0170 0609	SWB	3.7	
	20 0170 0594	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 122G ID 222G	20 0170 0349	Drum	1.9	Maximum of 3 plastic bag layers, two of which are drum liner bags
	20 0170 0323		3.7	
	20 0170 0388	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0363		3.7	
	20 0170 0250	SWB	3.7	
	20 0170 0235	Direct Load TDOP	3.7	
ID 122H ID 222H	20 0170 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are drum liner bags
	20 0170 0144		3.7	
	20 0170 0209	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0184		3.7	
	20 0170 0071	SWB	3.7	
	20 0170 0056	Direct Load TDOP	3.7	
ID 122I ID 222I	20 0170 0686	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a drum liner bag
	20 0170 0660		3.7	
	20 0170 0725	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0700		3.7	
	20 0170 0587	SWB	3.7	
	20 0170 0572	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 122J ID 222J	20 0170 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a drum liner bag
	20 0170 0302		3.7	
	20 0170 0367	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0341		3.7	
	20 0170 0229	SWB	3.7	
	20 0170 0214	Direct Load TDOP	3.7	
ID 122K ID 222K	20 0170 0131	Drum	1.9	Maximum of 1 plastic bag layer, which is a filtered liner bag. Rigid liner with no lid.
	20 0170 0106		3.7	
	20 0170 0084		18.5	
	20 0170 0171	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0145		3.7	
	20 0170 0124		18.5	
ID 122L ID 222L	20 0170 0125	Drum	1.9	No layers of confinement. Rigid liner with no lid.
	20 0170 0099		3.7	
	20 0170 0077		18.5	
	20 0170 0164	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0139		3.7	
	20 0170 0117		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 122M ID 222M	20 0170 0038	SWB	3.7 (2 filters)	Maximum of 1 plastic bag layer, which is a filtered inner bag
ID 122M ID 222M	20 0170 0027	SWB	18.5 (2 filters)	Maximum of 1 plastic bag layer, which is a filtered inner bag
ID 122M ID 222M	20 0170 0031	SWB	3.7 (4 filters)	Maximum of 1 plastic bag layer, which is a filtered inner bag
ID 122M ID 222M	20 0170 0025	SWB	18.5 (4 filters)	Maximum of 1 plastic bag layer, which is a filtered inner bag
ID 123A ID 223A	30 0340 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are drum liner bags
ID 123A ID 223A	30 0340 0502	Drum	3.7	Maximum of 4 plastic bag layers, two of which are drum liner bags
ID 123A ID 223A	30 0340 0568	SWB/85-Gallon Drum Overpack	1.9	Maximum of 4 plastic bag layers, two of which are drum liner bags
ID 123A ID 223A	30 0340 0542	SWB/85-Gallon Drum Overpack	3.7	Maximum of 4 plastic bag layers, two of which are drum liner bags
ID 123A ID 223A	30 0340 0430	SWB	3.7	Maximum of 4 plastic bag layers, two of which are drum liner bags
ID 123B ID 223B	30 0340 0349	Drum	1.9	Maximum of 3 plastic bag layers, two of which are drum liner bags
ID 123B ID 223B	30 0340 0323	Drum	3.7	Maximum of 3 plastic bag layers, two of which are drum liner bags
ID 123B ID 223B	30 0340 0388	SWB/85-Gallon Drum Overpack	1.9	Maximum of 3 plastic bag layers, two of which are drum liner bags
ID 123B ID 223B	30 0340 0363	SWB/85-Gallon Drum Overpack	3.7	Maximum of 3 plastic bag layers, two of which are drum liner bags
ID 123C ID 223C	30 0340 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are drum liner bags
ID 123C ID 223C	30 0340 0144	Drum	3.7	Maximum of 2 plastic bag layers, both of which are drum liner bags
ID 123C ID 223C	30 0340 0209	SWB/85-Gallon Drum Overpack	1.9	Maximum of 2 plastic bag layers, both of which are drum liner bags
ID 123C ID 223C	30 0340 0184	SWB/85-Gallon Drum Overpack	3.7	Maximum of 2 plastic bag layers, both of which are drum liner bags
ID 123D ID 223D	30 0340 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a drum liner bag
ID 123D ID 223D	30 0340 0302	Drum	3.7	Maximum of 2 plastic bag layers, one of which is a drum liner bag
ID 123D ID 223D	30 0340 0367	SWB/85-Gallon Drum Overpack	1.9	Maximum of 2 plastic bag layers, one of which is a drum liner bag
ID 123D ID 223D	30 0340 0341	SWB/85-Gallon Drum Overpack	3.7	Maximum of 2 plastic bag layers, one of which is a drum liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 123E ID 223E	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a drum liner bag
	30 0340 0122		3.7	
	30 0340 0188	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0162		3.7	
ID 124A ID 224A	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB/85-Gallon Drum Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000	SWB	3.7	
ID 125A ID 225A	30 0340 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are drum liner bags
	30 0340 0502		3.7	
	30 0340 0568	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0542		3.7	
	30 0340 0430	SWB	3.7	
ID 125C ID 225C	30 0340 0707	Drum	1.9	Maximum of 5 plastic bag layers, two of which are drum liner bags
	30 0340 0681		3.7	
	30 0340 0747	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0721		3.7	
	30 0340 0609	SWB	3.7	
ID 125D ID 225D	30 0340 0886	Drum	1.9	Maximum of 6 plastic bag layers, two of which are drum liner bags
	30 0340 0861		3.7	
	30 0340 0926	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0900		3.7	
	30 0340 0788	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 125E ID 225E	30 0340 0865	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a drum liner bag
	30 0340 0839		3.7	
	30 0340 0905	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0879		3.7	
	30 0340 0767	SWB	3.7	
ID 125F ID 225F	30 0340 0099	Drum	3.7	No layers of confinement. Rigid liner with no lid.
	30 0340 0077		18.5	
	30 0340 0139	SWB Overpack	3.7	
	30 0340 0117		18.5	
ID 125G ID 225G	30 0340 0101	Drum	3.7	Maximum of 1 filtered plastic bag, which is a liner bag with a filter with a minimum hydrogen diffusivity value of 5.375 x 10^{-5} mol/s/mol fraction, in a 55-gallon drum with a rigid liner with no lid
	30 0340 0079		18.5	
	30 0340 0140	SWB Overpack	3.7	
	30 0340 0119		18.5	
ID 125H ID 225H	30 0340 0349	Drum	1.9	Maximum of 3 plastic bag layers, two of which are drum liner bags
	30 0340 0323		3.7	
	30 0340 0388	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0363		3.7	
	30 0340 0250	SWB	3.7	
	30 0340 0235	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 125I ID 225I	30 0340 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are drum liner bags
	30 0340 0144		3.7	
	30 0340 0209	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0184		3.7	
	30 0340 0071	SWB	3.7	
	30 0340 0056	Direct Load TDOP	3.7	
ID 125J ID 225J	30 0340 0686	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a drum liner bag
	30 0340 0660		3.7	
	30 0340 0725	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0700		3.7	
	30 0340 0587	SWB	3.7	
	30 0340 0572	Direct Load TDOP	3.7	
ID 125K ID 225K	30 0340 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a drum liner bag
	30 0340 0302		3.7	
	30 0340 0367	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0341		3.7	
	30 0340 0229	SWB	3.7	
	30 0340 0214	Direct Load TDOP	3.7	
ID 125L ID 225L	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a drum liner bag
	30 0340 0122		3.7	
	30 0340 0188	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0162		3.7	
	30 0340 0050	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 125M ID 225M	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a drum liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0521		3.7	
	30 0340 0408	SWB	3.7	
	30 0340 0393	Direct Load TDOP	3.7	
ID 126A ID 226A	30 0340 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are drum liner bags
	30 0340 0502		3.7	
	30 0340 0568	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0542		3.7	
	30 0340 0430	SWB	3.7	
ID 126C ID 226C	30 0340 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	30 0340 0144		3.7	
ID 126D ID 226D	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
ID 126E ID 226E	30 0340 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	30 0340 0302		3.7	
ID 126F ID 226F	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0122		3.7	
ID 126G ID 226G	30 0340 0349	Drum	1.9	Maximum of 3 plastic liner bags, two of which are liner bags
	30 0340 0323		3.7	
ID 127A ID 227A	30 0340 0067	Bin Overpack	3.7	Maximum of 2 plastic bag layers, both of which are liner bags

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 127B ID 227B	30 0340 0131	Drum	1.9	Maximum of 1 plastic bag layer, which is a filtered liner bag. Rigid liner with no lid.
	30 0340 0106		3.7	
	30 0340 0084		18.5	
	30 0340 0171	SWB Overpack	1.9	
	30 0340 0145		3.7	
	30 0340 0124		18.5	
ID 127C ID 227C	30 0340 0125	Drum	1.9	No layers of confinement. Rigid liner with no lid.
	30 0340 0099		3.7	
	30 0340 0077		18.5	
	30 0340 0164	SWB Overpack	1.9	
	30 0340 0139		3.7	
	30 0340 0117		18.5	
ID 127D ID 227D	30 0340 0038	SWB	3.7 (2 filters)	Maximum of 1 plastic bag layer, which is a filtered inner bag
	30 0340 0027		18.5 (2 filters)	
	30 0340 0031	SWB	3.7 (4 filters)	
	30 0340 0025		18.5 (4 filters)	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 130A ID 230A	30 0185 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are drum liner bags
	30 0185 0502		3.7	
	30 0185 0568	SWB/85-Gallon Drum Overpack	1.9	
	30 0185 0542		3.7	
	30 0185 0430	SWB	3.7	
	30 0185 0415	Direct Load TDOP	3.7	
ID 130B ID 230B	30 0185 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a drum liner bag
	30 0185 0481		3.7	
	30 0185 0546	SWB/85-Gallon Drum Overpack	1.9	
	30 0185 0521		3.7	
	30 0185 0408	SWB	3.7	
	30 0185 0393	Direct Load TDOP	3.7	
ID 130C ID 230C	30 0185 0707	Drum	1.9	Maximum of 5 plastic bag layers, two of which are drum liner bags
	30 0185 0681		3.7	
	30 0185 0747	SWB/85-Gallon Drum Overpack	1.9	
	30 0185 0721		3.7	
	30 0185 0609	SWB	3.7	
	30 0185 0594	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 130D ID 230D	30 0185 0349	Drum	1.9	Maximum of 3 plastic bag layers, two of which are drum liner bags
	30 0185 0323		3.7	
	30 0185 0388	SWB/85-Gallon Drum Overpack	1.9	
	30 0185 0363		3.7	
	30 0185 0250	SWB	3.7	
	30 0185 0235	Direct Load TDOP	3.7	
ID 130E ID 230E	30 0185 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are drum liner bags
	30 0185 0144		3.7	
	30 0185 0209	SWB/85-Gallon Drum Overpack	1.9	
	30 0185 0184		3.7	
	30 0185 0071	SWB	3.7	
	30 0185 0056	Direct Load TDOP	3.7	
ID 130F ID 230F	30 0185 0686	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a drum liner bag
	30 0185 0660		3.7	
	30 0185 0725	SWB/85-Gallon Drum Overpack	1.9	
	30 0185 0700		3.7	
	30 0185 0587	SWB	3.7	
	30 0185 0572	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 130G ID 230G	30 0185 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a drum liner bag
	30 0185 0302		3.7	
	30 0185 0367	SWB/85-Gallon Drum Overpack	1.9	
	30 0185 0341		3.7	
	30 0185 0229	SWB	3.7	
	30 0185 0214	Direct Load TDOP	3.7	
ID 130H ID 230H	30 0185 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a drum liner bag
	30 0185 0122		3.7	
	30 0185 0188	SWB/85-Gallon Drum Overpack	1.9	
	30 0185 0162		3.7	
	30 0185 0050	SWB	3.7	
ID 132G ID 232G	10 0160 0147	Drum	1.9	No layers of confinement
	10 0160 0111		3.7	
	10 0160 0207	SWB/85-Gallon Overpack	1.9	
	10 0160 0172		3.7	
ID 132H ID 232H	10 0160 0408	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a drum liner bag.
	10 0160 0373		3.7	
	10 0160 0469	SWB Overpack	1.9	
	10 0160 0433		3.7	
	10 0160 0295	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 132I ID 232I	10 0160 0211	Drum	1.9	Maximum of 3 plastic bag layers, all of which are drum liner bags
	10 0160 0176		3.7	
	10 0160 0272	SWB/85-Gallon Drum Overpack	1.9	
	10 0160 0236		3.7	
	10 0160 0098	SWB	3.7	
ID 132J ID 232J	10 0160 0190	Drum	1.9	Maximum of 2 plastic bag layers, both of which are drum liner bags
	10 0160 0154		3.7	
	10 0160 0250	SWB/85-Gallon Drum Overpack	1.9	
	10 0160 0215		3.7	
	10 0160 0076	SWB	3.7	
ID 132K ID 232K	10 0160 0669	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	10 0160 0634		3.7	
	10 0160 0730	SWB/85-Gallon Drum Overpack	1.9	
	10 0160 0695		3.7	
ID 132L ID 232L	10 0160 0151	SWB	3.7	Maximum of 2 plastic bag layers, both of which are liner bags, in a 55-gallon container fitted with a filter with a minimum hydrogen diffusivity value of 1.9 x 10^{-6} mol/s/mol fraction and lined with a rigid liner
	10 0160 0132	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 132M ID 232M	10 0160 0168	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag.
	10 0160 0133		3.7	
	10 0160 0229	SWB/85-Gallon Overpack	1.9	
	10 0160 0193		3.7	
	10 0160 0046	SWB	3.7	
	10 0160 0027	Direct Load TDOP	3.7	
ID 132N ID 232N	10 0160 0091	Direct Load TDOP	18.5	Maximum of 2 plastic bag layers, both of which are drum liner bags, in a 55-gallon drum with a rigid liner. The 55-gallon drum is overpacked in an 85-gallon drum. The 85-gallon drum, 55-gallon drum, and rigid liner are vented with one filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
ID 132P ID 232P	10 0160 0909	Drum	1.9	Maximum of 5 plastic bag layers, two of which are drum liner bags, in a 55-gallon drum. The SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	10 0160 0874		3.7	
	10 0160 0897	SWB Overpack	3.7	
ID 132Q ID 232Q	10 0160 0166	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag. Rigid liner with no lid.
	10 0160 0131		3.7	
	10 0160 0101		18.5	
	10 0160 0227	SWB Overpack	1.9	
	10 0160 0191		3.7	
	10 0160 0161		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 132R ID 232R	10 0160 0145	Drum	1.9	No layers of confinement. Rigid liner with no lid.
	10 0160 0109		3.7	
	10 0160 0079		18.5	
	10 0160 0206	SWB Overpack	1.9	
	10 0160 0170		3.7	
	10 0160 0140		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 111A LA 211A	10 0130 0168	Drum	1.9	Maximum of one plastic bag layer, which is a liner bag
	10 0130 0133		3.7	
	10 0130 0103		18.5	
	10 0130 0229	SWB Overpack	1.9	
	10 0130 0193		3.7	
	10 0130 0163		18.5	
LA 111B LA 211B	10 0130 0147	Drum	1.9	No layers of confinement
	10 0130 0111		3.7	
	10 0130 0081		18.5	
	10 0130 0207	SWB Overpack	1.9	
	10 0130 0172		3.7	
	10 0130 0142		18.5	
	10 0130 0034	SWB	3.7	
LA 111G LA 211G	10 0130 0091	SWB (2 filters)	3.7	Maximum of 3 plastic bag layers, two of which are drum liner bags, and one of which is an SWB liner bag
	10 0130 0082	SWB (4 filters)	3.7	
LA 111H LA 211H	10 0130 0082	SWB (2 filters)	3.7	Maximum of 3 plastic bag layers, one of which is a drum liner bag, and two of which are SWB liner bags
	10 0130 0073	SWB (4 filters)	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 112A LA 212A	40 9999 0485	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	40 9999 0459		3.7	
	40 9999 0438		18.5	
	40 9999 0525	SWB Overpack	1.9	
	40 9999 0499		3.7	
	40 9999 0434		18.5[b]	
LA 114A LA 214A	10 0040 0190	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	10 0040 0154		3.7	
	10 0040 0124		18.5	
	10 0040 0250	SWB Overpack	1.9	
	10 0040 0215		3.7	
	10 0040 0125		18.5[b]	
LA 114B LA 214B	10 0040 0168	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	10 0040 0133		3.7	
	10 0040 0103		18.5	
	10 0040 0229	SWB Overpack	1.9	
	10 0040 0193		3.7	
	10 0040 0104		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 114C LA 214C	10 0040 0147	Drum	1.9	No layers of confinement
	10 0040 0111		3.7	
	10 0040 0081		18.5	
	10 0040 0207	SWB Overpack	1.9	
	10 0040 0172		3.7	
	10 0040 0082		18.5[b]	
LA 114E LA 214E	10 0040 0389	Pipe Overpack	3.7	Waste is placed into a slip-top metal can. Can is placed into a maximum of one plastic bag layer, which is an inner bag. Bag is placed into a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/ mol fraction
LA 115A LA 215A	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000		18.5	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000		18.5[b]	
LA 115B LA 215B	20 0170 0110	Drum	3.7	Maximum of 1 filtered plastic bag layer, which is an inner bag
	20 0170 0089		18.5	
	20 0170 0150	SWB Overpack	3.7	
	20 0170 0085		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 116A LA 216A	30 0340 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0340 0502		3.7	
	30 0340 0481		18.5	
	30 0340 0568	SWB Overpack	1.9	
	30 0340 0542		3.7	
	30 0340 0477		18.5[b]	
LA 116B LA 216B	30 0340 0145	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags
	30 0340 0120		3.7	
	30 0340 0098		18.5	
LA 116C LA 216C	30 0340 0306	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
	30 0340 0280		3.7	
	30 0340 0259		18.5	
	30 0340 0346	SWB Overpack	1.9	
	30 0340 0320		3.7	
	30 0340 0255		18.5[b]	
	30 0340 0208	SWB	3.7	
	30 0340 0197		18.5	
	30 0340 0193	Direct Load TDOP	3.7	
	30 0340 0190		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 116D LA 216D	30 0340 0485	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	30 0340 0459		3.7	
	30 0340 0438		18.5	
	30 0340 0525	SWB Overpack	1.9	
	30 0340 0499		3.7	
	30 0340 0434		18.5[b]	
LA 116E LA 216E	30 0340 0136	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag
	30 0340 0110		3.7	
	30 0340 0089		18.5	
	30 0340 0038	SWB	3.7	
	30 0340 0027		18.5	
	30 0340 0023	Direct Load TDOP	3.7	
	30 0340 0020		18.5	
LA 116F LA 216F	30 0340 0133	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a drum liner bag
	30 0340 0108		3.7	
	30 0340 0086		18.5	
	30 0340 0035	SWB	3.7	
	30 0340 0024		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 116G LA 216G	30 0340 0127	Drum	1.9	No layers of confinement
	30 0340 0101		3.7	
	30 0340 0079		18.5	
	30 0340 0166	SWB Overpack	1.9	
	30 0340 0141		3.7	
	30 0340 0076		18.5[b]	
	30 0340 0028	SWB	3.7	
	30 0340 0018		18.5	
	30 0340 0013	Direct Load TDOP	3.7	
	30 0340 0011		18.5	
LA 116H LA 216H	30 0340 0707	Drum	1.9	Maximum of 5 plastic bag layers, two of which are liner bags
	30 0340 0681		3.7	
	30 0340 0660		18.5	
	30 0340 0747	SWB Overpack	1.9	
	30 0340 0721		3.7	
	30 0340 0656		18.5[b]	
LA 116I LA 216I	30 0340 0861	Drum	3.7	Maximum of 6 plastic bag layers, two of which are liner bags
	30 0340 0839		18.5	
	30 0340 0900	SWB Overpack	3.7	
	30 0340 0836		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

**TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 116J LA 216J	30 0340 0486	Pipe Overpack	3.7	Maximum of 2 plastic bag layers, which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
LA 117A LA 217A	20 0170 0745	SWB	3.7	Maximum of 4 plastic bag layers, which are inner bags
	20 0170 0734		18.5	
LA 117B LA 217B	20 0170 0306	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
	20 0170 0280		3.7	
	20 0170 0259		18.5	
	20 0170 0346	SWB Overpack	1.9	
	20 0170 0320		3.7	
	20 0170 0255		18.5[b]	
	20 0170 0208	SWB	3.7	
	20 0170 0197		18.5	
	20 0170 0193	Direct Load TDOP	3.7	
	20 0170 0190		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 117C LA 217C	20 0170 0136	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag
	20 0170 0110		3.7	
	20 0170 0089		18.5	
	20 0170 0038	SWB	3.7	
	20 0170 0027		18.5	
	20 0170 0023	Direct Load TDOP	3.7	
	20 0170 0020		18.5	
LA 117D LA 217D	20 0170 0485	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	20 0170 0459		3.7	
	20 0170 0438		18.5	
	20 0170 0525	SWB Overpack	1.9	
	20 0170 0499		3.7	
	20 0170 0434		18.5[b]	
LA 117E LA 217E	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000		18.5	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 117F LA 217F	20 0170 0133	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a drum liner bag
	20 0170 0108		3.7	
	20 0170 0086		18.5	
	20 0170 0035	SWB	3.7	
	20 0170 0024		18.5	
LA 117G LA 217G	20 0170 0127	Drum	1.9	No layers of confinement
	20 0170 0101		3.7	
	20 0170 0079		18.5	
	20 0170 0166	SWB Overpack	1.9	
	20 0170 0141		3.7	
	20 0170 0076		18.5[b]	
	20 0170 0028	SWB	3.7	
	20 0170 0018		18.5	
	20 0170 0013	Direct Load TDOP	3.7	
	20 0170 0011		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 117H LA 217H	20 0170 0707	Drum	1.9	Maximum of 5 plastic bag layers, two of which are liner bags
	20 0170 0681		3.7	
	20 0170 0660		18.5	
	20 0170 0747	SWB Overpack	1.9	
	20 0170 0721		3.7	
	20 0170 0656		18.5[b]	
LA 117I LA 217I	20 0170 0502	Drum	3.7	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0481		18.5	
	20 0170 0542	SWB Overpack	3.7	
	20 0170 0477		18.5[b]	
	20 0170 0412	SWB	3.7	
	20 0170 0401		18.5	
LA 117J LA 217J	20 0170 0861	Drum	3.7	Maximum of 6 plastic bag layers, two of which are liner bags
	20 0170 0839		18.5	
	20 0170 0900	SWB Overpack	3.7	
	20 0170 0836		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 118A LA 218A	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000		18.5	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000		18.5[b]	
LA 118B LA 218B	20 0170 0306	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
	20 0170 0280		3.7	
	20 0170 0259		18.5	
	20 0170 0346	SWB Overpack	1.9	
	20 0170 0320		3.7	
	20 0170 0255		18.5[b]	
	20 0170 0208	SWB	3.7	
	20 0170 0197		18.5	
	20 0170 0193	Direct Load TDOP	3.7	
	20 0170 0190		18.5	
LA 118C LA 218C	20 0170 0133	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a liner bag
	20 0170 0108		3.7	
	20 0170 0086		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 118D LA 218D	20 0170 0127	Drum	1.9	No layers of confinement
	20 0170 0101		3.7	
	20 0170 0079		18.5	
	20 0170 0166	SWB Overpack	1.9	
	20 0170 0141		3.7	
	20 0170 0076		18.5[b]	
	20 0170 0028	SWB	3.7	
	20 0170 0018		18.5	
	20 0170 0013	Direct Load TDOP	3.7	
	20 0170 0011		18.5	
LA 118E LA 218E	20 0170 0707	Drum	1.9	Maximum of 5 plastic bag layers, two of which are liner bags
	20 0170 0681		3.7	
	20 0170 0660		18.5	
	20 0170 0747	SWB Overpack	1.9	
	20 0170 0721		3.7	
	20 0170 0656		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 118F LA 218F	20 0170 0134	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag, and no rigid liner in the 55-gallon drums
	20 0170 0108		3.7	
	20 0170 0087		18.5	
	20 0170 0174	SWB Overpack	1.9	
	20 0170 0148		3.7	
	20 0170 0083		18.5[b]	
LA 118G LA 218G	20 0170 0861	Drum	3.7	Maximum of 6 plastic bag layers, two of which are liner bags
	20 0170 0839		18.5	
	20 0170 0900	SWB Overpack	3.7	
	20 0170 0836		18.5[b]	
LA 119A LA 219A	30 0340 0306	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
	30 0340 0280		3.7	
	30 0340 0259		18.5	
	30 0340 0346	SWB Overpack	1.9	
	30 0340 0320		3.7	
	30 0340 0255		18.5[b]	
	30 0340 0208	SWB	3.7	
	30 0340 0197		18.5	
	30 0340 0193	Direct Load TDOP	3.7	
	30 0340 0190		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 119B LA 219B	30 0340 0136	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag
	30 0340 0110		3.7	
	30 0340 0089		18.5	
	30 0340 0038	SWB	3.7	
	30 0340 0027		18.5	
	30 0340 0023	Direct Load TDOP	3.7	
	30 0340 0020		18.5	
LA 119C LA 219C	30 0340 0133	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a drum liner bag
	30 0340 0108		3.7	
	30 0340 0086		18.5	
	30 0340 0035	SWB	3.7	
	30 0340 0024		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 119D LA 219D	30 0340 0127	Drum	1.9	No layers of confinement
	30 0340 0101		3.7	
	30 0340 0079		18.5	
	30 0340 0166	SWB Overpack	1.9	
	30 0340 0141		3.7	
	30 0340 0076		18.5[b]	
	30 0340 0028	SWB	3.7	
	30 0340 0018		18.5	
	30 0340 0013	Direct Load TDOP	3.7	
	30 0340 0011		18.5	
LA 119E LA 219E	30 0340 0707	Drum	1.9	Maximum of 5 plastic bag layers, two of which are liner bags
	30 0340 0681		3.7	
	30 0340 0660		18.5	
	30 0340 0747	SWB Overpack	1.9	
	30 0340 0721		3.7	
	30 0340 0656		18.5[b]	
LA 119F LA 219F	30 0340 0861	Drum	3.7	Maximum of 6 plastic bag layers, two of which are liner bags
	30 0340 0839		18.5	
	30 0340 0900	SWB Overpack	3.7	
	30 0340 0836		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 120A LA 220A	20 0000 0000	Pipe Overpack	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
LA 122A LA 222A	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000		18.5	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000		18.5[b]	
	20 0000 0000	Pipe Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000		18.5	
LA 122B LA 222B	20 0170 0136	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag
	20 0170 0110		3.7	
	20 0170 0089		18.5	
	20 0170 0176	SWB Overpack	1.9	
	20 0170 0150		3.7	
	20 0170 0085		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 122C LA 222C	20 0170 0110	Drum	3.7	Maximum of 1 filtered plastic bag layer, which is an inner bag
	20 0170 0089		18.5	
	20 0170 0038	SWB	3.7	
	20 0170 0027		18.5	
	20 0170 0023	Direct Load TDOP	3.7	
	20 0170 0020		18.5	
LA 123A LA 223A	30 0340 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0340 0502		3.7	
	30 0340 0481		18.5	
	30 0340 0568	SWB Overpack	1.9	
	30 0340 0542		3.7	
	30 0340 0477		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 123B LA 223B	30 0340 0306	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
	30 0340 0280		3.7	
	30 0340 0259		18.5	
	30 0340 0346	SWB Overpack	1.9	
	30 0340 0320		3.7	
	30 0340 0255		18.5[b]	
	30 0340 0208	SWB	3.7	
	30 0340 0197		18.5	
	30 0340 0193	Direct Load TDOP	3.7	
	30 0340 0190		18.5	
LA 123C LA 223C	30 0340 0136	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag
	30 0340 0110		3.7	
	30 0340 0089		18.5	
	30 0340 0038	SWB	3.7	
	30 0340 0027		18.5	
	30 0340 0023	Direct Load TDOP	3.7	
	30 0340 0020		18.5	
LA 123D LA 223D	30 0340 0145	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags
	30 0340 0120		3.7	
	30 0340 0098		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 123E LA 223E	30 0340 0133	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a liner bag
	30 0340 0108		3.7	
	30 0340 0086		18.5	
LA 123F LA 223F	30 0340 0127	Drum	1.9	No layers of confinement
	30 0340 0101		3.7	
	30 0340 0079		18.5	
	30 0340 0166	SWB Overpack	1.9	
	30 0340 0141		3.7	
	30 0340 0076		18.5[b]	
	30 0340 0028	SWB	3.7	
	30 0340 0018		18.5	
	30 0340 0013	Direct Load TDOP	3.7	
	30 0340 0011		18.5	
LA 123G LA 223G	30 0340 0707	Drum	1.9	Maximum of 5 plastic bag layers, two of which are liner bags
	30 0340 0681		3.7	
	30 0340 0660		18.5	
	30 0340 0747	SWB Overpack	1.9	
	30 0340 0721		3.7	
	30 0340 0656		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 123H LA 223H	30 0340 0861	Drum	3.7	Maximum of 6 plastic bag layers, two of which are liner bags
	30 0340 0839		18.5	
	30 0340 0900	SWB Overpack	3.7	
	30 0340 0836		18.5[b]	
LA 124A LA 224A	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000		18.5	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000		18.5[b]	
LA 124B LA 224B	20 0170 0110	Drum	3.7	Maximum of 1 filtered plastic bag layer, which is an inner bag
	20 0170 0089		18.5	
	20 0170 0038	SWB	3.7	
	20 0170 0027		18.5	
	20 0170 0023	Direct Load TDOP	3.7	
	20 0170 0020		18.5	
LA 124C LA 224C	20 0000 0000	Pipe Overpack	3.7	Metal can as innermost layer of confinement in a pipe overpack
LA 125A LA 225A	30 0340 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0030		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 125B LA 225B	30 0340 0306	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
	30 0340 0280		3.7	
	30 0340 0259		18.5	
	30 0340 0346	SWB Overpack	1.9	
	30 0340 0320		3.7	
	30 0340 0255		18.5[b]	
	30 0340 0208	SWB	3.7	
	30 0340 0197		18.5	
	30 0340 0193	Direct Load TDOP	3.7	
	30 0340 0190		18.5	
LA 125C LA 225C	30 0340 0136	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag
	30 0340 0110		3.7	
	30 0340 0089		18.5	
	30 0340 0038	SWB	3.7	
	30 0340 0027		18.5	
	30 0340 0023	Direct Load TDOP	3.7	
	30 0340 0020		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 125D LA 225D	30 0340 0133	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a drum liner bag
	30 0340 0108		3.7	
	30 0340 0086		18.5	
	30 0340 0035	SWB	3.7	
	30 0340 0024		18.5	
LA 125E LA 225E	30 0340 0127	Drum	1.9	No layers of confinement
	30 0340 0101		3.7	
	30 0340 0079		18.5	
	30 0340 0166	SWB Overpack	1.9	
	30 0340 0141		3.7	
	30 0340 0076		18.5[b]	
	30 0340 0028	SWB	3.7	
	30 0340 0018		18.5	
	30 0340 0013	Direct Load TDOP	3.7	
	30 0340 0011		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 125F LA 225F	30 0340 0707	Drum	1.9	Maximum of 5 plastic bag layers, two of which are liner bags
	30 0340 0681		3.7	
	30 0340 0660		18.5	
	30 0340 0747	SWB Overpack	1.9	
	30 0340 0721		3.7	
	30 0340 0656		18.5[b]	
LA 125G LA 225G	30 0340 0861	Drum	3.7	Maximum of 6 plastic bag layers, two of which are liner bags
	30 0340 0839		18.5	
	30 0340 0900	SWB Overpack	3.7	
	30 0340 0836		18.5[b]	
LA 125H LA 225H	30 0340 0486	Pipe Overpack	3.7	Maximum of 2 plastic bag layers, which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
LA 126A LA 226A	30 0340 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	30 0340 0144		3.7	
	30 0340 0122		18.5	
	30 0340 0209	SWB Overpack	1.9	
	30 0340 0184		3.7	
	30 0340 0119		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 126B LA 226B	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0122		3.7	
	30 0340 0101		18.5	
	30 0340 0188	SWB Overpack	1.9	
	30 0340 0162		3.7	
	30 0340 0097		18.5[b]	
LA 126C LA 226C	30 0340 0127	Drum	1.9	No layers of confinement
	30 0340 0101		3.7	
	30 0340 0079		18.5	
	30 0340 0166	SWB Overpack	1.9	
	30 0340 0141		3.7	
	30 0340 0076		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LL 111A LL 211A	10 0160 0648	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	10 0160 0613		3.7	
	10 0160 0709	SWB Overpack	1.9	
	10 0160 0673		3.7	
LL 111B LL 211B	10 0160 0147	Drum	1.9	No layers of confinement
	10 0160 0111		3.7	
LL 113A LL 213A	40 9999 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	40 9999 0481		3.7	
	40 9999 0546	SWB Overpack	1.9	
	40 9999 0521		3.7	
LL 116A LL 216A	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB Overpack	1.9	
	30 0340 0521		3.7	
LL 116B LL 216B	30 0340 0686	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	30 0340 0660		3.7	
	30 0340 0725	SWB Overpack	1.9	
	30 0340 0700		3.7	
LL 116C LL 216C	30 0340 0865	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag
	30 0340 0839		3.7	
	30 0340 0905	SWB Overpack	1.9	
	30 0340 0879		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LL 116D LL 216D	30 0340 0120	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag. Rigid liner with no lid.
	30 0340 0160	SWB Overpack		
LL 116E LL 216E	30 0340 0837	Drum	3.7	Maximum of 5 plastic bag layers, one of which is a liner bag. No rigid liner.
	30 0340 0877	SWB Overpack		
LL 116F LL 216F	30 0340 0099	Drum	3.7	No layers of confinement. Rigid liner with no lid.
	30 0340 0139	SWB Overpack		
LL 116G LL 216G	30 0340 0837	Drum	3.7	Maximum of 5 plastic bag layers, one of which is a liner bag. Rigid liner with no lid.
	30 0340 0877	SWB Overpack		
LL 119A LL 219A	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB Overpack	1.9	
	30 0340 0521		3.7	
	30 0340 0053	SWB	3.7	Maximum of 2 plastic bag layers, both of which are liner bags
LL 124A LL 224A	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LL 124B LL 224B	20 0170 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	20 0170 0481		3.7	
	20 0170 0546	SWB Overpack	1.9	
	20 0170 0521		3.7	
LL 125A LL 225A	30 0340 0485	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	30 0340 0459		3.7	
	30 0340 0387	SWB	3.7	
	30 0340 0372	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
MD 111A MD 211A	10 0130 0147	Drum	1.9	No layers of confinement
	10 0130 0111		3.7	
	10 0130 0207	SWB Overpack	1.9	
	10 0130 0172		3.7	
MD 111B MD 211B	10 0130 0034	SWB	3.7	No layers of confinement
MD 116A MD 216A	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB Overpack	1.9	
	30 0340 0521		3.7	
MD 117A MD 217A	20 0170 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	20 0170 0481		3.7	
	20 0170 0546	SWB Overpack	1.9	
	20 0170 0521		3.7	
	20 0170 0028	SWB	3.7	No layers of confinement

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
NT 111A NT 211A	10 0160 0147	Drum	1.9	No layers of confinement
	10 0160 0111		3.7	
	10 0160 0207	SWB Overpack	1.9	
	10 0160 0172		3.7	
NT 116A NT 216A	30 0340 0485	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	30 0340 0459		3.7	
	30 0340 0525	SWB Overpack	1.9	
	30 0340 0499		3.7	
NT 119A NT 219A	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0122		3.7	
	30 0340 0188	SWB Overpack	1.9	
	30 0340 0162		3.7	
NT 125A NT 225A	30 0340 0686	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	30 0340 0660		3.7	
	30 0340 0725	SWB Overpack	1.9	
	30 0340 0700		3.7	
NT 125B NT 225B	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0122		3.7	
	30 0340 0188	SWB Overpack	1.9	
	30 0340 0162		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
OR 125A OR 225A	30 0340 0125	Drum	1.9	No layers of confinement
	30 0340 0099		3.7	
	30 0340 0164	SWB Overpack	1.9	
	30 0340 0139		3.7	
	30 0340 0028	SWB	3.7	
OR 125B OR 225B	30 0340 0304	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag, and no rigid liner in the 55-gallon drums
	30 0340 0278		3.7	
	30 0340 0344	SWB Overpack	1.9	
	30 0340 0318		3.7	
	30 0340 0208	SWB	3.7	
OR 125C OR 225C	30 0340 0131	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a liner bag, and no rigid liner in the 55-gallon drums
	30 0340 0106		3.7	
	30 0340 0171	SWB Overpack	1.9	
	30 0340 0145		3.7	
	30 0340 0034	SWB	3.7	
OR 125D OR 225D	30 0340 0311	Drum	1.9	Maximum of 2 plastic bag layers, consisting of one inner bag and one filtered liner bag, and no rigid liner in the 55-gallon drums
	30 0340 0285		3.7	
	30 0340 0350	SWB Overpack	1.9	
	30 0340 0325		3.7	
	30 0340 0213	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
OR 125E OR 225E	30 0340 0490	Drum	1.9	Maximum of 3 plastic bag layers, consisting of two inner bags and one filtered liner bag, and no rigid liner in the 55-gallon drums
	30 0340 0464		3.7	
	30 0340 0530	SWB Overpack	1.9	
	30 0340 0504		3.7	
	30 0340 0392	SWB	3.7	
OR 125F OR 225F	30 0340 0669	Drum	1.9	Maximum of 4 plastic bag layers, consisting of three inner bags and one filtered liner bag, and no rigid liner in the 55-gallon drums
	30 0340 0643		3.7	
	30 0340 0709	SWB Overpack	1.9	
	30 0340 0683		3.7	
	30 0340 0571	SWB	3.7	
OR 125G OR 225G	30 0340 0848	Drum	1.9	Maximum of 5 plastic bag layers, consisting of four inner bags and one filtered liner bag, and no rigid liner in the 55-gallon drums
	30 0340 0823		3.7	
	30 0340 0888	SWB Overpack	1.9	
	30 0340 0862		3.7	
	30 0340 0751	SWB	3.7	
OR 125H OR 225H	30 0340 1027	Drum	1.9	Maximum of 6 plastic bag layers, consisting of five inner bags and one filtered liner bag, and no rigid liner in the 55-gallon drums
	30 0340 1002		3.7	
	30 0340 1067	SWB Overpack	1.9	
	30 0340 1042		3.7	
	30 0340 0930	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 111A RF 211A	10 0130 0190	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	10 0130 0154		3.7	
	10 0130 0250	SWB Overpack	1.9	
	10 0130 0215		3.7	
	10 0130 0046	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
RF 111B RF 211B	10 0130 0311	SWB	3.7	Maximum of 1 plastic bag layer, which is an inner bag, and one filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 111D RF 211D	10 0130 0175	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 111DF RF 211DF	10 0130 0246	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	10 0130 0210		3.7	
RF 111E RF 211E	10 0130 0191	Drum	1.9	Maximum of 4 filtered plastic bags layers, two of which are liner bags, and 2 metal cans, each of which are closed with a slip-top lid
	10 0130 0156		3.7	
	10 0130 0252	SWB Overpack	1.9	
	10 0130 0216		3.7	
RF 111H RF 211H	10 0130 0408	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	10 0130 0373		3.7	
	10 0130 0469	SWB Overpack	1.9	
	10 0130 0433		3.7	
	10 0130 0286	SWB	3.7	
RF 111J RF 211J	10 0130 0257	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 2 filtered metal cans, each of which is fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	10 0130 0221		3.7	
	10 0130 0318	SWB Overpack	1.9	
	10 0130 0282		3.7	
RF 111K RF 211K	10 0130 0232	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	10 0130 0197		3.7	
	10 0130 0293	SWB Overpack	1.9	
	10 0130 0257		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 111P RF 211P	10 0130 0212	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 111PF RF 211PF	10 0130 0319	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	10 0130 0283		3.7	
RF 112A RF 212A	40 9999 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	40 9999 0144		3.7	
	40 9999 0209	SWB Overpack	1.9	
	40 9999 0184		3.7	
RF 112B RF 212B	40 9999 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag, and one metal can, which is closed with a slip-top lid
	40 9999 0481		3.7	
	40 9999 0546	SWB Overpack	1.9	
	40 9999 0521		3.7	
RF 112D RF 212D	40 9999 0174	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 112DF RF 212DF	40 9999 0250	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	40 9999 0225		3.7	
RF 112J RF 212J	40 9999 0179	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	40 9999 0153		3.7	
	40 9999 0219	SWB Overpack	1.9	
	40 9999 0193		3.7	
RF 112N RF 212N	40 9999 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	40 9999 0481		3.7	
	40 9999 0546	SWB Overpack	1.9	
	40 9999 0521		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 112O RF 212O	40 9999 0101	Drum	3.7	No layers of confinement
	40 9999 0079		18.5	
	40 9999 0075		92.5	
	40 9999 0141	SWB Overpack	3.7	
	40 9999 0119		18.5	
	40 9999 0115		92.5	
RF 112OA RF 212OA	40 9999 0099	Drum	3.7	No layers of confinement and no rigid liner lid
	40 9999 0077		18.5	
	40 9999 0073		92.5	
	40 9999 0139	SWB Overpack	3.7	
	40 9999 0117		18.5	
	40 9999 0113		92.5	
RF 112P RF 212P	40 9999 0105	Drum	3.7	Maximum of 2 plastic bag layers, both of which are liner bags, which are punctured with a minimum 0.3-inch hole
	40 9999 0083		18.5	
	40 9999 0079		92.5	
	40 9999 0145	SWB Overpack	3.7	
	40 9999 0123		18.5	
	40 9999 0119		92.5	
RF 112PA RF 212PA	40 9999 0103	Drum	3.7	Maximum of 2 plastic bag layers, both of which are liner bags, which are punctured with a minimum 0.3-inch hole, and no rigid liner lid
	40 9999 0081		18.5	
	40 9999 0077		92.5	
	40 9999 0143	SWB Overpack	3.7	
	40 9999 0121		18.5	
	40 9999 0117		92.5	
RF 112Q RF 212Q	40 9999 0122	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag
	40 9999 0101		18.5	
	40 9999 0096		92.5	
	40 9999 0162	SWB Overpack	3.7	
	40 9999 0141		18.5	
	40 9999 0136		92.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 112QA RF 212QA	40 9999 0120	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag, and no rigid liner lid
	40 9999 0099		18.5	
	40 9999 0094		92.5	
	40 9999 0160	SWB Overpack	3.7	
	40 9999 0139		18.5	
	40 9999 0134		92.5	
RF 113A RF 213A	40 9999 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	40 9999 0144		3.7	
	40 9999 0209	SWB Overpack	1.9	
	40 9999 0184		3.7	
RF 114A RF 214A	10 0040 0648	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	10 0040 0613		3.7	
	10 0040 0709	SWB Overpack	1.9	
	10 0040 0673		3.7	
RF 114B RF 214B	10 0040 0669	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	10 0040 0634		3.7	
	10 0040 0730	SWB Overpack	1.9	
	10 0040 0695		3.7	
RF 114D RF 214D	10 0040 0629	Pipe Overpack	3.7	Maximum of 2 plastic bag layers, both of which are inner bags, in a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 114DF RF 214DF	10 0040 0700	Pipe Overpack	1.9	Maximum of 2 plastic bag layers, both of which are inner bags, in a pipe component
	10 0040 0664		3.7	
RF 114E RF 214E	10 0040 0191	Drum	1.9	Maximum of 4 filtered plastic bag layers, two of which are liner bags
	10 0040 0156		3.7	
	10 0040 0252	SWB Overpack	1.9	
	10 0040 0216		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 114F RF 214F	10 0040 0191	Drum	1.9	Maximum of 4 filtered plastic bag layers, two of which are liner bags
	10 0040 0156		3.7	
	10 0040 0252	SWB Overpack	1.9	
	10 0040 0216		3.7	
RF 114G RF 214G	10 0040 0175	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 114GF RF 214GF	10 0040 0246	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	10 0040 0210		3.7	
RF 114J RF 214J	10 0040 0266	Drum	1.9	Maximum of 4 filtered plastic bag layers, two of which are liner bags, and 2 filtered metal cans, each of which is fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	10 0040 0231		3.7	
	10 0040 0327	SWB Overpack	1.9	
	10 0040 0291		3.7	
RF 114JF RF 214JF	10 0040 0337	Drum	1.9	Maximum of 4 filtered plastic bag layers, two of which are liner bags, and 2 filtered metal cans
	10 0040 0302		3.7	
	10 0040 0398	SWB Overpack	1.9	
	10 0040 0362		3.7	
RF 114K RF 214K	10 0040 0190	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	10 0040 0154		3.7	
	10 0040 0250	SWB Overpack	1.9	
	10 0040 0215		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 114L RF 214L	10 0040 0166	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	10 0040 0130		3.7	
	10 0040 0226	SWB Overpack	1.9	
	10 0040 0191		3.7	
RF 114P RF 214P	10 0040 0212	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 114PF RF 214PF	10 0040 0319	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	10 0040 0283		3.7	
RF 115A RF 215A	20 0170 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0502		3.7	
	20 0170 0568	SWB Overpack	1.9	
	20 0170 0542		3.7	
RF 115B RF 215B	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
RF 115D RF 215D	20 0000 0000	Pipe Overpack	1.9	Metal can as innermost layer of confinement in a pipe overpack
	20 0000 0000		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 115E RF 215E	20 0170 0179	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity of 3.7 x 10^{-6} mol/s/mol fraction
	20 0170 0153		3.7	
	20 0170 0219	SWB Overpack	1.9	
	20 0170 0193		3.7	
RF 115F RF 215F	20 0170 0140	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	20 0170 0114		3.7	
	20 0170 0180	SWB Overpack	1.9	
	20 0170 0154		3.7	
RF 115N RF 215N	20 0170 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	20 0170 0481		3.7	
	20 0170 0546	SWB Overpack	1.9	
	20 0170 0521		3.7	
	20 0170 0399	SWB	3.7	
RF 116A RF 216A	30 0340 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0340 0502		3.7	
	30 0340 0568	SWB Overpack	1.9	
	30 0340 0542		3.7	
	30 0340 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
RF 116C RF 216C	30 0340 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	30 0340 0144		3.7	
	30 0340 0209	SWB Overpack	1.9	
	30 0340 0184		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 116D RF 216D	30 0340 0147	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 116DF RF 216DF	30 0340 0198	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0340 0172		3.7	
RF 116E RF 216E	30 0340 0179	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0153		3.7	
	30 0340 0219	SWB Overpack	1.9	
	30 0340 0193		3.7	
	30 0340 0079	SWB	3.7	
RF 116EF RF 216EF	30 0340 0205	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can
	30 0340 0179		3.7	
	30 0340 0244	SWB Overpack	1.9	
	30 0340 0219		3.7	
	30 0340 0105	SWB	3.7	
RF 116F RF 216F	30 0340 0140	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	30 0340 0114		3.7	
	30 0340 0180	SWB Overpack	1.9	
	30 0340 0154		3.7	
	30 0340 0034	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 116G RF 216G	30 0340 0170	Drum	1.9	Maximum of 2 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0144		3.7	
	30 0340 0209	SWB Overpack	1.9	
	30 0340 0184		3.7	
	30 0340 0070	SWB	3.7	
RF 116GF RF 216GF	30 0340 0195	Drum	1.9	Maximum of 2 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can
	30 0340 0170		3.7	
	30 0340 0235	SWB Overpack	1.9	
	30 0340 0209		3.7	
	30 0340 0096	SWB	3.7	
RF 116H RF 216H	30 0340 0220	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag
RF 116I RF 216I	30 0340 0152	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	30 0340 0126		3.7	
	30 0340 0192	SWB Overpack	1.9	
	30 0340 0166		3.7	
	30 0340 0052	SWB	3.7	
RF 116J RF 216J	30 0340 0686	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	30 0340 0660		3.7	
	30 0340 0725	SWB Overpack	1.9	
	30 0340 0700		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 116K RF 216K	30 0340 0188	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0163		3.7	
	30 0340 0228	SWB Overpack	1.9	
	30 0340 0202		3.7	
RF 116KF RF 216KF	30 0340 0214	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0188		3.7	
	30 0340 0254	SWB Overpack	1.9	
	30 0340 0228		3.7	
RF 116L RF 216L	30 0340 0865	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag
	30 0340 0839		3.7	
	30 0340 0905	SWB Overpack	1.9	
	30 0340 0879		3.7	
RF 116M RF 216M	30 0340 0198	Drum	1.9	Maximum of 5 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0172		3.7	
	30 0340 0237	SWB Overpack	1.9	
	30 0340 0212		3.7	
RF 116MF RF 216MF	30 0340 0223	Drum	1.9	Maximum of 5 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0198		3.7	
	30 0340 0263	SWB Overpack	1.9	
	30 0340 0237		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 116N RF 216N	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB Overpack	1.9	
	30 0340 0521		3.7	
	30 0340 0399	SWB	3.7	
RF 116P RF 216P	30 0340 0174	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 116PF RF 216PF	30 0340 0250	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	30 0340 0225		3.7	
RF 116Q RF 216Q	30 0340 0485	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	30 0340 0459		3.7	
	30 0340 0525	SWB Overpack	1.9	
	30 0340 0499		3.7	
RF 116R RF 216R	30 0340 0713	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0687		3.7	
	30 0340 0752	SWB Overpack	1.9	
	30 0340 0727		3.7	
RF 116RF RF 216RF	30 0340 0738	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0713		3.7	
	30 0340 0778	SWB Overpack	1.9	
	30 0340 0752		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 116S RF 216S	30 0340 0892	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0866		3.7	
	30 0340 0932	SWB Overpack	1.9	
	30 0340 0906		3.7	
RF 116SF RF 216SF	30 0340 0918	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0892		3.7	
	30 0340 0957	SWB Overpack	1.9	
	30 0340 0932		3.7	
RF 116T RF 216T	30 0340 0043	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag
RF 117A RF 217A	20 0170 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0502		3.7	
	20 0170 0568	SWB Overpack	1.9	
	20 0170 0542		3.7	
	20 0170 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
	20 0170 0372	TDOP	3.7	Maximum of 2 plastic bag layers, both of which are inner bags
RF 117B RF 217B	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 117C RF 217C	20 0170 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	20 0170 0144		3.7	
	20 0170 0209	SWB Overpack	1.9	
	20 0170 0184		3.7	
RF 117D RF 217D	20 0000 0000	Pipe Overpack	1.9	Metal can as innermost layer of confinement in a pipe overpack
	20 0000 0000		3.7	
RF 117E RF 217E	20 0170 0179	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	20 0170 0153		3.7	
	20 0170 0219	SWB Overpack	1.9	
	20 0170 0193		3.7	
	20 0170 0079	SWB	3.7	
RF 117F RF 217F	20 0170 0140	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	20 0170 0114		3.7	
	20 0170 0180	SWB Overpack	1.9	
	20 0170 0154		3.7	
	20 0170 0034	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 117H RF 217H	20 0170 0220	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 117I RF 217I	20 0170 0152	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	20 0170 0126		3.7	
	20 0170 0192	SWB Overpack	1.9	
	20 0170 0166		3.7	
	20 0170 0052	SWB	3.7	
	20 0170 0032	TDOP	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags
RF 117K RF 217K	20 0170 0062	SWB	3.7	Maximum of 4 filtered plastic bag layers, one of which is a liner bag
RF 117N RF 217N	20 0170 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	20 0170 0481		3.7	
	20 0170 0546	SWB Overpack	1.9	
	20 0170 0521		3.7	
	20 0170 0399	SWB	3.7	
RF 117T RF 217T	20 0170 0043	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag
RF 118A RF 218A	20 0170 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0502		3.7	
	20 0170 0568	SWB Overpack	1.9	
	20 0170 0542		3.7	
	20 0170 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 118B RF 218B	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
RF 118C RF 218C	20 0170 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	20 0170 0144		3.7	
	20 0170 0209	SWB Overpack	1.9	
	20 0170 0184		3.7	
RF 118D RF 218D	20 0000 0000	Pipe Overpack	1.9	Metal can as innermost layer of confinement in a pipe overpack
	20 0000 0000		3.7	
RF 118E RF 218E	20 0170 0179	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	20 0170 0153		3.7	
	20 0170 0219	SWB Overpack	1.9	
	20 0170 0193		3.7	
	20 0170 0079	SWB	3.7	
RF 118F RF 218F	20 0170 0140	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	20 0170 0114		3.7	
	20 0170 0180	SWB Overpack	1.9	
	20 0170 0154		3.7	
	20 0170 0034	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 118H RF 218H	20 0170 0220	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 118I RF 218I	20 0170 0152	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	20 0170 0126		3.7	
	20 0170 0192	SWB Overpack	1.9	
	20 0170 0166		3.7	
	20 0170 0052	SWB	3.7	
RF 118N RF 218N	20 0170 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	20 0170 0481		3.7	
	20 0170 0546	SWB Overpack	1.9	
	20 0170 0521		3.7	
	20 0170 0399	SWB	3.7	
RF 118T RF 218T	20 0170 0043	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag
RF 119A RF 219A	30 0340 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0340 0502		3.7	
	30 0340 0568	SWB Overpack	1.9	
	30 0340 0542		3.7	
	30 0340 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
RF 119BA RF 219BA	30 0340 0533	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0508		3.7	
	30 0340 0573	SWB Overpack	1.9	
	30 0340 0548		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 119BAF RF 219BAF	30 0340 0559	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0533		3.7	
	30 0340 0599	SWB Overpack	1.9	
	30 0340 0573		3.7	
RF 119C RF 219C	30 0340 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	30 0340 0144		3.7	
	30 0340 0209	SWB Overpack	1.9	
	30 0340 0184		3.7	
RF 119D RF 219D	30 0340 0147	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 119DF RF 219DF	30 0340 0198	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0340 0172		3.7	
RF 119E RF 219E	30 0340 0179	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0153		3.7	
	30 0340 0219	SWB Overpack	1.9	
	30 0340 0193		3.7	
	30 0340 0079	SWB	3.7	
RF 119EF RF 219EF	30 0340 0205	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can
	30 0340 0179		3.7	
	30 0340 0244	SWB Overpack	1.9	
	30 0340 0219		3.7	
	30 0340 0105	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 119F RF 219F	30 0340 0140	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	30 0340 0114		3.7	
	30 0340 0180	SWB Overpack	1.9	
	30 0340 0154		3.7	
	30 0340 0034	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 119G RF 219G	30 0340 0170	Drum	1.9	Maximum of 2 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0144		3.7	
	30 0340 0209	SWB Overpack	1.9	
	30 0340 0184		3.7	
	30 0340 0070	SWB	3.7	
RF 119GF RF 219GF	30 0340 0195	Drum	1.9	Maximum of 2 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can
	30 0340 0170		3.7	
	30 0340 0235	SWB Overpack	1.9	
	30 0340 0209		3.7	
	30 0340 0096	SWB	3.7	
RF 119H RF 219H	30 0340 0220	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag
RF 119I RF 219I	30 0340 0152	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	30 0340 0126		3.7	
	30 0340 0192	SWB Overpack	1.9	
	30 0340 0166		3.7	
	30 0340 0052	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 119J RF 219J	30 0340 0686	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	30 0340 0660		3.7	
	30 0340 0725	SWB Overpack	1.9	
	30 0340 0700		3.7	
RF 119K RF 219K	30 0340 0188	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0163		3.7	
	30 0340 0228	SWB Overpack	1.9	
	30 0340 0202		3.7	
RF 119KF RF 219KF	30 0340 0214	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0188		3.7	
	30 0340 0254	SWB Overpack	1.9	
	30 0340 0228		3.7	
RF 119L RF 219L	30 0340 0865	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag
	30 0340 0839		3.7	
	30 0340 0905	SWB Overpack	1.9	
	30 0340 0879		3.7	
RF 119M RF 219M	30 0340 0198	Drum	1.9	Maximum of 5 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0172		3.7	
	30 0340 0237	SWB Overpack	1.9	
	30 0340 0212		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 119MF RF 219MF	30 0340 0223	Drum	1.9	Maximum of 5 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0198		3.7	
	30 0340 0263	SWB Overpack	1.9	
	30 0340 0237		3.7	
RF 119N RF 219N	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB Overpack	1.9	
	30 0340 0521		3.7	
	30 0340 0399	SWB	3.7	
RF 119P RF 219P	30 0340 0174	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 119PF RF 219PF	30 0340 0250	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	30 0340 0225		3.7	
RF 119Q RF 219Q	30 0340 0485	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	30 0340 0459		3.7	
	30 0340 0525	SWB Overpack	1.9	
	30 0340 0499		3.7	
RF 119R RF 219R	30 0340 0713	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0687		3.7	
	30 0340 0752	SWB Overpack	1.9	
	30 0340 0727		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 119RF RF 219RF	30 0340 0738	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0713		3.7	
	30 0340 0778	SWB Overpack	1.9	
	30 0340 0752		3.7	
RF 119S RF 219S	30 0340 0892	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0866		3.7	
	30 0340 0932	SWB Overpack	1.9	
	30 0340 0906		3.7	
RF 119SF RF 219SF	30 0340 0918	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0892		3.7	
	30 0340 0957	SWB Overpack	1.9	
	30 0340 0932		3.7	
RF 119T RF 219T	30 0340 0043	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag
RF 119W RF 219W	30 0340 0161	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a filtered liner bag
	30 0340 0136		3.7	
	30 0340 0201	SWB Overpack	1.9	
	30 0340 0175		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] ($x 10^{-6}$)	Layers of Confinement
RF 121A RF 221A	30 0340 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0340 0502		3.7	
	30 0340 0568	SWB Overpack	1.9	
	30 0340 0542		3.7	
	30 0340 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0372	TDOP	3.7	Maximum of 2 plastic bag layers, both of which are inner bags
RF 121D RF 221D	30 0340 0512	Pipe Overpack	1.9	Maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/s/mol fraction
	30 0340 0486		3.7	
RF 121DF RF 221DF	30 0340 0538	Pipe Overpack	1.9	Maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0340 0512		3.7	
RF 121DA RF 221DA	30 0340 0147	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/s/mol fraction
RF 121DAF RF 221DAF	30 0340 0198	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0340 0172		3.7	
RF 121E RF 221E	30 0340 0179	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/s/mol fraction
	30 0340 0153		3.7	
	30 0340 0219	SWB Overpack	1.9	
	30 0340 0193		3.7	
	30 0340 0079	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 121F RF 221F	30 0340 0140	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	30 0340 0114		3.7	
	30 0340 0180	SWB Overpack	1.9	
	30 0340 0154		3.7	
	30 0340 0034	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 121H RF 221H	30 0340 0220	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag
RF 121I RF 221I	30 0340 0152	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	30 0340 0126		3.7	
	30 0340 0192	SWB Overpack	1.9	
	30 0340 0166		3.7	
	30 0340 0052	SWB	3.7	
	30 0340 0032	TDOP	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags
RF 121J RF 221J	30 0340 0206	Drum	1.9	Filtered metal can as innermost layer of confinement within a maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can. Both filtered metal cans are fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
	30 0340 0180		3.7	
	30 0340 0246	SWB Overpack	1.9	
	30 0340 0220		3.7	
RF 121K RF 221K	30 0340 0062	SWB	3.7	Maximum of 4 filtered plastic bag layers, one of which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 121N RF 221N	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB Overpack	1.9	
	30 0340 0521		3.7	
	30 0340 0399	SWB	3.7	
RF 121T RF 221T	30 0340 0043	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag
RF 121W RF 221W	30 0340 0161	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a filtered liner bag
	30 0340 0136		3.7	
	30 0340 0201	SWB Overpack	1.9	
	30 0340 0175		3.7	
RF 122A RF 222A	20 0170 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0502		3.7	
	20 0170 0568	SWB Overpack	1.9	
	20 0170 0542		3.7	
	20 0170 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
RF 122B RF 222B	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
RF 122D RF 222D	20 0000 0000	Pipe Overpack	1.9	Metal can as innermost layer of confinement in a pipe overpack
	20 0000 0000		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 122E RF 222E	20 0170 0179	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can layer with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	20 0170 0153		3.7	
	20 0170 0219	SWB Overpack	1.9	
	20 0170 0193		3.7	
	20 0170 0079	SWB	3.7	
RF 122F RF 222F	20 0170 0140	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	20 0170 0114		3.7	
	20 0170 0180	SWB Overpack	1.9	
	20 0170 0154		3.7	
	20 0170 0034	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 122H RF 222H	20 0170 0220	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag
RF 122I RF 222I	20 0170 0152	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	20 0170 0126		3.7	
	20 0170 0192	SWB Overpack	1.9	
	20 0170 0166		3.7	
	20 0170 0052	SWB	3.7	
RF 122N RF 222N	20 0170 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	20 0170 0481		3.7	
	20 0170 0546	SWB Overpack	1.9	
	20 0170 0521		3.7	
	20 0170 0399	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 122T RF 222T	20 0170 0043	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag
RF 123A RF 223A	30 0340 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0340 0502		3.7	
	30 0340 0568	SWB Overpack	1.9	
	30 0340 0542		3.7	
RF 123E RF 223E	30 0340 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	30 0340 0144		3.7	
	30 0340 0209	SWB Overpack	1.9	
	30 0340 0184		3.7	
RF 123F RF 223F	30 0340 0140	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	30 0340 0114		3.7	
	30 0340 0180	SWB Overpack	1.9	
	30 0340 0154		3.7	
	30 0340 0034	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 123I RF 223I	30 0340 0152	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	30 0340 0126		3.7	
	30 0340 0192	SWB Overpack	1.9	
	30 0340 0166		3.7	
	30 0340 0052	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 123N RF 223N	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB Overpack	1.9	
	30 0340 0521		3.7	
	30 0340 0399	SWB	3.7	
RF 124B RF 224B	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
RF 124D RF 224D	20 0000 0000	Pipe Overpack	1.9	Metal can as innermost layer of confinement in a pipe overpack
	20 0000 0000		3.7	
RF 124E RF 224E	20 0008 0229	Drum	1.9	Metal can as innermost layer of confinement within a maximum of 1 filtered metal can, and 4 filtered plastic bag layers, two of which are liner bags. The filtered metal can is fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
	20 0008 0193		3.7	
	20 0008 0289	SWB Overpack	1.9	
	20 0008 0254		3.7	
RF 124F RF 224F	20 0008 0212	Pipe Overpack	3.7	Metal can as innermost layer of confinement within a maximum of 1 filtered metal can, and 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 124FF RF 224FF	20 0008 0319	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 1 filtered metal can, and 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	20 0008 0283		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 124G RF 224G	20 0008 0175	Pipe Overpack	3.7	Metal can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 124GF RF 224GF	20 0008 0246	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	20 0008 0210		3.7	
RF 124H RF 224H	20 0008 0629	Pipe Overpack	3.7	Metal can as innermost layer of confinement within a maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 124HF RF 224HF	20 0008 0700	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack
	20 0008 0664		3.7	
RF 126A RF 226A	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB Overpack	1.9	
	30 0340 0521		3.7	
RF 126D RF 226D	30 0340 0486	Pipe Overpack	3.7	Maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 126DF RF 226DF	30 0340 0538	Pipe Overpack	1.9	Maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0340 0512		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 126DA RF 226DA	30 0340 0147	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 126DAF RF 226DAF	30 0340 0198	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0340 0172		3.7	
RF 126E RF 226E	30 0340 0152	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag.
	30 0340 0126		3.7	
	30 0340 0192	SWB Overpack	1.9	
	30 0340 0166		3.7	
RF 126J RF 226J	30 0340 0206	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 2 filtered metal cans, each of which is fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
	30 0340 0180		3.7	
	30 0340 0246	SWB Overpack	1.9	
	30 0340 0220		3.7	
RF 126K RF 226K	30 0340 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	30 0340 0144		3.7	
	30 0340 0209	SWB Overpack	1.9	
	30 0340 0184		3.7	
RF 126L RF 226L	30 0340 0140	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	30 0340 0114		3.7	
	30 0340 0180	SWB Overpack	1.9	
	30 0340 0154		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 126P RF 226P	30 0340 0174	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 126PF RF 226PF	30 0340 0250	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	30 0340 0225		3.7	
RF 127A RF 227A	30 0340 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags.
	30 0340 0144		3.7	
	30 0340 0209	SWB Overpack	1.9	
	30 0340 0184		3.7	
	30 0340 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag.
RF 127D RF 227D	30 0340 0147	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 127DF RF 227DF	30 0340 0198	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack.
	30 0340 0172		3.7	
RF 127E RF 227E	30 0340 0159	Drum	1.9	Maximum of 4 filtered plastic bag layers, two of which are liner bags, and 2 metal cans, each of which are closed with a slip-top lid.
	30 0340 0133		3.7	
	30 0340 0198	SWB Overpack	1.9	
	30 0340 0173		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 127F RF 227F	30 0340 0140	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags.
	30 0340 0114		3.7	
	30 0340 0180	SWB Overpack	1.9	
	30 0340 0154		3.7	
	30 0340 0034	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag.
RF 127H RF 227H	30 0340 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	30 0340 0302		3.7	
	30 0340 0367	SWB Overpack	1.9	
	30 0340 0341		3.7	
RF 127J RF 227J	30 0340 0206	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 2 filtered metal cans, each of which is fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
	30 0340 0180		3.7	
	30 0340 0246	SWB Overpack	1.9	
	30 0340 0220		3.7	
RF 127K RF 227K	30 0340 0188	Drum	1.9	Maximum of 4 filtered plastic bag layers, 1 of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
	30 0340 0163		3.7	
	30 0340 0228	SWB Overpack	1.9	
	30 0340 0202		3.7	
RF 127N RF 227N	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag.
	30 0340 0122		3.7	
	30 0340 0188	SWB Overpack	1.9	
	30 0340 0162		3.7	
	30 0340 0399	SWB	3.7	Maximum of 3 plastic bag layers, 1 of which is a liner bag.

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 127P RF 227P	30 0340 0174	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 127PF RF 227PF	30 0340 0250	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack.
	30 0340 0225		3.7	
RF 130A RF 230A	30 0185 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0185 0502		3.7	
	30 0185 0568	SWB Overpack	1.9	
	30 0185 0542		3.7	
	30 0185 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
	30 0185 0372	TDOP	3.7	Maximum of 2 plastic bag layers, both of which are inner bags
RF 130B RF 230B	30 0034 0528	Drum	1.9	Metal can as innermost layer of confinement within a maximum of 4 plastic bag layers, two of which are liner bags
	30 0034 0502		3.7	
	30 0034 0568	SWB Overpack	1.9	
	30 0034 0542		3.7	
RF 130BA RF 230BA	30 0034 0533	Drum	1.9	Metal can as innermost layer of confinement within a maximum of 3 plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0034 0508		3.7	
	30 0034 0573	SWB Overpack	1.9	
	30 0034 0548		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 130D RF 230D	30 0034 0512	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0034 0486		3.7	
RF 130DF RF 230DF	30 0034 0538	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0034 0512		3.7	
RF 130E RF 230E	30 0034 0159	Drum	1.9	Metal can as innermost layer of confinement within a maximum of 4 filtered plastic bag layers, two of which are liner bags
	30 0034 0133		3.7	
	30 0034 0198	SWB Overpack	1.9	
	30 0034 0173		3.7	
RF 130F RF 230F	30 0185 0159	Drum	1.9	Maximum of 4 filtered plastic bag layers, two of which are liner bags
	30 0185 0133		3.7	
	30 0185 0198	SWB Overpack	1.9	
	30 0185 0173		3.7	
	30 0185 0034	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 130G RF 230G	30 0034 0172	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0034 0147		3.7	
RF 130GF RF 230GF	30 0034 0198	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0034 0172		3.7	
RF 130H RF 230H	30 0185 0220	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 130I RF 230I	30 0185 0152	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	30 0185 0126		3.7	
	30 0185 0192	SWB Overpack	1.9	
	30 0185 0166		3.7	
	30 0185 0052	SWB	3.7	
	30 0185 0032	TDOP	3.7	Maximum of 2 filtered plastic bags, both of which are inner bags
RF 130J RF 230J	30 0034 0206	Drum	1.9	Filtered metal can as innermost layer of confinement within a maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can. Both filtered metal cans are fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
	30 0034 0180		3.7	
	30 0034 0246	SWB Overpack	1.9	
	30 0034 0220		3.7	
RF 130K RF 230K	30 0185 0713	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0185 0687		3.7	
	30 0185 0752	SWB Overpack	1.9	
	30 0185 0727		3.7	
	30 0185 0062	SWB	3.7	Maximum of 4 filtered plastic bag layers, one of which is a liner bag
RF 130N RF 230N	30 0185 0399	SWB	3.7	Maximum of 3 plastic bag layers, one of which is a liner bag
RF 130P RF 230P	30 0034 0174	Pipe Overpack	3.7	Metal can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 130PF RF 230PF	30 0034 0250	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	30 0034 0225		3.7	
RF 130PA RF 230PA	30 0034 0513	Pipe Overpack	3.7	Metal can as innermost layer of confinement within 2 plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 130PAF RF 230PAF	30 0034 0590	Pipe Overpack	1.9	Metal can as innermost layer of confinement within 2 plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	30 0034 0565		3.7	
RF 130Q RF 230Q	30 0185 0686	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	30 0185 0660		3.7	
	30 0185 0725	SWB Overpack	1.9	
	30 0185 0700		3.7	
RF 130R RF 230R	30 0185 0188	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a hydrogen diffusivity of 3.7 x 10^{-6} mol/s/mol fraction
	30 0185 0163		3.7	
	30 0185 0228	SWB Overpack	1.9	
	30 0185 0202		3.7	
RF 130RF RF 230RF	30 0185 0214	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0185 0188		3.7	
	30 0185 0254	SWB Overpack	1.9	
	30 0185 0228		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 130S RF 230S	30 0185 0892	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0185 0866		3.7	
	30 0185 0932	SWB Overpack	1.9	
	30 0185 0906		3.7	
RF 130SF RF 230SF	30 0185 0918	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0185 0892		3.7	
	30 0185 0957	SWB Overpack	1.9	
	30 0185 0932		3.7	
RF 130T RF 230T	30 0185 0043	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag
RF 130U RF 230U	30 0185 0865	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag
	30 0185 0839		3.7	
	30 0185 0905	SWB Overpack	1.9	
	30 0185 0879		3.7	
RF 130V RF 230V	30 0185 0198	Drum	1.9	Maximum of 5 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0185 0172		3.7	
	30 0185 0237	SWB Overpack	1.9	
	30 0185 0212		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 130VF RF 230VF	30 0185 0223	Drum	1.9	Maximum of 5 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0185 0198		3.7	
	30 0185 0263	SWB Overpack	1.9	
	30 0185 0237		3.7	
RF 130W RF 230W	30 0185 0161	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a filtered liner bag
	30 0185 0136		3.7	
	30 0185 0201	SWB Overpack	1.9	
	30 0185 0175		3.7	
RF 131A RF 231A	20 0170 0528	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0502		3.7	
	20 0170 0568	SWB Overpack	1.9	
	20 0170 0542		3.7	
	20 0170 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
RF 131B RF 231B	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
RF 131D RF 231D	20 0000 0000	Pipe Overpack	1.9	Metal can as innermost layer of confinement in a pipe overpack
	20 0000 0000		3.7	
RF 131E RF 231E	20 0170 0179	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	20 0170 0153		3.7	
	20 0170 0219	SWB Overpack	1.9	
	20 0170 0193		3.7	
	20 0170 0079	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 131F RF 231F	20 0170 0140	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	20 0170 0114		3.7	
	20 0170 0180	SWB Overpack	1.9	
	20 0170 0154		3.7	
	20 0170 0034	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 131H RF 231H	20 0170 0220	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag
RF 131I RF 231I	20 0170 0152	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	20 0170 0126		3.7	
	20 0170 0192	SWB Overpack	1.9	
	20 0170 0166		3.7	
	20 0170 0052	SWB	3.7	
RF 131K RF 231K	20 0170 0062	SWB	3.7	Maximum of 4 filtered plastic bag layers, one of which is a liner bag
RF 131N RF 231N	20 0170 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	20 0170 0481		3.7	
	20 0170 0546	SWB Overpack	1.9	
	20 0170 0521		3.7	
	20 0170 0399	SWB	3.7	
RF 131T RF 231T	20 0170 0043	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 132A RF 232A	10 0130 0190	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	10 0130 0154		3.7	
	10 0130 0250	SWB Overpack	1.9	
	10 0130 0215		3.7	
RF 132D RF 232D	10 0130 0175	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 132J RF 232J	10 0130 0257	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 2 filtered metal cans, each of which is fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	10 0130 0221		3.7	
	10 0130 0318	SWB Overpack	1.9	
	10 0130 0282		3.7	
RF 132K RF 232K	10 0130 0232	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	10 0130 0197		3.7	
	10 0130 0293	SWB Overpack	1.9	
	10 0130 0257		3.7	
RF 132P RF 232P	10 0130 0151	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags punctured with a minimum 0.3-inch diameter hole
	10 0130 0115		3.7	
	10 0130 0211	SWB Overpack	1.9	
	10 0130 0176		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 132Q RF 232Q	10 0130 0168	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	10 0130 0133		3.7	
	10 0130 0229	SWB Overpack	1.9	
	10 0130 0193		3.7	
RF 132QA RF 232QA	10 0130 0166	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag, and no rigid liner lid
	10 0130 0131		3.7	
	10 0130 0227	SWB Overpack	1.9	
	10 0130 0191		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RH 111A RH 211A	10 0130 0175	Pipe Overpack	3.7	Metal can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack (slip lid metal can does not provide resistance to gas release).
RH 111B RH 211B	10 0130 0111	Drum	3.7	No layers of confinement.
RH 111D RH 211D	10 0130 0046	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag.
RH 111E RH 211E	10 0130 0145	Drum	1.9	No layers of confinement and no rigid liner lid
	10 0130 0109		3.7	
	10 0130 0079		18.5	
	10 0130 0206	SWB Overpack	1.9	
	10 0130 0170		3.7	
	10 0130 0140		18.5	
RH 111F RH 211F	10 0130 0166	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag, and no rigid liner
	10 0130 0131		3.7	
	10 0130 0101		18.5	
	10 0130 0227	SWB Overpack	1.9	
	10 0130 0191		3.7	
	10 0130 0161		18.5	
RH 111G RH 211G	10 0130 0145	Drum	1.9	No layers of confinement and steel drum liner with no lid
	10 0130 0109		3.7	
	10 0130 0079		18.5	
	10 0130 0206	SWB Overpack	1.9	
	10 0130 0170		3.7	
	10 0130 0140		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RH 111H RH 211H	10 0130 0175	Pipe Overpack	3.7	Metal slip-lid can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, in a slip-lid metal can in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	10 0130 0145		18.5	
	10 0130 0235	SWB Overpack	3.7	
	10 0130 0205		18.5	
RH 111J RH 211J	10 0130 0145	Pipe Overpack	3.7	Metal slip-lid can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, in a slip-lid metal can in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction
	10 0130 0115		18.5	
	10 0130 0205	SWB Overpack	3.7	
	10 0130 0175		18.5	
RH 111K RH 211K	10 0130 0034	SWB	3.7	No layers of confinement
	10 0130 0022		18.5 (1 filter)	
RH 111L RH 211L	10 0130 0055	SWB	3.7	Maximum of 1 plastic bag layer, which is a drum liner bag
	10 0130 0044		18.5 (1 filter)	
RH 111M RH 211M	10 0130 0034	SWB	3.7	No layers of confinement
	10 0130 0022		18.5 (1 filter)	
RH 111N RH 211N	10 0130 0079	Drum	18.5	No layers of confinement and no rigid liner
	10 0130 0140	SWB Overpack	18.5	
RH 112A RH 212A	40 9999 0485	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	40 9999 0459		3.7	
	40 9999 0525	SWB Overpack	1.9	
	40 9999 0499		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RH 112B RH 212B	40 9999 0145	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags
	40 9999 0120		3.7	
	40 9999 0185	SWB Overpack	1.9	
	40 9999 0159		3.7	
RH 114A RH 214A	10 0040 0648	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	10 0040 0613		3.7	
	10 0040 0709	SWB Overpack	1.9	
	10 0040 0673		3.7	
RH 114B RH 214B	10 0040 0182	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	10 0040 0147		3.7	
RH 114C RH 214C	10 0040 0173	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags
	10 0040 0137		3.7	
RH 114D RH 214D	10 0040 0173	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags
	10 0040 0137		3.7	
	10 0040 0233	SWB Overpack	1.9	
	10 0040 0198		3.7	
RH 117A RH 217A	20 0000 0000	Drum	3.7	Metal waste in 55-gallon drum with no rigid liner.
RH 117B RH 217B	20 0170 0101	Drum	3.7	Metal waste in 55-gallon drum with rigid liner.
RH 117E RH 217E	20 0000 0000	Drum	3.7	Metal can within a maximum of 4 filtered plastic bag layers, all of which are inner bags (slip lid metal can does not provide resistance to gas release).
RH 117F RH 217F	20 0000 0000	Pipe Overpack	3.7	Metal can within a maximum of 4 filtered plastic bag layers, all of which are inner bags, in a pipe component (slip lid metal can does not provide resistance to gas release).
RH 117G RH 217G	20 0170 0034	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RH 117H RH 217H	20 0170 0041	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
RH 122A RH 222A	20 0000 0000	Pipe Overpack	3.7	Metal can within a maximum of 2 filtered plastic bag layers, all of which are inner bags (slip lid metal can does not provide resistance to gas release).
RH 123A RH 223A	30 0340 0686	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	30 0340 0660		3.7	
	30 0340 0725	SWB Overpack	1.9	
	30 0340 0700		3.7	
RH 125A RH 225A	30 0340 0127	Drum	1.9	No layers of confinement
	30 0340 0101		3.7	
	30 0340 0166	SWB Overpack	1.9	
	30 0340 0141		3.7	
	30 0340 0028	SWB	3.7	
RH 125B RH 225B	30 0340 0306	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
	30 0340 0280		3.7	
	30 0340 0346	SWB Overpack	1.9	
	30 0340 0320		3.7	
	30 0340 0208	SWB	3.7	
RH 125C RH 225C	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0122		3.7	
	30 0340 0188	SWB Overpack	1.9	
	30 0340 0162		3.7	
	30 0340 0041	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RH 125D RH 225D	30 0340 0485	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	30 0340 0459		3.7	
	30 0340 0525	SWB Overpack	1.9	
	30 0340 0499		3.7	
	30 0340 0387	SWB	3.7	
RH 125E RH 225E	30 0340 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	30 0340 0302		3.7	
	30 0340 0367	SWB Overpack	1.9	
	30 0340 0341		3.7	
	30 0340 0220	SWB	3.7	
RH 125F RH 225F	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB Overpack	1.9	
	30 0340 0521		3.7	
	30 0340 0399	SWB	3.7	
RH 125G RH 225G	30 0340 0686	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	30 0340 0660		3.7	
	30 0340 0725	SWB Overpack	1.9	
	30 0340 0700		3.7	
	30 0340 0579	SWB	3.7	
RH 125H RH 225H	30 0340 0865	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag
	30 0340 0839		3.7	
	30 0340 0905	SWB Overpack	1.9	
	30 0340 0879		3.7	
	30 0340 0758	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RH 125I RH 225I	30 0340 1044	Drum	1.9	Maximum of 6 plastic bag layers, one of which is a liner bag
	30 0340 1018		3.7	
	30 0340 1084	SWB Overpack	1.9	
	30 0340 1058		3.7	
	30 0340 0937	SWB	3.7	
RH 125J RH 225J	30 0340 0128	Drum	3.7	No layers of confinement. Filtered inner lid on double-lid drums.
	30 0340 0168	SWB Overpack	3.7	
RH 125K RH 225K	30 0340 0149	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag. Filtered inner lid on double-lid drums.
	30 0340 0189	SWB Overpack	3.7	
RH 125L RH 225L	30 0340 0307	Drum	3.7	Maximum of 1 plastic bag layer, which is an inner bag. Filtered inner lid on double-lid drums.
	30 0340 0347	SWB Overpack	3.7	
RH 125M RH 225M	30 0340 0329	Drum	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag. Filtered inner lid on double-lid drums.
	30 0340 0368	SWB Overpack	3.7	
RH 125N RH 225N	30 0340 0486	Drum	3.7	Maximum of 2 plastic bag layers, both of which are inner bags. Filtered inner lid on double-lid drums.
	30 0340 0526	SWB Overpack	3.7	
RH 125P RH 225P	30 0340 0508	Drum	3.7	Maximum of 3 plastic bag layers, one of which is a liner bag. Filtered inner lid on double-lid drums.
	30 0340 0548	SWB Overpack	3.7	
RH 125Q RH 225Q	30 0340 0666	Drum	3.7	Maximum of 3 plastic bag layers, all of which are inner bags. Filtered inner lid on double-lid drums.
	30 0340 0705	SWB Overpack	3.7	
RH 125R RH 225R	30 0340 0687	Drum	3.7	Maximum of 4 plastic bag layers, one of which is a liner bag. Filtered inner lid on double-lid drums.
	30 0340 0727	SWB Overpack	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RH 125S RH 225S	30 0340 0664	Drum	1.9	Maximum of 3 plastic bag layers, which are inner bags
	30 0340 0639		3.7	
	30 0340 0704	SWB Overpack	1.9	
	30 0340 0678		3.7	
	30 0340 0566	SWB	3.7	
RH 125T RH 225T	30 0340 0843	Drum	1.9	Maximum of 4 plastic bag layers, which are inner bags
	30 0340 0818		3.7	
	30 0340 0883	SWB Overpack	1.9	
	30 0340 0858		3.7	
	30 0340 0745	SWB	3.7	
RH 125U RH 225U	30 0340 1023	Drum	1.9	Maximum of 5 plastic bag layers, which are inner bags
	30 0340 0997		3.7	
	30 0340 1062	SWB Overpack	1.9	
	30 0340 1037		3.7	
	30 0340 0924	SWB	3.7	
RH 125V RH 225V	30 0340 1202	Drum	1.9	Maximum of 6 plastic bag layers, which are inner bags
	30 0340 1176		3.7	
	30 0340 1242	SWB Overpack	1.9	
	30 0340 1216		3.7	
	30 0340 1104	SWB	3.7	
RH 125W RH 225W	30 0340 0691	Drum	1.9	Maximum of 3 plastic bag layers, which are inner bags. Filtered inner lid on double-lid drums.
	30 0340 0666		3.7	
	30 0340 0731	SWB Overpack	1.9	
	30 0340 0705		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RH 125X RH 225X	30 0340 0870	Drum	1.9	Maximum of 4 plastic bag layers, which are inner bags. Filtered inner lid on double-lid drums.
	30 0340 0845		3.7	
	30 0340 0910	SWB Overpack	1.9	
	30 0340 0885		3.7	
RH 125Y RH 225Y	30 0340 1050	Drum	1.9	Maximum of 5 plastic bag layers, which are inner bags. Filtered inner lid on double-lid drums.
	30 0340 1024		3.7	
	30 0340 1089	SWB Overpack	1.9	
	30 0340 1064		3.7	
RH 125Z RH 225Z	30 0340 1229	Drum	1.9	Maximum of 6 plastic bag layers, which are inner bags. Filtered inner lid on double-lid drums.
	30 0340 1203		3.7	
	30 0340 1269	SWB Overpack	1.9	
	30 0340 1243		3.7	
RH 125AA RH 225AA	30 0340 0145	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags.
	30 0340 0120		3.7	
	30 0340 0047	SWB	3.7	
RH 125AB RH 225AB	30 0340 0155	Drum	1.9	Maximum of 3 filtered plastic bag layers, which are inner bags.
	30 0340 0129		3.7	
	30 0340 0056	SWB	3.7	
RH 125AC RH 225AC	30 0340 0164	Drum	1.9	Maximum of 4 filtered plastic bag layers, which are inner bags.
	30 0340 0138		3.7	
	30 0340 0066	SWB	3.7	
RH 125AD RH 225AD	30 0340 0101	Drum	3.7	Metal can as innermost layer (slip lid metal can does not provide resistance to gas release).

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RH 125AE RH 225AE	30 0340 0120	Drum	3.7	Metal can within a maximum of 2 filtered plastic bag layers, both of which are inner bags (slip lid metal can does not provide resistance to gas release).
RH 125AF RH 225AF	30 0340 0129	Drum	3.7	Metal can within a maximum of 3 filtered plastic bag layers, all of which are inner bags (slip lid metal can does not provide resistance to gas release).
RH 125AG RH 225AG	30 0340 0138	Drum	3.7	Metal can within a maximum of 4 filtered plastic bag layers, all of which are inner bags (slip lid metal can does not provide resistance to gas release).
RH 125AH RH 225AH	30 0340 0128	Pipe Overpack	3.7	Metal can within a pipe component (slip lid metal can does not provide resistance to gas release).
RH 125AI RH 225AI	30 0340 0147	Pipe Overpack	3.7	Metal can within a maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe component (slip lid metal can does not provide resistance to gas release).
RH 125AJ RH 225AJ	30 0340 0156	Pipe Overpack	3.7	Metal can within a maximum of 3 filtered plastic bag layers, all of which are inner bags, in a pipe component (slip lid metal can does not provide resistance to gas release).
RH 125AK RH 225AK	30 0340 0165	Pipe Overpack	3.7	Metal can within a maximum of 4 filtered plastic bag layers, all of which are inner bags, in a pipe component (slip lid metal can does not provide resistance to gas release).
RH 125AL RH 225AL	30 0340 2020	Drum	1.9	Maximum of 6 plastic bag layers, one of which is a heat-sealed bag and one of which is a liner bag. Rigid drum liner is not present.
	30 0340 1995		3.7	
RH 125AM RH 225AM	30 0340 1975	Drum	3.7	Maximum of 5 plastic bag layers, four of which are inner bags and one of which is a heat-sealed bag.

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RH 125AN RH 225AN	30 0340 0124	Drum	3.7	Maximum of 3 filtered plastic bag layers, one of which is a liner bag. Rigid drum liner is not present.
	30 0340 0164	SWB Overpack	3.7	
	30 0340 0052	SWB (2 filters)	3.7	
	30 0340 0046	SWB (4 filters)	3.7	
RH 125AP RH 225AP	30 0340 0134	Drum	3.7	Maximum of 4 filtered plastic bag layers, one of which is a liner bag. Rigid drum liner is not present.
	30 0340 0173	SWB Overpack	3.7	
	30 0340 0062	SWB (2 filters)	3.7	
	30 0340 0055	SWB (4 filters)	3.7	
RH 125AQ RH 225AQ	30 0340 0106	Drum	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag. Rigid drum liner is not present.
	30 0340 0145	SWB Overpack	3.7	
	30 0340 0034	SWB (2 filters)	3.7	
	30 0340 0027	SWB (4 filters)	3.7	
RH 125AR RH 225AR	30 0340 0321	Drum	3.7	Maximum of 3 plastic bag layers, one of which is an inner bag. Rigid drum liner is not present.
	30 0340 0361	SWB Overpack	3.7	
RH 125AS RH 225AS	30 0340 0122	Drum	3.7	Maximum of 3 filtered plastic bag layers, one of which is an inner bag. Rigid drum liner is not present.
	30 0340 0162	SWB Overpack	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RH 125AT RH 225AT	30 0340 0455	85-Gallon Drum	3.7	Maximum of 3 plastic bag layers, one of which is a liner bag. Rigid liner is not present. No inner lid on the 85-gallon drum.
	30 0340 0442		7.4	
	30 0340 0434		18.5	
RH 125AU RH 225AU	30 0340 0635	85-Gallon Drum	3.7	Maximum of 4 plastic bag layers, one of which is a liner bag. Rigid liner is not present. No inner lid on the 85-gallon drum.
	30 0340 0621		7.4	
	30 0340 0613		18.5	
RH 125AV RH 225AV	30 0340 0814	85-Gallon Drum	3.7	Maximum of 5 plastic bag layers, one of which is a liner bag. Rigid liner is not present. No inner lid on the 85-gallon drum.
	30 0340 0800		7.4	
	30 0340 0792		18.5	
RH 125AW RH 225AW	30 0340 0993	85-Gallon Drum	3.7	Maximum of 6 plastic bag layers, one of which is a liner bag. Rigid liner is not present. No inner lid on the 85-gallon drum.
	30 0340 0979		7.4	
	30 0340 0971		18.5	
RH 125AX RH 225AX	30 0340 1792	85-Gallon Drum	3.7	Maximum of 5 plastic bag layers, one of which is a liner bag and one of which is a heat-sealed bag. Rigid liner is not present. No inner lid on the 85-gallon drum.
	30 0340 1778		7.4	
	30 0340 1770		18.5	
RH 125AY RH 225AY	30 0340 1971	85-Gallon Drum	3.7	Maximum of 6 plastic bag layers, one of which is a liner bag and one of which is a heat-sealed bag. Rigid liner is not present. No inner lid on the 85-gallon drum.
	30 0340 1958		7.4	
	30 0340 1950		18.5	
RH 125AZ RH 225AZ	30 0340 0075	85-Gallon Drum	3.7	No layers of confinement. Rigid liner is not present. No inner lid on the 85-gallon drum.
	30 0340 0062		7.4	
	30 0340 0054		18.5	
RH 125BA RH 225BA	30 0340 0097	85-Gallon Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag. Rigid liner is not present. No inner lid on the 85-gallon drum.
	30 0340 0083		7.4	
	30 0340 0075		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RH 125BB RH 225BB	30 0340 0276	85-Gallon Drum	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag. Rigid liner is not present. No inner lid on the 85-gallon drum.
	30 0340 0 263		7.4	
	30 0340 0254		18.5	
RH 130A RH 230A	30 0034 0101	Drum	3.7	Metal can as innermost layer (slip lid metal can does not provide resistance to gas release).
RH 130B RH 230B	30 0034 0120	Drum	3.7	Metal can within a maximum of 2 filtered plastic bag layers, both of which are inner bags (slip lid metal can does not provide resistance to gas release).
RH 130C RH 230C	30 0034 0129	Drum	3.7	Metal can within a maximum of 3 filtered plastic bag layers, all of which are inner bags (slip lid metal can does not provide resistance to gas release).
RH 130D RH 230D	30 0034 0138	Drum	3.7	Metal can within a maximum of 4 filtered plastic bag layers, all of which are inner bags (slip lid metal can does not provide resistance to gas release).
RH 130E RH 230E	30 0034 0128	Pipe Overpack	3.7	Metal can within a pipe component (slip lid metal can does not provide resistance to gas release).
RH 130F RH 230F	30 0034 0147	Pipe Overpack	3.7	Metal can within a maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe component (slip lid metal can does not provide resistance to gas release).
RH 130G RH 230G	30 0034 0156	Pipe Overpack	3.7	Metal can within a maximum of 3 filtered plastic bag layers, all of which are inner bags, in a pipe component (slip lid metal can does not provide resistance to gas release).
RH 130H RH 230H	30 0034 0165	Pipe Overpack	3.7	Metal can within a maximum of 4 filtered plastic bag layers, all of which are inner bags, in a pipe component (slip lid metal can does not provide resistance to gas release).

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SL 111 SL 211	10 0160 0147	Drum	1.9	No layers of confinement
	10 0160 0111		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SQ 111A SQ 211A	10 0160 0147	Drum	1.9	No layers of confinement
	10 0160 0111		3.7	
	10 0160 0207	SWB/85-Gallon Drum Overpack	1.9	
	10 0160 0172		3.7	
	10 0160 0034	SWB	3.7	
SQ 111B SQ 211B	10 0160 0168	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	10 0160 0133		3.7	
	10 0160 0229	SWB/85-Gallon Drum Overpack	1.9	
	10 0160 0193		3.7	
	10 0160 0046	SWB	3.7	
SQ 111C SQ 211C	10 0160 0190	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	10 0160 0154		3.7	
	10 0160 0250	SWB/85-Gallon Drum Overpack	1.9	
	10 0160 0215		3.7	
	10 0160 0059	SWB	3.7	
SQ 111D SQ 211D	10 0160 0648	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	10 0160 0613		3.7	
	10 0160 0709	SWB/85-Gallon Drum Overpack	1.9	
	10 0160 0673		3.7	
	10 0160 0526	SWB	3.7	
SQ 112A SQ 212A	40 9999 0127	Drum	1.9	No layers of confinement
	40 9999 0101		3.7	
	40 9999 0166	SWB/85-Gallon Drum Overpack	1.9	
	40 9999 0141		3.7	
	40 9999 0028	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SQ 112B SQ 212B	40 9999 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	40 9999 0122		3.7	
	40 9999 0188	SWB/85-Gallon Drum Overpack	1.9	
	40 9999 0162		3.7	
	40 9999 0041	SWB	3.7	
SQ 112C SQ 212C	40 9999 0169	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	40 9999 0144		3.7	
	40 9999 0209	SWB/85-Gallon Drum Overpack	1.9	
	40 9999 0184		3.7	
	40 9999 0053	SWB	3.7	
SQ 112D SQ 212D	40 9999 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	40 9999 0481		3.7	
	40 9999 0546	SWB/85-Gallon Drum Overpack	1.9	
	40 9999 0521		3.7	
	40 9999 0399	SWB	3.7	
SQ 114A SQ 214A	10 0040 0147	Drum	1.9	No layers of confinement
	10 0040 0111		3.7	
	10 0040 0207	SWB/85-Gallon Drum Overpack	1.9	
	10 0040 0172		3.7	
	10 0040 0034	SWB	3.7	
SQ 114B SQ 214B	10 0040 0168	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	10 0040 0133		3.7	
	10 0040 0229	SWB/85-Gallon Drum Overpack	1.9	
	10 0040 0193		3.7	
	10 0040 0046	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SQ 114C SQ 214C	10 0040 0190	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	10 0040 0154		3.7	
	10 0040 0250	SWB/85-Gallon Drum Overpack	1.9	
	10 0040 0215		3.7	
	10 0040 0059	SWB	3.7	
SQ 114D SQ 214D	10 0040 0648	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	10 0040 0613		3.7	
	10 0040 0709	SWB/85-Gallon Drum Overpack	1.9	
	10 0040 0673		3.7	
	10 0040 0526	SWB	3.7	
SQ 120A SQ 220A	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB/85-Gallon Drum Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000	SWB	3.7	
	20 0000 0000	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SQ 121A SQ 221A	30 0340 0127	Drum	1.9	No layers of confinement
	30 0340 0101		3.7	
	30 0340 0166	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0141		3.7	
	30 0340 0028	SWB	3.7	
	30 0340 0013	Direct Load TDOP	3.7	
SQ 121AA SQ 221AA	30 0340 0079	Drum	18.5	No layers of confinement. Metal can with filter removed from bung hole is innermost layer of confinement, and the rigid liner lid in the 55-gallon drum is removed.
SQ 121AB SQ 221AB	30 0340 0099	Drum	3.7	No layers of confinement and no rigid liner
	30 0340 0077		18.5	
SQ 121AC SQ 221AC	30 0340 0084	Drum	18.5	Maximum of 1 plastic bag layer, which is a filtered liner bag, and no rigid liner
SQ 121B SQ 221B	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0122		3.7	
	30 0340 0188	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0162		3.7	
	30 0340 0041	SWB	3.7	
	30 0340 0026	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SQ 121C SQ 221C	30 0340 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	30 0340 0302		3.7	
	30 0340 0367	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0341		3.7	
	30 0340 0053	SWB	3.7	Maximum of 2 plastic bag layers, both of which are liner bags
	30 0340 0038	Direct Load TDOP	3.7	
SQ 121D SQ 221D	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0521		3.7	
	30 0340 0233	SWB	3.7	Maximum of 3 plastic bag layers, two of which are liner bags
	30 0340 0218	Direct Load TDOP	3.7	
SQ 121DA SQ 221DA	30 0340 0479	Drum	3.7	Maximum of 3 plastic bag layers, one of which is a liner bag, and no rigid liner in the 55-gallon drum
	30 0340 0457		18.5	
SQ 121E SQ 221E	30 0340 0637	Drum	3.7	Maximum of 3 plastic bag layers, which are inner bags, and no rigid liner in the 55-gallon drum
	30 0340 0615		18.5	
SQ 121F SQ 221F	30 0340 0093	SWB	3.7	Maximum of 3 plastic bag layers, which are drum liner bags
SQ 121FA SQ 221FA	30 0340 0086	SWB	3.7	Maximum of 3 plastic bag layers, which are drum liner bags. The SWB is fitted with four filters each with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SQ 121G SQ 221G	30 0340 1544	SWB	3.7	Maximum of 3 plastic bag layers, two of which are inner bags and one of which is a heat-sealed bag
SQ 121GA SQ 221GA	30 0340 1537	SWB	3.7	Maximum of 3 plastic bag layers, two of which are inner bags and one of which is a heat-sealed bag. The SWB is fitted with four filters each with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
SQ 121H SQ 221H	30 0340 1571	SWB	3.7	Maximum of 3 plastic bag layers, two of which are inner bags and one of which is a heat-sealed bag. Waste is placed into a 55-gallon drum with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction. The drum has no rigid liner.
SQ 121HA SQ 221HA	30 0340 1564	SWB	3.7	Maximum of 3 plastic bag layers, two of which are inner bags and one of which is a heat-sealed bag. Waste is placed into a 55-gallon drum with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction. The drum has no rigid liner. The SWB is fitted with four filters each with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
SQ 122A SQ 222A	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB/85-Gallon Drum Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000	SWB	3.7	
	20 0000 0000	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SQ 122B SQ 222B	20 0170 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	20 0170 0122		3.7	
	20 0170 0188	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0162		3.7	
	20 0170 0041	SWB	3.7	
	20 0170 0026	Direct Load TDOP	3.7	
SQ 122C SQ 222C	20 0170 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	20 0170 0302		3.7	
	20 0170 0367	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0341		3.7	
	20 0170 0053	SWB	3.7	Maximum of 2 plastic bag layers, both of which are liner bags
	20 0170 0038	Direct Load TDOP	3.7	
SQ 122D SQ 222D	20 0170 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	20 0170 0481		3.7	
	20 0170 0546	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0521		3.7	
	20 0170 0233	SWB	3.7	Maximum of 3 plastic bag layers, two of which are liner bags
	20 0170 0218	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SQ 122E SQ 222E	20 0170 0127	Drum	1.9	No layers of confinement
	20 0170 0101		3.7	
	20 0170 0166	SWB/85-Gallon Drum Overpack	1.9	
	20 0170 0141		3.7	
	20 0170 0028	SWB	3.7	
	20 0170 0013	Direct Load TDOP	3.7	
SQ 125A SQ 225A	30 0340 0127	Drum	1.9	No layers of confinement
	30 0340 0101		3.7	
	30 0340 0166	SWB Overpack	1.9	
	30 0340 0141		3.7	
	30 0340 0028	SWB	3.7	
	30 0340 0013	Direct Load TDOP	3.7	
	30 0340 0128	Pipe Overpack	3.7	No layers of confinement in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
SQ 125B SQ 225B	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0122		3.7	
	30 0340 0188	SWB Overpack	1.9	
	30 0340 0162		3.7	
	30 0340 0041	SWB	3.7	
	30 0340 0026	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SQ 125C SQ 225C	30 0340 0485	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	30 0340 0459		3.7	
	30 0340 0525	SWB Overpack	1.9	
	30 0340 0499		3.7	
	30 0340 0387	SWB	3.7	
	30 0340 0372	Direct Load TDOP	3.7	
	30 0340 0486	Pipe Overpack	3.7	Maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
SQ 125D SQ 225D	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB Overpack	1.9	
	30 0340 0521		3.7	
	30 0340 0399	SWB	3.7	
	30 0340 0384	Direct Load TDOP	3.7	
SQ 126A SQ 226A	30 0340 0127	Drum	1.9	No layers of confinement
	30 0340 0101		3.7	
	30 0340 0166	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0141		3.7	
	30 0340 0028	SWB	3.7	
	30 0340 0013	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SQ 126B SQ 226B	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0122		3.7	
	30 0340 0188	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0162		3.7	
	30 0340 0041	SWB	3.7	
	30 0340 0026	Direct Load TDOP	3.7	
SQ 126C SQ 226C	30 0340 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	30 0340 0302		3.7	
	30 0340 0367	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0341		3.7	
	30 0340 0053	SWB	3.7	Maximum of 2 plastic bag layers, both of which are liner bags
	30 0340 0038	Direct Load TDOP	3.7	
SQ 126D SQ 226D	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB/85-Gallon Drum Overpack	1.9	
	30 0340 0521		3.7	
	30 0340 0233	SWB	3.7	Maximum of 3 plastic bag layers, two of which are liner bags
	30 0340 0218	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SQ 126E SQ 226E	30 0340 0128	Pipe Overpack	3.7	No layers of confinement in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
SQ 126F SQ 226F	30 0340 0486	Pipe Overpack	3.7	Maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SR 117A SR 217A	20 0000 0000	SWB	3.7	Metal container as innermost layer of confinement
SR 122A SR 222A	20 0170 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	20 0170 0481		3.7	
	20 0170 0546	SWB Overpack	1.9	
	20 0170 0521		3.7	
	20 0170 0399	SWB	3.7	
	20 0170 0384	Direct Load TDOP	3.7	
SR 122B SR 222B	20 0170 0686	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	20 0170 0660		3.7	
	20 0170 0725	SWB Overpack	1.9	
	20 0170 0700		3.7	
	20 0170 0579	SWB	3.7	
	20 0170 0564	Direct Load TDOP	3.7	
SR 122C SR 222C	20 0170 0865	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag
	20 0170 0839		3.7	
	20 0170 0905	SWB Overpack	1.9	
	20 0170 0879		3.7	
	20 0170 0758	SWB	3.7	
	20 0170 0743	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SR 122D SR 222D	20 0170 0127	Drum	1.9	No layers of confinement
	20 0170 0101		3.7	
	20 0170 0166	SWB Overpack	1.9	
	20 0170 0141		3.7	
	20 0170 0028	SWB	3.7	
	20 0170 0013	Direct Load TDOP	3.7	
SR 122E SR 222E	20 0170 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	20 0170 0122		3.7	
	20 0170 0188	SWB Overpack	1.9	
	20 0170 0162		3.7	
	20 0170 0041	SWB	3.7	
	20 0170 0026	Direct Load TDOP	3.7	
SR 122F SR 222F	20 0170 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	20 0170 0302		3.7	
	20 0170 0367	SWB Overpack	1.9	
	20 0170 0341		3.7	
	20 0170 0220	SWB	3.7	
	20 0170 0205	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SR 122G SR 222G	20 0170 1044	Drum	1.9	Maximum of 6 plastic bag layers, one of which is a liner bag
	20 0170 1018		3.7	
	20 0170 1084	SWB Overpack	1.9	
	20 0170 1058		3.7	
	20 0170 0937	SWB	3.7	
	20 0170 0922	Direct Load TDOP	3.7	
SR 122H SR 222H	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000	SWB	3.7	
	20 0000 0000	Direct Load TDOP	3.7	
SR 125A SR 225A	30 0340 0865	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag
	30 0340 0839		3.7	
	30 0340 0905	SWB Overpack	1.9	
	30 0340 0879		3.7	
	30 0340 0758	SWB	3.7	
	30 0340 0743	Direct Load TDOP	3.7	
	30 0340 0852	SWB Overpack	3.7	Maximum of 5 plastic bag layers, one of which is a liner bag. The SWB is fitted with four filters, each with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SR 125B SR 225B	30 0340 0127	Drum	1.9	No layers of confinement
	30 0340 0101		3.7	
	30 0340 0166	SWB Overpack	1.9	
	30 0340 0141		3.7	
	30 0340 0028	SWB	3.7	
	30 0340 0013	Direct Load TDOP	3.7	
SR 125C SR 225C	30 0340 0148	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0122		3.7	
	30 0340 0188	SWB Overpack	1.9	
	30 0340 0162		3.7	
	30 0340 0041	SWB	3.7	
	30 0340 0026	Direct Load TDOP	3.7	
	30 0340 0135	SWB Overpack	3.7	Maximum of 1 plastic bag layer, which is a liner bag. The SWB is fitted with four filters, each with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
SR 125D SR 225D	30 0340 0327	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	30 0340 0302		3.7	
	30 0340 0367	SWB Overpack	1.9	
	30 0340 0341		3.7	
	30 0340 0220	SWB	3.7	
	30 0340 0205	Direct Load TDOP	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2A (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR GENERAL CASE (60-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
SR 125E SR 225E	30 0340 0506	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0481		3.7	
	30 0340 0546	SWB Overpack	1.9	
	30 0340 0521		3.7	
	30 0340 0399	SWB	3.7	
	30 0340 0384	Direct Load TDOP	3.7	
SR 125F SR 225F	30 0340 0686	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	30 0340 0660		3.7	
	30 0340 0725	SWB Overpack	1.9	
	30 0340 0700		3.7	
	30 0340 0579	SWB	3.7	
	30 0340 0564	Direct Load TDOP	3.7	
SR 125G SR 225G	30 0340 1044	Drum	1.9	Maximum of 6 plastic bag layers, one of which is a liner bag
	30 0340 1018		3.7	
	30 0340 1084	SWB Overpack	1.9	
	30 0340 1058		3.7	
	30 0340 0937	SWB	3.7	
	30 0340 0922	Direct Load TDOP	3.7	
	30 0340 1031	SWB Overpack	3.7	Maximum of 6 plastic bag layers, one of which is a liner bag. The SWB is fitted with four filters, each with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 111A LA 211A	10 0130 0121	Drum	1.9	Maximum of one plastic bag layer, which is a liner bag
	10 0130 0085		3.7	
	10 0130 0055		18.5	
	10 0130 0191	SWB Overpack	1.9	
	10 0130 0155		3.7	
	10 0130 0125		18.5	
LA 111B LA 211B	10 0130 0099	Drum	1.9	No layers of confinement
	10 0130 0064		3.7	
	10 0130 0034		18.5	
	10 0130 0169	SWB Overpack	1.9	
	10 0130 0134		3.7	
	10 0130 0104		18.5	
	10 0130 0024	SWB	3.7	
LA 111G LA 211G	10 0130 0081	SWB (2 filters)	3.7	Maximum of 3 plastic bag layers, two of which are drum liner bags, and one of which is an SWB liner bag
	10 0130 0072	SWB (4 filters)	3.7	
LA 111H LA 211H	10 0130 0073	SWB (2 filters)	3.7	Maximum of 3 plastic bag layers, one of which is a drum liner bag, and two of which are SWB liner bags
	10 0130 0063	SWB (4 filters)	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 112A LA 212A	40 9999 0437	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	40 9999 0412		3.7	
	40 9999 0390		18.5	
	40 9999 0487	SWB Overpack	1.9	
	40 9999 0461		3.7	
	40 9999 0396		18.5[b]	
LA 114A LA 214A	10 0040 0142	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	10 0040 0107		3.7	
	10 0040 0077		18.5	
	10 0040 0212	SWB Overpack	1.9	
	10 0040 0177		3.7	
	10 0040 0087		18.5[b]	
LA 114B LA 214B	10 0040 0121	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	10 0040 0085		3.7	
	10 0040 0055		18.5	
	10 0040 0191	SWB Overpack	1.9	
	10 0040 0155		3.7	
	10 0040 0065		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 114C LA 214C	10 0040 0099	Drum	1.9	No layers of confinement
	10 0040 0064		3.7	
	10 0040 0034		18.5	
	10 0040 0169	SWB Overpack	1.9	
	10 0040 0134		3.7	
	10 0040 0044		18.5[b]	
LA 114E LA 214E	10 0040 0341	Pipe Overpack	3.7	Waste is placed into a slip-top metal can. Can is placed into a maximum of one plastic bag layer, which is an inner bag. Bag is placed into a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/ mol fraction
LA 115A LA 215A	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000		18.5	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000		18.5[b]	
LA 115B LA 215B	20 0170 0063	Drum	3.7	Maximum of 1 filtered plastic bag layer, which is an inner bag
	20 0170 0041		18.5	
	20 0170 0112	SWB Overpack	3.7	
	20 0170 0047		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 116A LA 216A	30 0340 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0340 0455		3.7	
	30 0340 0433		18.5	
	30 0340 0530	SWB Overpack	1.9	
	30 0340 0504		3.7	
	30 0340 0439		18.5[b]	
LA 116B LA 216B	30 0340 0098	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags
	30 0340 0072		3.7	
	30 0340 0050		18.5	
LA 116C LA 216C	30 0340 0258	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
	30 0340 0233		3.7	
	30 0340 0211		18.5	
	30 0340 0307	SWB Overpack	1.9	
	30 0340 0282		3.7	
	30 0340 0217		18.5[b]	
	30 0340 0198	SWB	3.7	
	30 0340 0187		18.5	
	30 0340 0186	Direct Load TDOP	3.7	
	30 0340 0184		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 116D LA 216D	30 0340 0437	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	30 0340 0412		3.7	
	30 0340 0390		18.5	
	30 0340 0487	SWB Overpack	1.9	
	30 0340 0461		3.7	
	30 0340 0396		18.5[b]	
LA 116E LA 216E	30 0340 0088	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag
	30 0340 0063		3.7	
	30 0340 0041		18.5	
	30 0340 0028	SWB	3.7	
	30 0340 0017		18.5	
	30 0340 0016	Direct Load TDOP	3.7	
	30 0340 0014		18.5	
LA 116F LA 216F	30 0340 0086	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a drum liner bag
	30 0340 0060		3.7	
	30 0340 0038		18.5	
	30 0340 0026	SWB	3.7	
	30 0340 0015		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 116G LA 216G	30 0340 0079	Drum	1.9	No layers of confinement
	30 0340 0053		3.7	
	30 0340 0032		18.5	
	30 0340 0128	SWB Overpack	1.9	
	30 0340 0103		3.7	
	30 0340 0038		18.5[b]	
	30 0340 0019	SWB	3.7	
	30 0340 0008		18.5	
	30 0340 0007	Direct Load TDOP	3.7	
	30 0340 0004		18.5	
LA 116H LA 216H	30 0340 0659	Drum	1.9	Maximum of 5 plastic bag layers, two of which are liner bags
	30 0340 0634		3.7	
	30 0340 0612		18.5	
	30 0340 0709	SWB Overpack	1.9	
	30 0340 0683		3.7	
	30 0340 0618		18.5[b]	
LA 116I LA 216I	30 0340 0813	Drum	3.7	Maximum of 6 plastic bag layers, two of which are liner bags
	30 0340 0791		18.5	
	30 0340 0862	SWB Overpack	3.7	
	30 0340 0797		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 116J LA 216J	30 0340 0439	Pipe Overpack	3.7	Maximum of 2 plastic bag layers, which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/ mol fraction
LA 117A LA 217A	20 0170 0736	SWB	3.7	Maximum of 4 plastic bag layers, which are inner bags
	20 0170 0725		18.5	
LA 117B LA 217B	20 0170 0258	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
	20 0170 0233		3.7	
	20 0170 0211		18.5	
	20 0170 0307	SWB Overpack	1.9	
	20 0170 0282		3.7	
	20 0170 0217		18.5[b]	
	20 0170 0198	SWB	3.7	
	20 0170 0187		18.5	
	20 0170 0186	Direct Load TDOP	3.7	
	20 0170 0184		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 117C LA 217C	20 0170 0088	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag
	20 0170 0063		3.7	
	20 0170 0041		18.5	
	20 0170 0028	SWB	3.7	
	20 0170 0017		18.5	
	20 0170 0016	Direct Load TDOP	3.7	
	20 0170 0014		18.5	
LA 117D LA 217D	20 0170 0437	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	20 0170 0412		3.7	
	20 0170 0390		18.5	
	20 0170 0487	SWB Overpack	1.9	
	20 0170 0461		3.7	
	20 0170 0396		18.5[b]	
LA 117E LA 217E	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000		18.5	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 117F LA 217F	20 0170 0086	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a drum liner bag
	20 0170 0060		3.7	
	20 0170 0038		18.5	
	20 0170 0026	SWB	3.7	
	20 0170 0015		18.5	
LA 117G LA 217G	20 0170 0079	Drum	1.9	No layers of confinement
	20 0170 0053		3.7	
	20 0170 0032		18.5	
	20 0170 0128	SWB Overpack	1.9	
	20 0170 0103		3.7	
	20 0170 0038		18.5[b]	
	20 0170 0019	SWB	3.7	
	20 0170 0008		18.5	
	20 0170 0007	Direct Load TDOP	3.7	
	20 0170 0004		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 117H LA 217H	20 0170 0659	Drum	1.9	Maximum of 5 plastic bag layers, two of which are liner bags
	20 0170 0634		3.7	
	20 0170 0612		18.5	
	20 0170 0709	SWB Overpack	1.9	
	20 0170 0683		3.7	
	20 0170 0618		18.5[b]	
LA 117I LA 217I	20 0170 0455	Drum	3.7	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0433		18.5	
	20 0170 0504	SWB Overpack	3.7	
	20 0170 0439		18.5[b]	
	20 0170 0402	SWB	3.7	
	20 0170 0392		18.5	
LA 117J LA 217J	20 0170 0813	Drum	3.7	Maximum of 6 plastic bag layers, two of which are liner bags
	20 0170 0791		18.5	
	20 0170 0862	SWB Overpack	3.7	
	20 0170 0797		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 118A LA 218A	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000		18.5	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000		18.5[b]	
LA 118B LA 218B	20 0170 0258	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
	20 0170 0233		3.7	
	20 0170 0211		18.5	
	20 0170 0307	SWB Overpack	1.9	
	20 0170 0282		3.7	
	20 0170 0217		18.5[b]	
	20 0170 0198	SWB	3.7	
	20 0170 0187		18.5	
	20 0170 0186	Direct Load TDOP	3.7	
	20 0170 0184		18.5	
LA 118C LA 218C	20 0170 0086	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a liner bag
	20 0170 0060		3.7	
	20 0170 0038		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

**TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 118D LA 218D	20 0170 0079	Drum	1.9	No layers of confinement
	20 0170 0053		3.7	
	20 0170 0032		18.5	
	20 0170 0128	SWB Overpack	1.9	
	20 0170 0103		3.7	
	20 0170 0038		18.5[b]	
	20 0170 0019	SWB	3.7	
	20 0170 0008		18.5	
	20 0170 0007	Direct Load TDOP	3.7	
	20 0170 0004		18.5	
LA 118E LA 218E	20 0170 0659	Drum	1.9	Maximum of 5 plastic bag layers, two of which are liner bags
	20 0170 0634		3.7	
	20 0170 0612		18.5	
	20 0170 0709	SWB Overpack	1.9	
	20 0170 0683		3.7	
	20 0170 0618		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 118F LA 218F	20 0170 0086	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag, and no rigid liner in the 55-gallon drums
	20 0170 0061		3.7	
	20 0170 0039		18.5	
	20 0170 0136	SWB Overpack	1.9	
	20 0170 0110		3.7	
	20 0170 0045		18.5[b]	
LA 118G LA 218G	20 0170 0813	Drum	3.7	Maximum of 6 plastic bag layers, two of which are liner bags
	20 0170 0791		18.5	
	20 0170 0862	SWB Overpack	3.7	
	20 0170 0797		18.5[b]	
LA 119A LA 219A	30 0340 0258	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
	30 0340 0233		3.7	
	30 0340 0211		18.5	
	30 0340 0307	SWB Overpack	1.9	
	30 0340 0282		3.7	
	30 0340 0217		18.5[b]	
	30 0340 0198	SWB	3.7	
	30 0340 0187		18.5	
	30 0340 0186	Direct Load TDOP	3.7	
	30 0340 0184		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

**TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 119B LA 219B	30 0340 0088	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag
	30 0340 0063		3.7	
	30 0340 0041		18.5	
	30 0340 0028	SWB	3.7	
	30 0340 0017		18.5	
	30 0340 0016	Direct Load TDOP	3.7	
	30 0340 0014		18.5	
LA 119C LA 219C	30 0340 0086	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a drum liner bag
	30 0340 0060		3.7	
	30 0340 0038		18.5	
	30 0340 0026	SWB	3.7	
	30 0340 0015		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 119D LA 219D	30 0340 0079	Drum	1.9	No layers of confinement
	30 0340 0053		3.7	
	30 0340 0032		18.5	
	30 0340 0128	SWB Overpack	1.9	
	30 0340 0103		3.7	
	30 0340 0038		18.5[b]	
	30 0340 0019	SWB	3.7	
	30 0340 0008		18.5	
	30 0340 0007	Direct Load TDOP	3.7	
	30 0340 0004		18.5	
LA 119E LA 219E	30 0340 0659	Drum	1.9	Maximum of 5 plastic bag layers, two of which are liner bags
	30 0340 0634		3.7	
	30 0340 0612		18.5	
	30 0340 0709	SWB Overpack	1.9	
	30 0340 0683		3.7	
	30 0340 0618		18.5[b]	
LA 119F LA 219F	30 0340 0813	Drum	3.7	Maximum of 6 plastic bag layers, two of which are liner bags
	30 0340 0791		18.5	
	30 0340 0862	SWB Overpack	3.7	
	30 0340 0797		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 120A LA 220A	20 0000 0000	Pipe Overpack	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
LA 122A LA 222A	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000		18.5	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000		18.5[b]	
	20 0000 0000	Pipe Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000		18.5	
LA 122B LA 222B	20 0170 0088	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag
	20 0170 0063		3.7	
	20 0170 0041		18.5	
	20 0170 0138	SWB Overpack	1.9	
	20 0170 0112		3.7	
	20 0170 0047		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

**TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 122C LA 222C	20 0170 0063	Drum	3.7	Maximum of 1 filtered plastic bag layer, which is an inner bag
	20 0170 0041		18.5	
	20 0170 0028	SWB	3.7	
	20 0170 0017		18.5	
	20 0170 0016	Direct Load TDOP	3.7	
	20 0170 0014		18.5	
LA 123A LA 223A	30 0340 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0340 0455		3.7	
	30 0340 0433		18.5	
	30 0340 0530	SWB Overpack	1.9	
	30 0340 0504		3.7	
	30 0340 0439		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 123B LA 223B	30 0340 0258	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
LA 123B LA 223B	30 0340 0233	Drum	3.7	Maximum of 1 plastic bag layer, which is an inner bag
LA 123B LA 223B	30 0340 0211	Drum	18.5	Maximum of 1 plastic bag layer, which is an inner bag
LA 123B LA 223B	30 0340 0307	SWB Overpack	1.9	Maximum of 1 plastic bag layer, which is an inner bag
LA 123B LA 223B	30 0340 0282	SWB Overpack	3.7	Maximum of 1 plastic bag layer, which is an inner bag
LA 123B LA 223B	30 0340 0217	SWB Overpack	18.5[b]	Maximum of 1 plastic bag layer, which is an inner bag
LA 123B LA 223B	30 0340 0198	SWB	3.7	Maximum of 1 plastic bag layer, which is an inner bag
LA 123B LA 223B	30 0340 0187	SWB	18.5	Maximum of 1 plastic bag layer, which is an inner bag
LA 123B LA 223B	30 0340 0186	Direct Load TDOP	3.7	Maximum of 1 plastic bag layer, which is an inner bag
LA 123B LA 223B	30 0340 0184	Direct Load TDOP	18.5	Maximum of 1 plastic bag layer, which is an inner bag
LA 123C LA 223C	30 0340 0088	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag
LA 123C LA 223C	30 0340 0063	Drum	3.7	Maximum of 1 filtered plastic bag layer, which is an inner bag
LA 123C LA 223C	30 0340 0041	Drum	18.5	Maximum of 1 filtered plastic bag layer, which is an inner bag
LA 123C LA 223C	30 0340 0028	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is an inner bag
LA 123C LA 223C	30 0340 0017	SWB	18.5	Maximum of 1 filtered plastic bag layer, which is an inner bag
LA 123C LA 223C	30 0340 0016	Direct Load TDOP	3.7	Maximum of 1 filtered plastic bag layer, which is an inner bag
LA 123C LA 223C	30 0340 0014	Direct Load TDOP	18.5	Maximum of 1 filtered plastic bag layer, which is an inner bag
LA 123D LA 223D	30 0340 0098	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags
LA 123D LA 223D	30 0340 0072	Drum	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags
LA 123D LA 223D	30 0340 0050	Drum	18.5	Maximum of 2 filtered plastic bag layers, both of which are inner bags

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 123E LA 223E	30 0340 0086	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a liner bag
	30 0340 0060		3.7	
	30 0340 0038		18.5	
LA 123F LA 223F	30 0340 0079	Drum	1.9	No layers of confinement
	30 0340 0053		3.7	
	30 0340 0032		18.5	
	30 0340 0128	SWB Overpack	1.9	
	30 0340 0103		3.7	
	30 0340 0038		18.5[b]	
	30 0340 0019	SWB	3.7	
	30 0340 0008		18.5	
	30 0340 0007	Direct Load TDOP	3.7	
	30 0340 0004		18.5	
LA 123G LA 223G	30 0340 0659	Drum	1.9	Maximum of 5 plastic bag layers, two of which are liner bags
	30 0340 0634		3.7	
	30 0340 0612		18.5	
	30 0340 0709	SWB Overpack	1.9	
	30 0340 0683		3.7	
	30 0340 0618		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 123H LA 223H	30 0340 0813	Drum	3.7	Maximum of 6 plastic bag layers, two of which are liner bags
	30 0340 0791		18.5	
	30 0340 0862	SWB Overpack	3.7	
	30 0340 0797		18.5[b]	
LA 124A LA 224A	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000		18.5	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
	20 0000 0000		18.5[b]	
LA 124B LA 224B	20 0170 0063	Drum	3.7	Maximum of 1 filtered plastic bag layer, which is an inner bag
	20 0170 0041		18.5	
	20 0170 0028	SWB	3.7	
	20 0170 0017		18.5	
	20 0170 0016	Direct Load TDOP	3.7	
	20 0170 0014		18.5	
LA 124C LA 224C	20 0000 0000	Pipe Overpack	3.7	Metal can as innermost layer of confinement in a pipe overpack
LA 125A LA 225A	30 0340 0031	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0021		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 125B LA 225B	30 0340 0258	Drum	1.9	Maximum of 1 plastic bag layer, which is an inner bag
	30 0340 0233		3.7	
	30 0340 0211		18.5	
	30 0340 0307	SWB Overpack	1.9	
	30 0340 0282		3.7	
	30 0340 0217		18.5[b]	
	30 0340 0198	SWB	3.7	
	30 0340 0187		18.5	
	30 0340 0186	Direct Load TDOP	3.7	
	30 0340 0184		18.5	
LA 125C LA 225C	30 0340 0088	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is an inner bag
	30 0340 0063		3.7	
	30 0340 0041		18.5	
	30 0340 0028	SWB	3.7	
	30 0340 0017		18.5	
	30 0340 0016	Direct Load TDOP	3.7	
	30 0340 0014		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 125D LA 225D	30 0340 0086	Drum	1.9	Maximum of 1 filtered plastic bag layer, which is a drum liner bag
	30 0340 0060		3.7	
	30 0340 0038		18.5	
	30 0340 0026	SWB	3.7	
	30 0340 0015		18.5	
LA 125E LA 225E	30 0340 0079	Drum	1.9	No layers of confinement
	30 0340 0053		3.7	
	30 0340 0032		18.5	
	30 0340 0128	SWB Overpack	1.9	
	30 0340 0103		3.7	
	30 0340 0038		18.5[b]	
	30 0340 0019	SWB	3.7	
	30 0340 0008		18.5	
	30 0340 0007	Direct Load TDOP	3.7	
	30 0340 0004		18.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 125F LA 225F	30 0340 0659	Drum	1.9	Maximum of 5 plastic bag layers, two of which are liner bags
	30 0340 0634		3.7	
	30 0340 0612		18.5	
	30 0340 0709	SWB Overpack	1.9	
	30 0340 0683		3.7	
	30 0340 0618		18.5[b]	
LA 125G LA 225G	30 0340 0813	Drum	3.7	Maximum of 6 plastic bag layers, two of which are liner bags
	30 0340 0791		18.5	
	30 0340 0862	SWB Overpack	3.7	
	30 0340 0797		18.5[b]	
LA 125H LA 225H	30 0340 0439	Pipe Overpack	3.7	Maximum of 2 plastic bag layers, which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
LA 126A LA 226A	30 0340 0122	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	30 0340 0096		3.7	
	30 0340 0075		18.5	
	30 0340 0171	SWB Overpack	1.9	
	30 0340 0145		3.7	
	30 0340 0081		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LA 126B LA 226B	30 0340 0100	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0075		3.7	
	30 0340 0053		18.5	
	30 0340 0150	SWB Overpack	1.9	
	30 0340 0124		3.7	
	30 0340 0059		18.5[b]	
LA 126C LA 226C	30 0340 0079	Drum	1.9	No layers of confinement
	30 0340 0053		3.7	
	30 0340 0032		18.5	
	30 0340 0128	SWB Overpack	1.9	
	30 0340 0103		3.7	
	30 0340 0038		18.5[b]	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

[b] For these SWB overpack packaging configurations, the hydrogen diffusivity value is specified for the filters on both the primary and secondary payload containers (i.e., one filter with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the 55-gallon drum and a minimum of two filters with a hydrogen diffusivity value of 18.5 x 10^{-6} mol/s/mol fraction on the overpacking SWB).

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
NT 111A NT 211A	10 0160 0099	Drum	1.9	No layers of confinement
	10 0160 0064		3.7	
	10 0160 0169	SWB Overpack	1.9	
	10 0160 0134		3.7	
NT 115AR NT 215AR	20 0170 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0455		3.7	
	20 0170 0530	SWB Overpack	1.9	
	20 0170 0504		3.7	
NT 115BR NT 215BR	20 0170 0073	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag. Rigid liner with no lid.
	20 0170 0122	SWB Overpack	3.7	
NT 116A NT 216A	30 0340 0437	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	30 0340 0412		3.7	
	30 0340 0487	SWB Overpack	1.9	
	30 0340 0461		3.7	
NT 116AR NT 216AR	30 0340 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0340 0455		3.7	
	30 0340 0530	SWB Overpack	1.9	
	30 0340 0504		3.7	
NT 116BR NT 216BR	30 0340 0073	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag. Rigid liner with no lid.
	30 0340 0122	SWB Overpack	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
NT 117AR NT 217AR	20 0170 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0455		3.7	
	20 0170 0530	SWB Overpack	1.9	
	20 0170 0504		3.7	
NT 117BR NT 217BR	20 0170 0073	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag. Rigid liner with no lid.
	20 0170 0122	SWB Overpack	3.7	
NT 119A NT 219A	30 0340 0100	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0075		3.7	
	30 0340 0150	SWB Overpack	1.9	
	30 0340 0124		3.7	
NT 125A NT 225A	30 0340 0638	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	30 0340 0612		3.7	
	30 0340 0687	SWB Overpack	1.9	
	30 0340 0662		3.7	
NT 125B NT 225B	30 0340 0100	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0075		3.7	
	30 0340 0150	SWB Overpack	1.9	
	30 0340 0124		3.7	
NT 125C NT 225C	30 0340 0051	Drum	3.7	No layers of confinement. Rigid liner with no lid.
	30 0340 0101	SWB Overpack	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
NT 131AR NT 231AR	20 0170 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0455		3.7	
	20 0170 0530	SWB Overpack	1.9	
	20 0170 0504		3.7	
NT 131BR NT 231BR	20 0170 0073	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag. Rigid liner with no lid.
	20 0170 0122	SWB Overpack	3.7	
NT 133AR NT 233AR	30 0340 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags.
	30 0340 0455		3.7	
	30 0340 0530	SWB Overpack	1.9	
	30 0340 0504		3.7	
NT 133BR NT 233BR	30 0340 0073	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag. Rigid liner with no lid.
	30 0340 0122	SWB Overpack	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 111A RF 211A	10 0130 0142	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	10 0130 0107		3.7	
	10 0130 0212	SWB Overpack	1.9	
	10 0130 0177		3.7	
	10 0130 0037	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
RF 111B RF 211B	10 0130 0301	SWB	3.7	Maximum of 1 plastic bag layer, which is an inner bag, and one filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 111D RF 211D	10 0130 0127	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 111DF RF 211DF	10 0130 0198	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	10 0130 0162		3.7	
RF 111E RF 211E	10 0130 0144	Drum	1.9	Maximum of 4 filtered plastic bags layers, two of which are liner bags, and 2 metal cans, each of which are closed with a slip-top lid
	10 0130 0108		3.7	
	10 0130 0214	SWB Overpack	1.9	
	10 0130 0178		3.7	
RF 111H RF 211H	10 0130 0361	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	10 0130 0325		3.7	
	10 0130 0431	SWB Overpack	1.9	
	10 0130 0395		3.7	
	10 0130 0276	SWB	3.7	
RF 111J RF 211J	10 0130 0209	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 2 filtered metal cans, each of which is fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	10 0130 0174		3.7	
	10 0130 0279	SWB Overpack	1.9	
	10 0130 0244		3.7	
RF 111K RF 211K	10 0130 0185	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	10 0130 0149		3.7	
	10 0130 0255	SWB Overpack	1.9	
	10 0130 0219		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] ($x 10^{-6}$)	Layers of Confinement
RF 111M RF 211M	10 0130 0586	Drum	3.7	Maximum of 4 plastic bag layers, two of which are drum liner bags
	10 0130 0556		18.5	
	10 0130 0657	SWB Overpack	3.7	
	10 1030 0627		18.5	
RF 111N RF 211N	10 0130 0565	Drum	3.7	Maximum of 3 plastic bag layers, one of which is a drum liner bag
	10 0130 0635	SWB Overpack	3.7	
RF 111O RF 211O	10 0130 0064	Drum	3.7	No layers of confinement
	10 0130 0134	SWB Overpack	3.7	
RF 111OA RF 211OA	10 0130 0062	Drum	3.7	No layers of confinement and no rigid liner lid
	10 0130 0132	SWB Overpack	3.7	
RF 111P RF 211P	10 0130 0164	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/s/mol fraction.
RF 111PF RF 211PF	10 0130 0271	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	10 0130 0235		3.7	
RF 112A RF 212A	40 9999 0122	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	40 9999 0096		3.7	
	40 9999 0171	SWB Overpack	1.9	
	40 9999 0145		3.7	
RF 112B RF 212B	40 9999 0459	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag, and one metal can, which is closed with a slip-top lid
	40 9999 0433		3.7	
	40 9999 0508	SWB Overpack	1.9	
	40 9999 0482		3.7	
RF 112D RF 212D	40 9999 0126	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/s/mol fraction.

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 112DF RF 212DF	40 9999 0203	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	40 9999 0177		3.7	
RF 112J RF 212J	40 9999 0131	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	40 9999 0106		3.7	
	40 9999 0181	SWB Overpack	1.9	
	40 9999 0155		3.7	
RF 112N RF 212N	40 9999 0459	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	40 9999 0433		3.7	
	40 9999 0508	SWB Overpack	1.9	
	40 9999 0482		3.7	
RF 112O RF 212O	40 9999 0053	Drum	3.7	No layers of confinement
	40 9999 0032		18.5	
	40 9999 0027		92.5	
	40 9999 0103	SWB Overpack	3.7	
	40 9999 0081		18.5	
	40 9999 0077		92.5	
RF 112OA RF 212OA	40 9999 0051	Drum	3.7	No layers of confinement and no rigid liner lid
	40 9999 0030		18.5	
	40 9999 0025		92.5	
	40 9999 0101	SWB Overpack	3.7	
	40 9999 0079		18.5	
	40 9999 0075		92.5	
RF 112P RF 212P	40 9999 0057	Drum	3.7	Maximum of 2 plastic bag layers, both of which are liner bags, which are punctured with a minimum 0.3-inch hole
	40 9999 0036		18.5	
	40 9999 0031		92.5	
	40 9999 0107	SWB Overpack	3.7	
	40 9999 0085		18.5	
	40 9999 0081		92.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 112PA RF 212PA	40 9999 0055	Drum	3.7	Maximum of 2 plastic bag layers, both of which are liner bags, which are punctured with a minimum 0.3-inch hole, and no rigid liner lid
	40 9999 0034		18.5	
	40 9999 0029		92.5	
	40 9999 0105	SWB Overpack	3.7	
	40 9999 0083		18.5	
	40 9999 0079		92.5	
RF 112Q RF 212Q	40 9999 0075	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag
	40 9999 0053		18.5	
	40 9999 0049		92.5	
	40 9999 0124	SWB Overpack	3.7	
	40 9999 0102		18.5	
	40 9999 0098		92.5	
RF 112QA RF 212QA	40 9999 0073	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag, and no rigid liner lid
	40 9999 0051		18.5	
	40 9999 0047		92.5	
	40 9999 0122	SWB Overpack	3.7	
	40 9999 0100		18.5	
	40 9999 0096		92.5	
RF 113A RF 213A	40 9999 0122	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	40 9999 0096		3.7	
	40 9999 0171	SWB Overpack	1.9	
	40 9999 0145		3.7	
RF 113O RF 213O	40 9999 0053	Drum	3.7	No layers of confinement
	40 9999 0103	SWB Overpack	3.7	
RF 113OA RF 213OA	40 9999 0051	Drum	3.7	No layers of confinement and no rigid liner lid
	40 9999 0101	SWB Overpack	3.7	
RF 114A RF 214A	10 0040 0600	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	10 0040 0565		3.7	
	10 0040 0671	SWB Overpack	1.9	
	10 0040 0635		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 114B RF 214B	10 0040 0622	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	10 0040 0586		3.7	
	10 0040 0692	SWB Overpack	1.9	
	10 0040 0657		3.7	
RF 114D RF 214D	10 0040 0581	Pipe Overpack	3.7	Maximum of 2 plastic bag layers, both of which are inner bags, in a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 114DF RF 214DF	10 0040 0652	Pipe Overpack	1.9	Maximum of 2 plastic bag layers, both of which are inner bags, in a pipe component
	10 0040 0616		3.7	
RF 114E RF 214E	10 0040 0144	Drum	1.9	Maximum of 4 filtered plastic bag layers, two of which are liner bags
	10 0040 0108		3.7	
	10 0040 0214	SWB Overpack	1.9	
	10 0040 0178		3.7	
RF 114F RF 214F	10 0040 0144	Drum	1.9	Maximum of 4 filtered plastic bag layers, two of which are liner bags
	10 0040 0108		3.7	
	10 0040 0214	SWB Overpack	1.9	
	10 0040 0178		3.7	
RF 114G RF 214G	10 0040 0127	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 114GF RF 214GF	10 0040 0198	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	10 0040 0162		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 114J RF 214J	10 0040 0219	Drum	1.9	Maximum of 4 filtered plastic bag layers, two of which are liner bags, and 2 filtered metal cans, each of which is fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	10 0040 0183		3.7	
	10 0040 0289	SWB Overpack	1.9	
	10 0040 0253		3.7	
RF 114JF RF 214JF	10 0040 0290	Drum	1.9	Maximum of 4 filtered plastic bag layers, two of which are liner bags, and 2 filtered metal cans
	10 0040 0254		3.7	
	10 0040 0360	SWB Overpack	1.9	
	10 0040 0324		3.7	
RF 114K RF 214K	10 0040 0142	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	10 0040 0107		3.7	
	10 0040 0212	SWB Overpack	1.9	
	10 0040 0177		3.7	
RF 114L RF 214L	10 0040 0118	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	10 0040 0082		3.7	
	10 0040 0188	SWB Overpack	1.9	
	10 0040 0153		3.7	
RF 114P RF 214P	10 0040 0164	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 114PF RF 214PF	10 0040 0271	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	10 0040 0235		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 115A RF 215A	20 0170 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0455		3.7	
	20 0170 0530	SWB Overpack	1.9	
	20 0170 0504		3.7	
RF 115B RF 215B	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
RF 115D RF 215D	20 0000 0000	Pipe Overpack	1.9	Metal can as innermost layer of confinement in a pipe overpack
	20 0000 0000		3.7	
RF 115E RF 215E	20 0170 0131	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity of 3.7 x 10^{-6} mol/s/mol fraction
	20 0170 0106		3.7	
	20 0170 0181	SWB Overpack	1.9	
	20 0170 0155		3.7	
RF 115F RF 215F	20 0170 0092	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	20 0170 0067		3.7	
	20 0170 0142	SWB Overpack	1.9	
	20 0170 0116		3.7	
RF 115N RF 215N	20 0170 0459	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	20 0170 0433		3.7	
	20 0170 0508	SWB Overpack	1.9	
	20 0170 0482		3.7	
	20 0170 0390	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 116A RF 216A	30 0340 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0340 0455		3.7	
	30 0340 0530	SWB Overpack	1.9	
	30 0340 0504		3.7	
	30 0340 0031	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
RF 116C RF 216C	30 0340 0122	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	30 0340 0096		3.7	
	30 0340 0171	SWB Overpack	1.9	
	30 0340 0145		3.7	
RF 116D RF 216D	30 0340 0099	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 116DF RF 216DF	30 0340 0150	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0340 0125		3.7	
RF 116E RF 216E	30 0340 0131	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0106		3.7	
	30 0340 0181	SWB Overpack	1.9	
	30 0340 0155		3.7	
	30 0340 0070	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 116EF RF 216EF	30 0340 0157	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can
	30 0340 0131		3.7	
	30 0340 0206	SWB Overpack	1.9	
	30 0340 0181		3.7	
	30 0340 0096	SWB	3.7	
RF 116F RF 216F	30 0340 0092	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	30 0340 0067		3.7	
	30 0340 0142	SWB Overpack	1.9	
	30 0340 0116		3.7	
	30 0340 0024	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 116G RF 216G	30 0340 0122	Drum	1.9	Maximum of 2 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0096		3.7	
	30 0340 0171	SWB Overpack	1.9	
	30 0340 0146		3.7	
	30 0340 0061	SWB	3.7	
RF 116GF RF 216GF	30 0340 0148	Drum	1.9	Maximum of 2 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can
	30 0340 0122		3.7	
	30 0340 0197	SWB Overpack	1.9	
	30 0340 0171		3.7	
	30 0340 0086	SWB	3.7	
RF 116H RF 216H	30 0340 0211	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 116I RF 216I	30 0340 0104	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	30 0340 0079		3.7	
	30 0340 0154	SWB Overpack	1.9	
	30 0340 0128		3.7	
	30 0340 0043	SWB	3.7	
RF 116J RF 216J	30 0340 0638	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	30 0340 0612		3.7	
	30 0340 0687	SWB Overpack	1.9	
	30 0340 0662		3.7	
RF 116K RF 216K	30 0340 0141	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0115		3.7	
	30 0340 0190	SWB Overpack	1.9	
	30 0340 0164		3.7	
RF 116KF RF 216KF	30 0340 0166	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0141		3.7	
	30 0340 0216	SWB Overpack	1.9	
	30 0340 0190		3.7	
RF 116L RF 216L	30 0340 0817	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag
	30 0340 0792		3.7	
	30 0340 0867	SWB Overpack	1.9	
	30 0340 0841		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 116M RF 216M	30 0340 0150	Drum	1.9	Maximum of 5 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0124		3.7	
	30 0340 0199	SWB Overpack	1.9	
	30 0340 0174		3.7	
RF 116MF RF 216MF	30 0340 0176	Drum	1.9	Maximum of 5 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0150		3.7	
	30 0340 0225	SWB Overpack	1.9	
	30 0340 0199		3.7	
RF 116N RF 216N	30 0340 0459	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0433		3.7	
	30 0340 0508	SWB Overpack	1.9	
	30 0340 0482		3.7	
	30 0340 0390	SWB	3.7	
RF 116P RF 216P	30 0340 0126	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 116PF RF 216PF	30 0340 0203	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	30 0340 0177		3.7	
RF 116Q RF 216Q	30 0340 0437	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	30 0340 0412		3.7	
	30 0340 0487	SWB Overpack	1.9	
	30 0340 0461		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 116R RF 216R	30 0340 0665	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0639		3.7	
	30 0340 0714	SWB Overpack	1.9	
	30 0340 0689		3.7	
RF 116RF RF 216RF	30 0340 0691	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0665		3.7	
	30 0340 0740	SWB Overpack	1.9	
	30 0340 0714		3.7	
RF 116S RF 216S	30 0340 0844	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0819		3.7	
	30 0340 0894	SWB Overpack	1.9	
	30 0340 0868		3.7	
RF 116SF RF 216SF	30 0340 0870	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0844		3.7	
	30 0340 0919	SWB Overpack	1.9	
	30 0340 0894		3.7	
RF 116T RF 216T	30 0340 0034	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 117A RF 217A	20 0170 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0455		3.7	
	20 0170 0530	SWB Overpack	1.9	
	20 0170 0504		3.7	
	20 0170 0031	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
	20 0170 0365	TDOP	3.7	Maximum of 2 plastic bag layers, both of which are inner bags
RF 117B RF 217B	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
RF 117C RF 217C	20 0170 0122	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	20 0170 0096		3.7	
	20 0170 0171	SWB Overpack	1.9	
	20 0170 0145		3.7	
RF 117D RF 217D	20 0000 0000	Pipe Overpack	1.9	Metal can as innermost layer of confinement in a pipe overpack
	20 0000 0000		3.7	
RF 117E RF 217E	20 0170 0131	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	20 0170 0106		3.7	
	20 0170 0181	SWB Overpack	1.9	
	20 0170 0155		3.7	
	20 0170 0070	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 117F RF 217F	20 0170 0092	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	20 0170 0067		3.7	
	20 0170 0142	SWB Overpack	1.9	
	20 0170 0116		3.7	
	20 0170 0024	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 117H RF 217H	20 0170 0211	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag
RF 117I RF 217I	20 0170 0104	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	20 0170 0079		3.7	
	20 0170 0154	SWB Overpack	1.9	
	20 0170 0128		3.7	
	20 0170 0043	SWB	3.7	
	20 0170 0025	TDOP	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags
RF 117K RF 217K	20 0170 0052	SWB	3.7	Maximum of 4 filtered plastic bag layers, one of which is a liner bag
RF 117N RF 217N	20 0170 0459	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	20 0170 0433		3.7	
	20 0170 0508	SWB Overpack	1.9	
	20 0170 0482		3.7	
	20 0170 0390	SWB	3.7	
RF 117T RF 217T	20 0170 0034	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 118A RF 218A	20 0170 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0455		3.7	
	20 0170 0530	SWB Overpack	1.9	
	20 0170 0504		3.7	
	20 0170 0031	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
RF 118B RF 218B	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
RF 118C RF 218C	20 0170 0122	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	20 0170 0096		3.7	
	20 0170 0171	SWB Overpack	1.9	
	20 0170 0145		3.7	
RF 118D RF 218D	20 0000 0000	Pipe Overpack	1.9	Metal can as innermost layer of confinement in a pipe overpack
	20 0000 0000		3.7	
RF 118E RF 218E	20 0170 0131	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	20 0170 0106		3.7	
	20 0170 0181	SWB Overpack	1.9	
	20 0170 0155		3.7	
	20 0170 0070	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 118F RF 218F	20 0170 0092	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	20 0170 0067		3.7	
	20 0170 0142	SWB Overpack	1.9	
	20 0170 0116		3.7	
	20 0170 0024	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 118H RF 218H	20 0170 0211	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag
RF 118I RF 218I	20 0170 0104	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	20 0170 0079		3.7	
	20 0170 0154	SWB Overpack	1.9	
	20 0170 0128		3.7	
	20 0170 0043	SWB	3.7	
RF 118N RF 218N	20 0170 0459	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	20 0170 0433		3.7	
	20 0170 0508	SWB Overpack	1.9	
	20 0170 0482		3.7	
	20 0170 0390	SWB	3.7	
RF 118T RF 218T	20 0170 0034	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 119A RF 219A	30 0340 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0340 0455		3.7	
	30 0340 0530	SWB Overpack	1.9	
	30 0340 0504		3.7	
	30 0340 0031	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
RF 119BA RF 219BA	30 0340 0486	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0460		3.7	
	30 0340 0535	SWB Overpack	1.9	
	30 0340 0510		3.7	
RF 119BAF RF 219BAF	30 0340 0511	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0486		3.7	
	30 0340 0561	SWB Overpack	1.9	
	30 0340 0535		3.7	
RF 119C RF 219C	30 0340 0122	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	30 0340 0096		3.7	
	30 0340 0171	SWB Overpack	1.9	
	30 0340 0145		3.7	
RF 119D RF 219D	30 0340 0099	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 119DF RF 219DF	30 0340 0150	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0340 0125		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 119E RF 219E	30 0340 0131	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0106		3.7	
	30 0340 0181	SWB Overpack	1.9	
	30 0340 0155		3.7	
	30 0340 0070	SWB	3.7	
RF 119EF RF 219EF	30 0340 0157	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can
	30 0340 0131		3.7	
	30 0340 0206	SWB Overpack	1.9	
	30 0340 0181		3.7	
	30 0340 0096	SWB	3.7	
RF 119F RF 219F	30 0340 0092	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	30 0340 0067		3.7	
	30 0340 0142	SWB Overpack	1.9	
	30 0340 0116		3.7	
	30 0340 0024	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 119G RF 219G	30 0340 0122	Drum	1.9	Maximum of 2 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0096		3.7	
	30 0340 0171	SWB Overpack	1.9	
	30 0340 0146		3.7	
	30 0340 0061	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 119GF RF 219GF	30 0340 0148	Drum	1.9	Maximum of 2 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can
	30 0340 0122		3.7	
	30 0340 0197	SWB Overpack	1.9	
	30 0340 0171		3.7	
	30 0340 0086	SWB	3.7	
RF 119H RF 219H	30 0340 0211	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag
RF 119I RF 219I	30 0340 0104	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	30 0340 0079		3.7	
	30 0340 0154	SWB Overpack	1.9	
	30 0340 0128		3.7	
	30 0340 0043	SWB	3.7	
RF 119J RF 219J	30 0340 0638	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	30 0340 0612		3.7	
	30 0340 0687	SWB Overpack	1.9	
	30 0340 0662		3.7	
RF 119K RF 219K	30 0340 0141	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0115		3.7	
	30 0340 0190	SWB Overpack	1.9	
	30 0340 0164		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 119KF RF 219KF	30 0340 0166	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0141		3.7	
	30 0340 0216	SWB Overpack	1.9	
	30 0340 0190		3.7	
RF 119L RF 219L	30 0340 0817	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag
	30 0340 0792		3.7	
	30 0340 0867	SWB Overpack	1.9	
	30 0340 0841		3.7	
RF 119M RF 219M	30 0340 0150	Drum	1.9	Maximum of 5 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0124		3.7	
	30 0340 0199	SWB Overpack	1.9	
	30 0340 0174		3.7	
RF 119MF RF 219MF	30 0340 0176	Drum	1.9	Maximum of 5 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0150		3.7	
	30 0340 0225	SWB Overpack	1.9	
	30 0340 0199		3.7	
RF 119N RF 219N	30 0340 0459	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0433		3.7	
	30 0340 0508	SWB Overpack	1.9	
	30 0340 0482		3.7	
	30 0340 0390	SWB	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 119P RF 219P	30 0340 0126	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 119PF RF 219PF	30 0340 0203	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	30 0340 0177		3.7	
RF 119Q RF 219Q	30 0340 0437	Drum	1.9	Maximum of 2 plastic bag layers, both of which are inner bags
	30 0340 0412		3.7	
	30 0340 0487	SWB Overpack	1.9	
	30 0340 0461		3.7	
RF 119R RF 219R	30 0340 0665	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0639		3.7	
	30 0340 0714	SWB Overpack	1.9	
	30 0340 0689		3.7	
RF 119RF RF 219RF	30 0340 0691	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0665		3.7	
	30 0340 0740	SWB Overpack	1.9	
	30 0340 0714		3.7	
RF 119S RF 219S	30 0340 0844	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0819		3.7	
	30 0340 0894	SWB Overpack	1.9	
	30 0340 0868		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 119SF RF 219SF	30 0340 0870	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0340 0844		3.7	
	30 0340 0919	SWB Overpack	1.9	
	30 0340 0894		3.7	
RF 119T RF 219T	30 0340 0034	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag
RF 119W RF 219W	30 0340 0114	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a filtered liner bag
	30 0340 0088		3.7	
	30 0340 0163	SWB Overpack	1.9	
	30 0340 0137		3.7	
RF 121A RF 221A	30 0340 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0340 0455		3.7	
	30 0340 0530	SWB Overpack	1.9	
	30 0340 0504		3.7	
	30 0340 0031	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
	30 0340 0365	TDOP	3.7	Maximum of 2 plastic bag layers, both of which are inner bags
RF 121D RF 221D	30 0340 0464	Pipe Overpack	1.9	Maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0439		3.7	
RF 121DF RF 221DF	30 0340 0490	Pipe Overpack	1.9	Maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0340 0464		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 121DA RF 221DA	30 0340 0099	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 121DAF RF 221DAF	30 0340 0150	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0340 0125		3.7	
RF 121E RF 221E	30 0340 0131	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0340 0106		3.7	
	30 0340 0181	SWB Overpack	1.9	
	30 0340 0155		3.7	
	30 0340 0070	SWB	3.7	
RF 121F RF 221F	30 0340 0092	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	30 0340 0067		3.7	
	30 0340 0142	SWB Overpack	1.9	
	30 0340 0116		3.7	
	30 0340 0024	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 121H RF 221H	30 0340 0211	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 121I RF 221I	30 0340 0104	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	30 0340 0079		3.7	
	30 0340 0154	SWB Overpack	1.9	
	30 0340 0128		3.7	
	30 0340 0043	SWB	3.7	
	30 0340 0025	TDOP	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags
RF 121J RF 221J	30 0340 0158	Drum	1.9	Filtered metal can as innermost layer of confinement within a maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can. Both filtered metal cans are fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
	30 0340 0133		3.7	
	30 0340 0208	SWB Overpack	1.9	
	30 0340 0182		3.7	
RF 121K RF 221K	30 0340 0052	SWB	3.7	Maximum of 4 filtered plastic bag layers, one of which is a liner bag
RF 121N RF 221N	30 0340 0459	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0433		3.7	
	30 0340 0508	SWB Overpack	1.9	
	30 0340 0482		3.7	
	30 0340 0390	SWB	3.7	
RF 121T RF 221T	30 0340 0034	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag
RF 121W RF 221W	30 0340 0114	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a filtered liner bag
	30 0340 0088		3.7	
	30 0340 0163	SWB Overpack	1.9	
	30 0340 0137		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 122A RF 222A	20 0170 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0455		3.7	
	20 0170 0530	SWB Overpack	1.9	
	20 0170 0504		3.7	
	20 0170 0031	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
RF 122B RF 222B	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
RF 122D RF 222D	20 0000 0000	Pipe Overpack	1.9	Metal can as innermost layer of confinement in a pipe overpack
	20 0000 0000		3.7	
RF 122E RF 222E	20 0170 0131	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can layer with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	20 0170 0106		3.7	
	20 0170 0181	SWB Overpack	1.9	
	20 0170 0155		3.7	
	20 0170 0070	SWB	3.7	
RF 122F RF 222F	20 0170 0092	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	20 0170 0067		3.7	
	20 0170 0142	SWB Overpack	1.9	
	20 0170 0116		3.7	
	20 0170 0024	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 122H RF 222H	20 0170 0211	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 122I RF 222I	20 0170 0104	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	20 0170 0079		3.7	
	20 0170 0154	SWB Overpack	1.9	
	20 0170 0128		3.7	
	20 0170 0043	SWB	3.7	
RF 122N RF 222N	20 0170 0459	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	20 0170 0433		3.7	
	20 0170 0508	SWB Overpack	1.9	
	20 0170 0482		3.7	
	20 0170 0390	SWB	3.7	
RF 122T RF 222T	20 0170 0034	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag
RF 123A RF 223A	30 0340 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0340 0455		3.7	
	30 0340 0530	SWB Overpack	1.9	
	30 0340 0504		3.7	
RF 123E RF 223E	30 0340 0122	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	30 0340 0096		3.7	
	30 0340 0171	SWB Overpack	1.9	
	30 0340 0145		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 123F RF 223F	30 0340 0092	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	30 0340 0067		3.7	
	30 0340 0142	SWB Overpack	1.9	
	30 0340 0116		3.7	
	30 0340 0024	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 123I RF 223I	30 0340 0104	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	30 0340 0079		3.7	
	30 0340 0154	SWB Overpack	1.9	
	30 0340 0128		3.7	
	30 0340 0043	SWB	3.7	
RF 123N RF 223N	30 0340 0459	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0433		3.7	
	30 0340 0508	SWB Overpack	1.9	
	30 0340 0482		3.7	
	30 0340 0390	SWB	3.7	
RF 124B RF 224B	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
RF 124D RF 224D	20 0000 0000	Pipe Overpack	1.9	Metal can as innermost layer of confinement in a pipe overpack
	20 0000 0000		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 124E RF 224E	20 0008 0181	Drum	1.9	Metal can as innermost layer of confinement within a maximum of 1 filtered metal can, and 4 filtered plastic bag layers, two of which are liner bags. The filtered metal can is fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
	20 0008 0146		3.7	
	20 0008 0251	SWB Overpack	1.9	
	20 0008 0216		3.7	
RF 124F RF 224F	20 0008 0164	Pipe Overpack	3.7	Metal can as innermost layer of confinement within a maximum of 1 filtered metal can, and 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 124FF RF 224FF	20 0008 0271	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 1 filtered metal can, and 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	20 0008 0235		3.7	
RF 124G RF 224G	20 0008 0127	Pipe Overpack	3.7	Metal can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 124GF RF 224GF	20 0008 0198	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	20 0008 0162		3.7	
RF 124H RF 224H	20 0008 0581	Pipe Overpack	3.7	Metal can as innermost layer of confinement within a maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 124HF RF 224HF	20 0008 0652	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack
	20 0008 0616		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 126A RF 226A	30 0340 0459	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	30 0340 0433		3.7	
	30 0340 0508	SWB Overpack	1.9	
	30 0340 0482		3.7	
RF 126D RF 226D	30 0340 0439	Pipe Overpack	3.7	Maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 126DF RF 226DF	30 0340 0490	Pipe Overpack	1.9	Maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0340 0464		3.7	
RF 126DA RF 226DA	30 0340 0099	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 126DAF RF 226DAF	30 0340 0150	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0340 0125		3.7	
RF 126E RF 226E	30 0340 0104	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag.
	30 0340 0079		3.7	
	30 0340 0154	SWB Overpack	1.9	
	30 0340 0128		3.7	
RF 126J RF 226J	30 0340 0158	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 2 filtered metal cans, each of which is fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
	30 0340 0133		3.7	
	30 0340 0208	SWB Overpack	1.9	
	30 0340 0182		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 126K RF 226K	30 0340 0122	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	30 0340 0096		3.7	
	30 0340 0171	SWB Overpack	1.9	
	30 0340 0145		3.7	
RF 126L RF 226L	30 0340 0092	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	30 0340 0067		3.7	
	30 0340 0142	SWB Overpack	1.9	
	30 0340 0116		3.7	
RF 126P RF 226P	30 0340 0126	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
RF 126PF RF 226PF	30 0340 0203	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	30 0340 0177		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 127A RF 227A	30 0340 0122	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags.
	30 0340 0096		3.7	
	30 0340 0171	SWB Overpack	1.9	
	30 0340 0145		3.7	
	30 0340 0031	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag.
RF 127D RF 227D	30 0340 0099	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 127DF RF 227DF	30 0340 0150	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack.
	30 0340 0125		3.7	
RF 127E RF 227E	30 0340 0111	Drum	1.9	Maximum of 4 filtered plastic bag layers, two of which are liner bags, and 2 metal cans, each of which are closed with a slip-top lid.
	30 0340 0085		3.7	
	30 0340 0160	SWB Overpack	1.9	
	30 0340 0135		3.7	
RF 127F RF 227F	30 0340 0092	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags.
	30 0340 0067		3.7	
	30 0340 0142	SWB Overpack	1.9	
	30 0340 0116		3.7	
	30 0340 0024	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag.

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 127H RF 227H	30 0340 0280	Drum	1.9	Maximum of 2 plastic bag layers, one of which is a liner bag
	30 0340 0254		3.7	
	30 0340 0329	SWB Overpack	1.9	
	30 0340 0303		3.7	
RF 127J RF 227J	30 0340 0158	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 2 filtered metal cans, each of which is fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
	30 0340 0133		3.7	
	30 0340 0208	SWB Overpack	1.9	
	30 0340 0182		3.7	
RF 127K RF 227K	30 0340 0141	Drum	1.9	Maximum of 4 filtered plastic bag layers, 1 of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
	30 0340 0115		3.7	
	30 0340 0190	SWB Overpack	1.9	
	30 0340 0164		3.7	
RF 127L RF 227L	30 0340 0433	Drum	3.7	Maximum of 3 plastic bag layers, one of which is a drum liner bag
	30 0340 0482	SWB Overpack	3.7	
RF 127N RF 227N	30 0340 0100	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag.
	30 0340 0075		3.7	
	30 0340 0150	SWB Overpack	1.9	
	30 0340 0124		3.7	
	30 0340 0390	SWB	3.7	Maximum of 3 plastic bag layers, 1 of which is a liner bag.
RF 127P RF 227P	30 0340 0126	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] ($x 10^{-6}$)	Layers of Confinement
RF 127PF RF 227PF	30 0340 0203	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack.
	30 0340 0177		3.7	
RF 130A RF 230A	30 0185 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	30 0185 0455		3.7	
	30 0185 0530	SWB Overpack	1.9	
	30 0185 0504		3.7	
	30 0185 0031	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag
	30 0185 0365	TDOP	3.7	Maximum of 2 plastic bag layers, both of which are inner bags
RF 130B RF 230B	30 0034 0480	Drum	1.9	Metal can as innermost layer of confinement within a maximum of 4 plastic bag layers, two of which are liner bags
	30 0034 0455		3.7	
	30 0034 0530	SWB Overpack	1.9	
	30 0034 0504		3.7	
RF 130BA RF 230BA	30 0034 0486	Drum	1.9	Metal can as innermost layer of confinement within a maximum of 3 plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0034 0460		3.7	
	30 0034 0535	SWB Overpack	1.9	
	30 0034 0510		3.7	
RF 130D RF 230D	30 0034 0464	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0034 0439		3.7	
RF 130DF RF 230DF	30 0034 0490	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 2 plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0034 0464		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 130E RF 230E	30 0034 0111	Drum	1.9	Metal can as innermost layer of confinement within a maximum of 4 filtered plastic bag layers, two of which are liner bags
	30 0034 0085		3.7	
	30 0034 0160	SWB Overpack	1.9	
	30 0034 0135		3.7	
RF 130F RF 230F	30 0185 0111	Drum	1.9	Maximum of 4 filtered plastic bag layers, two of which are liner bags
	30 0185 0085		3.7	
	30 0185 0160	SWB Overpack	1.9	
	30 0185 0135		3.7	
	30 0185 0024	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 130G RF 230G	30 0034 0125	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0034 0099		3.7	
RF 130GF RF 230GF	30 0034 0150	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack
	30 0034 0125		3.7	
RF 130H RF 230H	30 0185 0211	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag
RF 130I RF 230I	30 0185 0104	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	30 0185 0079		3.7	
	30 0185 0154	SWB Overpack	1.9	
	30 0185 0128		3.7	
	30 0185 0043	SWB	3.7	
	30 0185 0025	TDOP	3.7	Maximum of 2 filtered plastic bags, both of which are inner bags

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 130J RF 230J	30 0034 0158	Drum	1.9	Filtered metal can as innermost layer of confinement within a maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can. Both filtered metal cans are fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
	30 0034 0133		3.7	
	30 0034 0208	SWB Overpack	1.9	
	30 0034 0182		3.7	
RF 130K RF 230K	30 0185 0665	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0185 0639		3.7	
	30 0185 0714	SWB Overpack	1.9	
	30 0185 0689		3.7	
	30 0185 0052	SWB	3.7	Maximum of 4 filtered plastic bag layers, one of which is a liner bag
RF 130N RF 230N	30 0185 0390	SWB	3.7	Maximum of 3 plastic bag layers, one of which is a liner bag
RF 130P RF 230P	30 0034 0126	Pipe Overpack	3.7	Metal can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 130PF RF 230PF	30 0034 0203	Pipe Overpack	1.9	Metal can as innermost layer of confinement within a maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	30 0034 0177		3.7	
RF 130PA RF 230PA	30 0034 0466	Pipe Overpack	3.7	Metal can as innermost layer of confinement within 2 plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 130PAF RF 230PAF	30 0034 0543	Pipe Overpack	1.9	Metal can as innermost layer of confinement within 2 plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	30 0034 0517		3.7	
RF 130Q RF 230Q	30 0185 0638	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	30 0185 0612		3.7	
	30 0185 0687	SWB Overpack	1.9	
	30 0185 0662		3.7	
RF 130R RF 230R	30 0185 0141	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a hydrogen diffusivity of 3.7 x 10^{-6} mol/s/mol fraction
	30 0185 0115		3.7	
	30 0185 0190	SWB Overpack	1.9	
	30 0185 0164		3.7	
RF 130RF RF 230RF	30 0185 0166	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0185 0141		3.7	
	30 0185 0216	SWB Overpack	1.9	
	30 0185 0190		3.7	
RF 130S RF 230S	30 0185 0844	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0185 0819		3.7	
	30 0185 0894	SWB Overpack	1.9	
	30 0185 0868		3.7	
RF 130SF RF 230SF	30 0185 0870	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0185 0844		3.7	
	30 0185 0919	SWB Overpack	1.9	
	30 0185 0894		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 130T RF 230T	30 0185 0034	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag
RF 130U RF 230U	30 0185 0817	Drum	1.9	Maximum of 5 plastic bag layers, one of which is a liner bag
	30 0185 0792		3.7	
	30 0185 0867	SWB Overpack	1.9	
	30 0185 0841		3.7	
RF 130V RF 230V	30 0185 0150	Drum	1.9	Maximum of 5 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	30 0185 0124		3.7	
	30 0185 0199	SWB Overpack	1.9	
	30 0185 0174		3.7	
RF 130VF RF 230VF	30 0185 0176	Drum	1.9	Maximum of 5 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container
	30 0185 0150		3.7	
	30 0185 0225	SWB Overpack	1.9	
	30 0185 0199		3.7	
RF 130W RF 230W	30 0185 0114	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a filtered liner bag
	30 0185 0088		3.7	
	30 0185 0163	SWB Overpack	1.9	
	30 0185 0137		3.7	
RF 131A RF 231A	20 0170 0480	Drum	1.9	Maximum of 4 plastic bag layers, two of which are liner bags
	20 0170 0455		3.7	
	20 0170 0530	SWB Overpack	1.9	
	20 0170 0504		3.7	
	20 0170 0031	SWB	3.7	Maximum of 1 plastic bag layer, which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 131B RF 231B	20 0000 0000	Drum	1.9	Metal can as innermost layer of confinement
	20 0000 0000		3.7	
	20 0000 0000	SWB Overpack	1.9	
	20 0000 0000		3.7	
RF 131D RF 231D	20 0000 0000	Pipe Overpack	1.9	Metal can as innermost layer of confinement in a pipe overpack
	20 0000 0000		3.7	
RF 131E RF 231E	20 0170 0131	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	20 0170 0106		3.7	
	20 0170 0181	SWB Overpack	1.9	
	20 0170 0155		3.7	
	20 0170 0070	SWB	3.7	
RF 131F RF 231F	20 0170 0092	Drum	1.9	Maximum of 2 filtered plastic bag layers, both of which are liner bags
	20 0170 0067		3.7	
	20 0170 0142	SWB Overpack	1.9	
	20 0170 0116		3.7	
	20 0170 0024	SWB	3.7	Maximum of 1 filtered plastic bag layer, which is a liner bag
RF 131H RF 231H	20 0170 0211	SWB	3.7	Maximum of 2 plastic bag layers, one of which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 131I RF 231I	20 0170 0104	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag
	20 0170 0079		3.7	
	20 0170 0154	SWB Overpack	1.9	
	20 0170 0128		3.7	
	20 0170 0043	SWB	3.7	
RF 131K RF 231K	20 0170 0052	SWB	3.7	Maximum of 4 filtered plastic bag layers, one of which is a liner bag
RF 131N RF 231N	20 0170 0459	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	20 0170 0433		3.7	
	20 0170 0508	SWB Overpack	1.9	
	20 0170 0482		3.7	
	20 0170 0390	SWB	3.7	
RF 131T RF 231T	20 0170 0034	SWB	3.7	Maximum of 2 filtered plastic bag layers, one of which is a liner bag
RF 132A RF 232A	10 0130 0142	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	10 0130 0107		3.7	
	10 0130 0212	SWB Overpack	1.9	
	10 0130 0177		3.7	
RF 132D RF 232D	10 0130 0127	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, in a pipe overpack with a pipe component fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] ($x 10^{-6}$)	Layers of Confinement
RF 132J RF 232J	10 0130 0209	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 2 filtered metal cans, each of which is fitted with a filter with a minimum hydrogen diffusivity value of $3.7 x 10^{-6}$ mol/s/mol fraction
RF 132J RF 232J	10 0130 0174	Drum	3.7	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 2 filtered metal cans, each of which is fitted with a filter with a minimum hydrogen diffusivity value of $3.7 x 10^{-6}$ mol/s/mol fraction
RF 132J RF 232J	10 0130 0279	SWB Overpack	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 2 filtered metal cans, each of which is fitted with a filter with a minimum hydrogen diffusivity value of $3.7 x 10^{-6}$ mol/s/mol fraction
RF 132J RF 232J	10 0130 0244	SWB Overpack	3.7	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 2 filtered metal cans, each of which is fitted with a filter with a minimum hydrogen diffusivity value of $3.7 x 10^{-6}$ mol/s/mol fraction
RF 132K RF 232K	10 0130 0185	Drum	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of $3.7 x 10^{-6}$ mol/s/mol fraction
RF 132K RF 232K	10 0130 0149	Drum	3.7	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of $3.7 x 10^{-6}$ mol/s/mol fraction
RF 132K RF 232K	10 0130 0255	SWB Overpack	1.9	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of $3.7 x 10^{-6}$ mol/s/mol fraction
RF 132K RF 232K	10 0130 0219	SWB Overpack	3.7	Maximum of 4 filtered plastic bag layers, one of which is a liner bag, and 1 filtered container fitted with a filter with a minimum hydrogen diffusivity value of $3.7 x 10^{-6}$ mol/s/mol fraction
RF 132O RF 232O	10 0130 0064	Drum	3.7	No layers of confinement
RF 132O RF 232O	10 0130 0134	SWB Overpack	3.7	No layers of confinement
RF 132OA RF 232OA	10 0130 0062	Drum	3.7	No layers of confinement and no rigid liner lid
RF 132OA RF 232OA	10 0130 0132	SWB Overpack	3.7	No layers of confinement and no rigid liner lid
RF 132P RF 232P	10 0130 0103	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags punctured with a minimum 0.3-inch diameter hole
RF 132P RF 232P	10 0130 0068	Drum	3.7	Maximum of 2 plastic bag layers, both of which are liner bags punctured with a minimum 0.3-inch diameter hole
RF 132P RF 232P	10 0130 0173	SWB Overpack	1.9	Maximum of 2 plastic bag layers, both of which are liner bags punctured with a minimum 0.3-inch diameter hole
RF 132P RF 232P	10 0130 0138	SWB Overpack	3.7	Maximum of 2 plastic bag layers, both of which are liner bags punctured with a minimum 0.3-inch diameter hole
RF 132Q RF 232Q	10 0130 0121	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag
RF 132Q RF 232Q	10 0130 0085	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag
RF 132Q RF 232Q	10 0130 0191	SWB Overpack	1.9	Maximum of 1 plastic bag layer, which is a liner bag
RF 132Q RF 232Q	10 0130 0155	SWB Overpack	3.7	Maximum of 1 plastic bag layer, which is a liner bag

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2B (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CLOSE-PROXIMITY SHIPMENTS (20-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 132QA RF 232QA	10 0130 0119	Drum	1.9	Maximum of 1 plastic bag layer, which is a liner bag, and no rigid liner lid
	10 0130 0083		3.7	
	10 0130 0189	SWB Overpack	1.9	
	10 0130 0153		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2C
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CONTROLLED SHIPMENTS (10-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] ($x 10^{-6}$)	Layers of Confinement
ID 112B ID 212B	40 9999 0108	Drum	1.9	Maximum of 2 plastic bag layers, both of which are drum liner bags. No rigid liner. If overpacking 55-gallon drums, the SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0082		3.7	
	40 9999 0061		18.5	
	40 9999 0056		92.5	
	40 9999 0133	SWB Overpack	1.9	
	40 9999 0107		3.7	
	40 9999 0085		18.5	
	40 9999 0081		92.5	
	40 9999 0059	SWB	3.7	
	40 9999 0052		3.7 (4 filters)	
ID 112C ID 212C	40 9999 0131	Drum	1.9	Maximum of 3 plastic bag layers, all of which are liner bags. The SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0106		3.7	
	40 9999 0084		18.5	
	40 9999 0080		92.5	
	40 9999 0156	SWB Overpack	1.9	
	40 9999 0130		3.7	
	40 9999 0109		18.5	
	40 9999 0104		92.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2C (Continued)
SUMMARY OF APPROVED CONTENT CODES AND CORRESPONDING SHIPPING CATEGORIES FOR CONTROLLED SHIPMENTS (10-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 112D ID 212D	40 9999 0129	Drum	1.9	Maximum of 3 plastic bag layers, all of which are drum liner bags. No rigid liner. If overpacking 55-gallon drums, the SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0104		3.7	
	40 9999 0082		18.5	
	40 9999 0078		92.5	
	40 9999 0154	SWB Overpack	1.9	
	40 9999 0128		3.7	
	40 9999 0107		18.5	
	40 9999 0102		92.5	
	40 9999 0081	SWB	3.7	
	40 9999 0074		3.7 (4 filters)	
ID 112E ID 212E	40 9999 0088	Drum	1.9	Maximum of 1 plastic bag layer, which is a drum liner bag. The SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0063		3.7	
	40 9999 0041		18.5	
	40 9999 0037		92.5	
	40 9999 0113	SWB Overpack	1.9	
	40 9999 0087		3.7	
	40 9999 0066		18.5	
	40 9999 0062		92.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2C (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CONTROLLED SHIPMENTS (10-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 112F ID 212F	40 9999 0086	Drum	1.9	Maximum of 1 plastic bag layer, which is a drum liner bag. No rigid liner. If overpacking 55-gallon drums, the SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0061		3.7	
	40 9999 0039		18.5	
	40 9999 0035		92.5	
	40 9999 0111	SWB Overpack	1.9	
	40 9999 0086		3.7	
	40 9999 0064		18.5	
	40 9999 0060		92.5	
	40 9999 0038	SWB	3.7	
	40 9999 0031		3.7 (4 filters)	
ID 112G ID 212G	40 9999 0067	Drum	1.9	No layers of confinement. The SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0041		3.7	
	40 9999 0020		18.5	
	40 9999 0015		92.5	
	40 9999 0092	SWB Overpack	1.9	
	40 9999 0066		3.7	
	40 9999 0044		18.5	
	40 9999 0040		92.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2C (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CONTROLLED SHIPMENTS (10-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
ID 112H ID 212H	40 9999 0065	Drum	1.9	No layers of confinement. No rigid liner. If overpacking 55-gallon drums, the SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0039		3.7	
	40 9999 0018		18.5	
	40 9999 0014		92.5	
	40 9999 0090	SWB Overpack	1.9	
	40 9999 0064		3.7	
	40 9999 0042		18.5	
	40 9999 0038		92.5	
	40 9999 0016	SWB	3.7	
	40 9999 0010		3.7 (4 filters)	
ID 112K ID 212K	40 9999 0110	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags. The SWB is filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
	40 9999 0084		3.7	
	40 9999 0063		18.5	
	40 9999 0058		92.5	
	40 9999 0135	SWB Overpack	1.9	
	40 9999 0109		3.7	
	40 9999 0087		18.5	
	40 9999 0083		92.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2C (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CONTROLLED SHIPMENTS (10-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
LL 116C LL 216C	30 0340 0780	Drum	3.7	Maximum of 5 plastic bag layers, one of which is a liner bag
	30 0340 0831	SWB Overpack		
LL 116D LL 216D	30 0340 0061	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag. Rigid liner with no lid.
	30 0340 0113	SWB Overpack		
LL 116E LL 216E	30 0340 0778	Drum	3.7	Maximum of 5 plastic bag layers, one of which is a liner bag. No rigid liner.
	30 0340 0829	SWB Overpack		
LL 116F LL 216F	30 0340 0039	Drum	3.7	No layers of confinement. Rigid liner with no lid.
	30 0340 0091	SWB Overpack		
LL 116G LL 216G	30 0340 0778	Drum	3.7	Maximum of 5 plastic bag layers, one of which is a liner bag. Rigid liner with no lid.
	30 0340 0829	SWB Overpack		

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2C (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CONTROLLED SHIPMENTS (10-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
NT 125A NT 225A	30 0340 0626	Drum	1.9	Maximum of 4 plastic bag layers, one of which is a liner bag
	30 0340 0600		3.7	
	30 0340 0678	SWB Overpack	1.9	
	30 0340 0652		3.7	
NT 125B NT 225B	30 0340 0088	Drum	1.9	Maximum of 1 plastic bag layers, which is a liner bag
	30 0340 0063		3.7	
	30 0340 0140	SWB Overpack	1.9	
	30 0340 0115		3.7	
NT 125C NT 225C	30 0340 0039	Drum	3.7	No layers of confinement. Rigid liner with no lid.
	30 0340 0091	SWB Overpack	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2C (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CONTROLLED SHIPMENTS (10-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 112A RF 212A	40 9999 0110	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	40 9999 0084		3.7	
	40 9999 0162	SWB Overpack	1.9	
	40 9999 0136		3.7	
RF 112B RF 212B	40 9999 0447	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag, and one metal can that is closed with a slip-top lid
	40 9999 0421		3.7	
	40 9999 0499	SWB Overpack	1.9	
	40 9999 0473		3.7	
RF 112D RF 212D	40 9999 0114	Pipe Overpack	3.7	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack. Both the filtered metal can and the pipe component are fitted with a filter having a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction.
RF 112DF RF 212DF	40 9999 0191	Pipe Overpack	1.9	Maximum of 2 filtered plastic bag layers, both of which are inner bags, and 1 filtered metal can in a pipe overpack
	40 9999 0165		3.7	
RF 112J RF 212J	40 9999 0119	Drum	1.9	Maximum of 3 filtered plastic bag layers, one of which is a liner bag, and 1 filtered metal can fitted with a filter with a minimum hydrogen diffusivity value of 3.7 x 10^{-6} mol/s/mol fraction
	40 9999 0094		3.7	
	40 9999 0171	SWB Overpack	1.9	
	40 9999 0145		3.7	
RF 112N RF 212N	40 9999 0447	Drum	1.9	Maximum of 3 plastic bag layers, one of which is a liner bag
	40 9999 0421		3.7	
	40 9999 0499	SWB Overpack	1.9	
	40 9999 0473		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2C (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CONTROLLED SHIPMENTS (10-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 112O RF 212O	40 9999 0041	Drum	3.7	No layers of confinement
	40 9999 0020		18.5	
	40 9999 0015		92.5	
	40 9999 0093	SWB Overpack	3.7	
	40 9999 0071		18.5	
	40 9999 0067		92.5	
RF 112OA RF 212OA	40 9999 0039	Drum	3.7	No layers of confinement and no rigid liner lid
	40 9999 0018		18.5	
	40 9999 0014		92.5	
	40 9999 0091	SWB Overpack	3.7	
	40 9999 0069		18.5	
	40 9999 0065		92.5	
RF 112P RF 212P	40 9999 0045	Drum	3.7	Maximum of 2 plastic bag layers, both of which are liner bags, which are punctured with a minimum 0.3-inch hole
	40 9999 0024		18.5	
	40 9999 0019		92.5	
	40 9999 0097	SWB Overpack	3.7	
	40 9999 0075		18.5	
	40 9999 0071		92.5	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

**TABLE 2C (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CONTROLLED SHIPMENTS (10-DAY SHIPPING PERIOD)**

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 112PA RF 212PA	40 9999 0043	Drum	3.7	Maximum of 2 plastic bag layers, both of which are liner bags, which are punctured with a minimum 0.3-inch hole and no rigid liner lid
	40 9999 0022		18.5	
	40 9999 0017		92.5	
	40 9999 0095	SWB Overpack	3.7	
	40 9999 0073		18.5	
	40 9999 0069		92.5	
RF 112Q RF 212Q	40 9999 0063	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag
	40 9999 0041		18.5	
	40 9999 0037		92.5	
	40 9999 0115	SWB Overpack	3.7	
	40 9999 0093		18.5	
	40 9999 0089		92.5	
RF 112QA RF 212QA	40 9999 0061	Drum	3.7	Maximum of 1 plastic bag layer, which is a liner bag, and no rigid liner lid
	40 9999 0039		18.5	
	40 9999 0035		92.5	
	40 9999 0113	SWB Overpack	3.7	
	40 9999 0091		18.5	
	40 9999 0087		92.5	
RF 113A RF 213A	40 9999 0110	Drum	1.9	Maximum of 2 plastic bag layers, both of which are liner bags
	40 9999 0084		3.7	
	40 9999 0162	SWB Overpack	1.9	
	40 9999 0136		3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 2C (Continued)
SUMMARY OF APPROVED CONTENT CODES
AND CORRESPONDING SHIPPING CATEGORIES
FOR CONTROLLED SHIPMENTS (10-DAY SHIPPING PERIOD)

Content Code	Shipping Category	Payload Container	Filter Hydrogen Diffusivity [a] (x 10^{-6})	Layers of Confinement
RF 113O RF 213O	40 9999 0041	Drum	3.7	No layers of confinement
	40 9999 0093	SWB Overpack	3.7	
RF 113OA RF 213OA	40 9999 0039	Drum	3.7	No layers of confinement and no rigid liner lid
	40 9999 0091	SWB Overpack	3.7	

[a] Minimum hydrogen diffusivity value of the filter on the primary payload container in mole/second/mole fraction (mol/s/mol fraction). Note: For the pipe overpack packaging configuration, the hydrogen diffusivity value is specified for the filter on the secondary payload container (i.e., 55-gallon drum) in mol/s/mol fraction.

TABLE 3
WASTE GENERATOR/SHIPPER SITE IDENTIFICATION CODES

SITE NAME	Site Identifier Code
Argonne National Laboratory - East (ANL-E)	AE
Argonne National Laboratory - West (ANL-W)	AW
Idaho National Engineering and Environmental Laboratory (INEEL)	ID
Los Alamos National Laboratory (LANL)	LA
Lawrence Livermore National Laboratory (LLNL)	LL
Mound Laboratory (MOUND)	MD
Nevada Test Site (NTS)	NT
Oak Ridge National Laboratory (ORNL)	OR
Rocky Flats Environmental Technology Site (RFETS)	RF
Richland Hanford (RH)	RH
Sandia National Laboratories/California (SNL/CA)	SL
Small Quantity (SQ)	SQ
Savannah River Site (SRS)	SR

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TABLE 4
CONTENT CODES FOR CH-TRU WASTE

WASTE TYPE	CONTENT CODE(S)[a,b]	DESCRIPTION
I	111/211	TRU Solidified Aqueous or Homogeneous Inorganic Solids: Cemented or dewatered sludge precipitated from aqueous waste treatment processes. Soils that are not contaminated with organic chemicals are classified as homogeneous solids.
IV	112/212	TRU Solidified Organics: Cemented or absorbed organic liquids from production or laboratory processes.
IV	113/213	TRU Solidified Laboratory Waste: Cemented or absorbed neutralized aqueous laboratory waste (contains organic acids, etc.).
I	114/214	TRU Solidified Inorganic Process Solids: Cemented inorganic particulate or sludge-like (not chemically precipitated) wastes from plutonium recovery operations.
II	115/215	TRU Graphite Waste: Discarded graphite molds, laboratory equipment, and furnace equipment (whole or pieces) from plutonium casting or laboratory operations.
III	116/216	TRU Combustible Waste: Cellulosic, plastic, or cloth waste from various processes.
II	117/217	TRU Metal Waste: Discarded metal (i.e., tantalum, aluminum, stainless steel) from production or maintenance operations.
II	118/218	TRU Glass Waste: Discarded labware, windows, containers, or Raschig rings from various processes.
III	119/219	TRU Filter Waste: High-efficiency particulate air (HEPA) filters or processed filter media from filter change operations. (Most filters or the housings for filters are made of organic material.)
II	120/220	TRU Isotopic Source Waste.
III	121/221	TRU Organic Solid Waste: Solid organic waste such as methyl methacrylate (Plexiglas) and Benelex.
II	122/222	TRU Inorganic Solid Waste: Solid inorganic waste such as insulation, firebrick, and concrete.
III	123/223	TRU Leaded Rubber: Discarded leaded glovebox gloves and leaded aprons.
II	124/224	TRU Pyrochemical Salt Waste: Used chloride salts from pyrochemical processes such as electrorefining, molten salt extraction, or direct oxide reduction.
III	125/225	TRU Combustible and Noncombustible Waste: Mixture of paper, plastic, metal, and glass waste.
III	126/226	TRU Cemented Organic Process Solids: Cemented organic particulate, sludge-like (not chemically precipitated) waste or resins.

TABLE 4 (Continued)
CONTENT CODES FOR CH-TRU WASTE

WASTE TYPE	CONTENT CODE(S)[a,b]	DESCRIPTION
III	127/227	TRU Combined Solid Organics, Solid Inorganics, and Solidified Inorganics: Cellulosic, plastic, or cloth waste from various processes, discarded graphite, nonpyrophoric waste metals, glass and ceramic waste, and spent chloride salts, combined with cemented or dewatered sludge precipitated from aqueous waste treatment process.
II	128/228	Combined Solidified Inorganics and Solid Inorganics: Discarded graphite pieces, metal, glass, firebrick, concrete, and pyrochemical salt waste from various processes, combined with aqueous effluent and particulate and sludge-type wastes that have been solidified with Portland cement.
IV	129/229	Combined Solidified Organics: Cemented or absorbed organic liquids from production or laboratory processes combined with cemented or absorbed neutralized aqueous laboratory waste (containing organic acid, etc.).
III	130/230	Solid Inorganic with Residual Organic Waste.
II	131/231	Solid Inorganic Waste with Greater than Trace Quantities of Beryllium: Solid inorganic waste (e.g., graphite waste, metal, glass, pyrochemical salt waste, insulation, firebrick, and concrete) that contains beryllium in greater than trace amounts.
I	132/232	TRU Solidified Aqueous or Homogeneous Inorganic Solids with Greater than Trace Quantities of Beryllium: Cemented or dewatered sludge precipitated from aqueous waste treatment processes that contains beryllium in greater than trace amounts.
III	133/233	TRU Combustible and Noncombustible Waste with Greater than Trace Quantities of Beryllium: Solid organic waste (e.g., paper, plastic, metal, and glass waste) that contains beryllium in greater than trace amounts.

[a] 1XX = Waste generated under a formal certification program, as specified in the CH-TRAMPAC.
2XX = Waste generated prior to site implementation of a formal certification program, as specified in the CH-TRAMPAC.

[b] High-wattage CH-TRU wastes described by Appendix 6.12, Use of TRUPACT-II for the Shipment of High-Wattage CH-TRU Waste, of the CH-TRU Payload Appendices are not assigned to content codes described in the CH-TRUCON document. The payload containers and packaging configurations governed by Appendix 6.12 of the CH-TRU Payload Appendices are described by Content Codes LA 154 and SQ 154, which are provided in Section 6.12.10 of Appendix 6.12 of the CH-TRU Payload Appendices.

TABLE 5
NUMERIC/ALPHA-NUMERIC SHIPPING CATEGORY NOTATION CROSS CORRELATION

Numeric Payload Shipping Category[a]	Alpha-Numeric Payload Shipping Category[b]
10 0040 34	I.3C0
10 0040 147	I.3A0
10 0040 168	I.3A1
10 0040 190	I.3A2
10 0040 207	I.3B0
10 0040 229	I.3B1
10 0040 250	I.3B2
10 0040 648	I.3A3
10 0040 709	I.3B3
10 0040 888	I.3A4
10 0040 949	I.3B4
10 0130 34	I.2C0
10 0130 147	I.2A0
10 0130 168	I.2A1
10 0130 190	I.2A2
10 0130 207	I.2B0
10 0130 229	I.2B1
10 0130 250	I.2B2
10 0130 648	I.2A3
10 0130 709	I.2B3
10 0130 888	I.2A4
10 0130 949	I.2B4
10 0160 34	I.1C0
10 0160 59	I.1C2
10 0160 147	I.1A0
10 0160 168	I.1A1
10 0160 190	I.1A2
10 0160 207	I.1B0
10 0160 229	I.1B1
10 0160 250	I.1B2
10 0160 286	I.1C2b

[a] Payload shipping category notation initiated in June 1999.
[b] Payload shipping category notation used through June 1999.

TABLE 5 (Continued)
NUMERIC/ALPHA-NUMERIC SHIPPING CATEGORY NOTATION CROSS CORRELATION

Numeric Payload Shipping Category[a]	Alpha-Numeric Payload Shipping Category[b]
10 0160 648	I.1A3
10 0160 709	I.1B3
20 0000 0	II.2AM
20 0000 0	II.2BM
20 0000 0	II.2CM
20 0000 0	II.2E0
20 0170 28	II.1C0
20 0170 34	II.1C1f
20 0170 39	II.1C2f
20 0170 41	II.1C1
20 0170 43	II.1C2bf
20 0170 49	II.1C3f
20 0170 53	II.1C2
20 0170 67	II.1D2
20 0170 127	II.1A0
20 0170 133	II.1A1f
20 0170 140	II.1A2af
20 0170 143	II.1A2f
20 0170 148	II.1A1
20 0170 152	II.1A3f
20 0170 166	II.1B0
20 0170 169	II.1A2a
20 0170 188	II.1B1
20 0170 209	II.1B2a
20 0170 220	II.1C2b
20 0170 233	II.1C3
20 0170 327	II.1A2
20 0170 367	II.1B2
20 0170 412	II.1C4
20 0170 506	II.1A3
20 0170 546	II.1B3

[a] Payload shipping category notation initiated in June 1999.
[b] Payload shipping category notation used through June 1999.

TABLE 5 (Continued)
NUMERIC/ALPHA-NUMERIC SHIPPING CATEGORY NOTATION CROSS CORRELATION

Numeric Payload Shipping Category[a]	Alpha-Numeric Payload Shipping Category[b]
20 0170 686	II.1A4
20 0170 725	II.1B4
20 0170 865	II.1A5
20 0170 905	II.1B5
20 0170 1044	II.1A6
20 0170 1084	II.1B6
30 0340 28	III.1C0
30 0340 34	III.1C1f
30 0340 39	III.1C2f
30 0340 41	III.1C1
30 0340 43	III.1C2bf
30 0340 49	III.1C3f
30 0340 53	III.1C2
30 0340 67	III.1D2
30 0340 127	III.1A0
30 0340 133	III.1A1f
30 0340 140	III.1A2af
30 0340 143	III.1A2f
30 0340 148	III.1A1
30 0340 152	III.1A3f
30 0340 166	III.1B0
30 0340 169	III.1A2a
30 0340 188	III.1B1
30 0340 209	III.1B2a
30 0340 220	III.1C2b
30 0340 233	III.1C3
30 0340 327	III.1A2
30 0340 367	III.1B2
30 0340 412	III.1C4
30 0340 506	III.1A3
30 0340 546	III.1B3
30 0340 686	III.1A4

[a] Payload shipping category notation initiated in June 1999.
[b] Payload shipping category notation used through June 1999.

TABLE 5 (Continued)
NUMERIC/ALPHA-NUMERIC SHIPPING CATEGORY NOTATION CROSS CORRELATION

Numeric Payload Shipping Category[a]	Alpha-Numeric Payload Shipping Category[b]
30 0340 725	III.1B4
30 0340 865	III.1A5
30 0340 905	III.1B5
30 0340 1044	III.1A6
30 0340 1084	III.1B6
40 9999 148	IV.1A1T
40 9999 169	IV.1A2T
40 9999 188	IV.1B1T
40 9999 209	IV.1B2T
40 9999 506	IV.1A3T
40 9999 546	IV.1B3T

[a] Payload shipping category notation initiated in June 1999.
[b] Payload shipping category notation used through June 1999.

TABLE 6
ALPHA-NUMERIC/NUMERIC SHIPPING CATEGORY NOTATION CROSS CORRELATION

Alpha-Numeric Payload Shipping Category[a]	Numeric Payload Shipping Category[b]
I.1A0	10 0160 147
I.1A1	10 0160 168
I.1A2	10 0160 190
I.1A3	10 0160 648
I.2A0	10 0130 147
I.2A1	10 0130 168
I.2A2	10 0130 190
I.2A3	10 0130 648
I.2A4	10 0130 888
I.3A0	10 0040 147
I.3A1	10 0040 168
I.3A2	10 0040 190
I.3A3	10 0040 648
I.3A4	10 0040 888
II.1A0	20 0170 127
II.1A1	20 0170 148
II.1A1f	20 0170 133
II.1A2	20 0170 327
II.1A2a	20 0170 169
II.1A2f	20 0170 143
II.1A2af	20 0170 140
II.1A3	20 0170 506
II.1A3f	20 0170 152
II.1A4	20 0170 686
II.1A5	20 0170 865
II.1A6	20 0170 1044
II.2AM	20 0000 0
III.1A0	30 0340 127
III.1A1	30 0340 148

[a] Payload shipping category notation used through June 1999.
[b] Payload shipping category notation initiated in June 1999.

TABLE 6 (Continued)
ALPHA-NUMERIC/NUMERIC SHIPPING CATEGORY NOTATION CROSS CORRELATION

Alpha-Numeric Payload Shipping Category[a]	Numeric Payload Shipping Category[b]
III.1A1f	30 0340 133
III.1A2	30 0340 327
III.1A2a	30 0340 169
III.1A2f	30 0340 143
III.1A2af	30 0340 140
III.1A3	30 0340 506
III.1A3f	30 0340 152
III.1A4	30 0340 686
III.1A5	30 0340 865
III.1A6	30 0340 1044
IV.1A1T	40 9999 148
IV.1A2T	40 9999 169
IV.1A3T	40 9999 506
I.1B0	10 0160 207
I.1B1	10 0160 229
I.1B2	10 0160 250
I.1B3	10 0160 709
I.2B0	10 0130 207
I.2B1	10 0130 229
I.2B2	10 0130 250
I.2B3	10 0130 709
I.2B4	10 0130 949
I.3B0	10 0040 207
I.3B1	10 0040 229
I.3B2	10 0040 250
I.3B3	10 0040 709
I.3B4	10 0040 949
II.1B0	20 0170 166

[a] Payload shipping category notation used through June 1999.
[b] Payload shipping category notation initiated in June 1999.

TABLE 6 (Continued)
ALPHA-NUMERIC/NUMERIC SHIPPING CATEGORY NOTATION CROSS CORRELATION

Alpha-Numeric Payload Shipping Category[a]	Numeric Payload Shipping Category[b]
II.1B1	20 0170 188
II.1B2	20 0170 367
II.1B2a	20 0170 209
II.1B3	20 0170 546
II.1B4	20 0170 725
II.1B5	20 0170 905
II.1B6	20 0170 1084
II.2BM	20 0000 0
III.1B0	30 0340 166
III.1B1	30 0340 188
III.1B2	30 0340 367
III.1B2a	30 0340 209
III.1B3	30 0340 546
III.1B4	30 0340 725
III.1B5	30 0340 905
III.1B6	30 0340 1084
IV.1B1T	40 9999 188
IV.1B2T	40 9999 209
IV.1B3T	40 9999 546
I.1C0	10 0160 34
I.1C2	10 0160 59
I.1C2b	10 0160 286
I.2C0	10 0130 34
I.3C0	10 0040 34
II.1C0	20 0170 28
II.1C1	20 0170 41
II.1C1f	20 0170 34
II.1C2	20 0170 53

[a] Payload shipping category notation used through June 1999.
[b] Payload shipping category notation initiated in June 1999.

TABLE 6 (Continued)
ALPHA-NUMERIC/NUMERIC SHIPPING CATEGORY NOTATION CROSS CORRELATION

Alpha-Numeric Payload Shipping Category[a]	Numeric Payload Shipping Category[b]
II.1C2b	20 0170 220
II.1C2f	20 0170 39
II.1C2bf	20 0170 43
II.1C3	20 0170 233
II.1C3f	20 0170 49
II.1C4	20 0170 412
II.2CM	20 0000 0
III.1C0	30 0340 28
III.1C1	30 0340 41
III.1C1f	30 0340 34
III.1C2	30 0340 53
III.1C2b	30 0340 220
III.1C2f	30 0340 39
III.1C2bf	30 0340 43
III.1C3	30 0340 233
III.1C3f	30 0340 49
III.1C4	30 0340 412
II.1D2	20 0170 67
III.1D2	30 0340 67
II.2E0	20 0000 0

[a] Payload shipping category notation used through June 1999.
[b] Payload shipping category notation initiated in June 1999.

TABLE 7
TERMINOLOGY AND NOTATION

85-Gallon Drum Overpack:	55-gallon drum overpacked in an 85-gallon drum.
Assay:	The observation of spontaneous or stimulated nuclear radiations, interpreted to estimate the content of one or more radionuclides in a material.
Bin:	A box with a rectangular configuration. The bin is fitted with at least two filters and overpacked in a standard waste box (SWB).
Bin Overpack:	A bin overpacked in an SWB.
CH-TRAMPAC:	Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC) is the governing document for shipments in the TRUPACT-II and HalfPACT packagings.
CH-TRUCON:	CH-TRU Waste Content Codes (CH-TRUCON) is the document developed to show wastes characterized and grouped together for controlling the payload in accordance with the CH-TRAMPAC.
Chemical Compatibility:	Assessing the properties of all potential chemicals in a payload container (>1 weight percent), there must be no adverse safety or health hazards produced as a result of any mixtures that could occur.
Combustible Materials:	Organic materials that are dominantly cellulosic (e.g., cotton, paper, cloth, wood, etc.), but also includes plastics.
Compressed Gas:	Compressed gases are those materials defined as such by Title 49, Code of Federal Regulations (CFR), Part 173.
Contact-Handled TRU (CH-TRU) Waste:	Transuranic waste with a surface radiation dose rate not greater than 200 millirem/hour.
Content Code:	A uniform system applied to waste forms to group those with similar characteristics for purposes of shipment. Content code is not to be confused with Item Description Code (IDC).
Corrosive Materials:	Corrosive materials are those defined as such by 40 CFR 261.
Decay Heat:	Heat produced by radioactive emissions that are absorbed in the surrounding material.
Explosive Materials:	Explosive materials are those defined as such by 49 CFR 173.
Filter Vent:	A filter vent is defined as filter media manufactured of carbon composite, Kevlar, stainless steel, or any material that enables the filter to meet the minimum performance specifications stipulated in the CH-TRAMPAC.
Free Liquid:	Liquid that is not sorbed on or in a host material such that it could spill or drain from its container.

TABLE 7 (Continued)
TERMINOLOGY AND NOTATION

G Value:	The number of molecules of gas species produced per 100 electron volts of decay energy absorbed by the waste.
Glovebox:	A sealed box with windows and rubber gloves attached to ports such that an operator's hands and arms are protected as he works inside the box.
Hydrogen Diffusivity:	In this document, used to distinguish between different payload container filters authorized for use as indicated in the CH-TRAMPAC. Within the scope of approved payload container filters, as defined in the CH-TRAMPAC, the possible use of filters with different hydrogen diffusivity values results in different possible shipping category assignments for payload containers with otherwise identical packaging configurations.
Immobilized Materials:	Materials that are fixed in a matrix such as glass, ceramic, cement, concrete, etc.
Item Description Code (IDC):	A site-specific numerical code applied to individual waste forms (including source if applicable) to provide identification which is used for physical segregation and computerized record keeping and tracking.
NaI Drum Counter:	Assay performed on drums using sodium iodide crystals as the measurement device in the detector.
Nondestructive Assay:	Assay methods for waste items that do not affect the physical or chemical form of the material.
Nondestructive Examination:	Methods that allow examination of items without affecting the chemical or physical forms of these items. An example is radiography, which provides visible evidence of the contents of payload containers.
Oil-Dri:	A trade name for an absorbent material, typically made of clay.
Overpack:	An enclosure that is used to provide protection or convenience in handling of a package.
Passive-Active Neutron (PAN) Counter:	A device that measures the radiations that occur spontaneously or naturally (passive) and those that are induced by external irradiation (active) and compares the results of both measurements.
Payload Containers:	Containers meeting the requirements in the CH-TRAMPAC.
Pipe Component:	A stainless steel container used for packaging specific waste forms within a 55-gallon drum. The pipe component is exclusively used as part of the pipe overpack.
Pipe Overpack:	A pipe component overpacked in a 55-gallon drum, as specified in the CH-TRAMPAC.

TABLE 7 (Continued)
TERMINOLOGY AND NOTATION

Polyethylene Liners:	Rigid drum liners molded from high-density polyethylene, typically with a wall thickness of about 0.09 inches (90 mils). The liner may have a snap-on cover of the same material.
Pressurized Vessels (Containers):	Smaller containers in the payload container such as aerosol cans, which may hold compressed gas.
Pu-239 Fissile Gram Equivalent:	The unit of measure for subcriticality mass limits. The Pu-239 fissile gram equivalent mass is determined by multiplying the mass of each isotope with the isotope's FGE conversion factor and summing the results. The Pu-239 FGE conversion factor is defined as the ratio of the subcritical mass limit of Pu-239 to that of the subject fissile isotope, where the subcritical mass limits are determined as provided in ANSI/ANS-8.1-1998 and ANSI/ANS-8.15-1981.
Pyrophoric Materials:	Pyrophoric materials are defined as those that may ignite spontaneously under the ambient conditions.
Radiochemical Assay:	Assay performed with wet samples in a radiochemical laboratory using separation techniques.
Segmented Gamma Scanner (SGS):	An assay device.
Shipping Category:	A shipping category is defined by the following parameters: • Chemical composition of the waste (waste type) • Gas generation potential (G value of the waste material type) • Gas release resistance (type of payload container and type and maximum number of confinement layers used in a packaging configuration of a payload container). The numeric notation used to describe a shipping category provides a correlation on a per payload container basis to the gas generation potential of the contents and the resistance to gas release of the packaging configuration. The shipping category notation is a ten-digit code: XX YYYY ZZZZ where, XX = The waste type, which indicates the chemical composition of the waste YYYY = The G value, or gas generation potential, of the waste material type multiplied by 10^2 ZZZZ = The resistance to hydrogen release of the packaging configuration multiplied by 10^{-4}.

TABLE 7 (Continued)
TERMINOLOGY AND NOTATION

	For example, the shipping category assignment for a 55-gallon drum containing solid inorganic waste packaged within two filtered, plastic liner bag layers is: 20 0170 0140 The alpha-numeric shipping category notation was based on the same parameters as the numeric notation, but conveyed the information through a different set of denotations. The alpha-numeric shipping category notation was based on the waste type, the payload container type, and the type and number of confinement layers within a payload container. X.XYZzz where, X.X = The waste material type (which corresponds to a G value) Y = The type of payload container Z = The number of confinement layers zz = The type of confinement layers For example, the shipping category assignment for a 55-gallon drum containing solid inorganic waste packaged within two filtered, plastic liner bag layers is: II.1A2af Tables 5 and 6 correlate the numeric shipping category notations to equivalent alpha-numeric notations. The CH-TRAMPAC details the shipping category classification system.
Small Quantity (SQ):	Approximately 20 to 30 sites across the country storing from one to a few hundred drums of TRU waste, as well as small waste streams from larger sites. Shipments of small quantities of waste may demonstrate compliance with the CH-TRAMPAC requirements through the use of a waste-specific data package as described in the CH-TRAMPAC.
Standard Waste Box (SWB):	A box with ends designed specifically to fit the packaging.
SWB Overpack:	A 55-gallon drum overpacked in an SWB.
Ten-Drum Overpack (TDOP):	A cylindrical payload container that fits within the inner containment vessel of the TRUPACT-II. Due to its size, the TDOP is not an authorized payload container for the HalfPACT.
Transuranic (TRU) Waste:	TRU waste is defined as defense waste contaminated with certain alpha-emitting radionuclides in concentrations greater than 100 nanocuries per gram of waste.

TABLE 7 (Continued)
TERMINOLOGY AND NOTATION

Twist and Tape:	A method of bag closure for waste consisting of gathering the neck of the bag, twisting tightly, and wrapping tightly with tape, wire, or other material. Often called "horsetail."
Ultrasonic Measurements:	A nondestructive, metal-thickness-gauging device that uses ultrasonic signal reflection measurements. It is used to verify minimum drum wall thickness in locations judged most likely to be corroded if any corrosion is present inside the drum.
Waste Acceptance Criteria (WAC):	Criteria developed for the safe disposal of TRU waste in the WIPP, meeting the long-term disposal requirements of the WIPP.
Waste Certification:	Activities associated with waste processing and records required to certify that the waste meets the WIPP WAC.
Waste Material Type:	Further divisions of Waste Types based on flammable gas generation potential (G values).
Waste Type:	Waste type refers to physical types of waste such as solidified inorganics, solid inorganics, solidified organics, and solid organics.
Waste Packaging:	The process of filling a payload container with waste and remaining within the controls applied to layers of confinement.

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TABLE 8
ACRONYM LIST

°C	Degrees Celsius
ALARA	As low as reasonably achievable
ANL-E	Argonne National Laboratory-East
ANL-W	Argonne National Laboratory-West
APT	Advanced Processing Technology
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CH-TRAMPAC	Contact-Handled Transuranic Waste Authorized Methods for Payload Control (document)
CH-TRU	Contact-handled transuranic (waste)
CH-TRUCON	CH-TRU Waste Content Codes (document)
CWS	Chemical Warfare Service (filter)
DDW	Decontamination and decommissioning waste
DOE	U. S. Department of Energy
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
HDPE	High-density polyethylene
HEPA	High-efficiency particulate air (filter)
IDC	Item description code
in^2	square inch(es)
INEEL	Idaho National Engineering and Environmental Laboratory
ISAM	Isotope Separation and Advanced Manufacturing
keV	Kiloelectron volt(s)
LANL	Los Alamos National Laboratory
lb/ft^3	pound(s) per cubic foot
LLNL	Lawrence Livermore National Laboratory
mol/s/mol fraction	mole(s) per second per mole fraction
MOUND	Mound Laboratory
MSA	Mine Safety Appliance
N	Normality
NaI	Sodium iodine
NTS	Nevada Test Site
ORNL	Oak Ridge National Laboratory
PAN	Passive-active neutron (counter)
PFP	Plutonium Finishing Plant
PHP	Plasma hearth process
psia	Pounds per square inch absolute
PUREX	Plutonium-Uranium Extraction
PVC	Polyvinyl chloride
QA	Quality assurance

TABLE 8 (Continued)
ACRONYM LIST

RCRA	Resource Conservation and Recovery Act
RFETS	Rocky Flats Environmental Technology Site
RGW	Research generated waste
RH	Richland Hanford
RMWC	Radioactive Mixed Waste Complex
RTR	Real-time radiography
SAR	Safety Analysis Report
SED	Separations Equipment Development
SGS	Segmented Gamma Scan
SIS	Special isotope separation
SNL/CA	Sandia National Laboratories/California
SQ	Small quantity
SRS	Savannah River Site
SS	Special source
SS&C	Sand, slag, and crucible
SWB	Standard waste box
SWEPP	Stored Waste Examination Pilot Plant
TA	Technical Area
TDOP	Ten-drum overpack
torr	Torrent(s)
TRU	Transuranic
TRUPACT-II	Transuranic Package Transporter-II
WAC	Waste Acceptance Criteria
WIPP	Waste Isolation Pilot Plant

CONTENT CODE: AE 111, AE 211 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Aqueous Waste

GENERATING SITE: Argonne National Laboratory - East (ANL-E)

WASTE DESCRIPTION: The waste is nonflammable aqueous waste that may contain various organic materials as a trace component (<1%) from research activities and decontamination and decommissioning activities.

GENERATING SOURCES: The waste is generated at various locations at ANL-E.

WASTE FORM: Absorbed/solidified liquids are derived from research activities, decontamination and decommissioning activities, and maintenance or repair activities. Liquids are sorbed and/or solidified using inorganic solidification and/or sorption media (e.g., Aquaset products, cement, vermiculite, etc.). The product is visually inspected for the presence of free liquid after an appropriate set time, and additional sorbent is added, if required, before the liner cover is installed.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
AE 111A AE 211A	Absorbed/solidified liquids are packaged inside a DOT Type A or UN 1A2 55-gallon drum with a rigid plastic drum liner. The cover of the rigid liner has a 0.75-inch minimum diameter hole. The drum is vented using at least one (1) HEPA filter. The drums and liners are inspected before waste is placed in them. If the drum is overpacked in an SWB, no closed liner bags are used in the SWB.
AE 111C AE 211C	Absorbed/solidified liquids are packaged inside a DOT Type A or UN 1A2 55-gallon drum with a twist-and-tape plastic drum liner bag and possibly a rigid plastic drum liner. The cover of the rigid liner has a 0.75-inch minimum diameter hole. The drum is vented using at least one (1) HEPA filter. The drums are inspected before waste is placed in them. If the drum is overpacked in an SWB, no closed liner bags are used in the SWB.

ASSAY: The 55-gallon drums or SWBs are assayed by the mobile service vendor as part of the certification for calculating Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error).

FREE LIQUIDS: The containers will also be examined using RTR to check for the presence of free liquids.

EXPLOSIVES/COMPRESSED GASES: No explosives or compressed gases have been identified in this waste stream and none are foreseen in the future.

PYROPHORICS: No pyrophorics have been identified in this waste stream, and none are foreseen in the future.

CORROSIVES: The pH of the liquids is adjusted to between 4 and 10 before they are solidified.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a filter, and the rigid drum liner has a 0.75-inch minimum diameter hole (0.44 in.^{2}). Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: AE 116, AE 216 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Combustible Waste

GENERATING SITE: Argonne National Laboratory - East (ANL-E)

WASTE DESCRIPTION: Solid combustible waste is derived from research activities performed at the laboratory. The waste includes soft plastics, cardboard, rags, paper, cloth, concrete, and laboratory apparatus from various processes.

GENERATING SOURCES: The waste is generated at various locations at ANL-E.

WASTE FORM: Solid combustible and some noncombustible waste is produced by two sources: research generation and decontamination and decommissioning activities. Research-generated waste (RGW) is produced as a by-product from research activities performed in a laboratory environment on a routine basis. Decontamination and decommissioning wastes (DDW) are derived from decontamination and disposal of facilities and ancillary systems (e.g., gloveboxes).

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
AE 116A AE 216A	Waste is placed directly in a can or other rigid container. Can or container lids are closed with a "crimped" or "friction" seal, but the seals are not air-tight. Cans or containers are then placed in a 55-gallon drum lined with a rigid drum liner or are placed directly in an SWB or a TDOP. The waste may also be placed directly in a 55-gallon drum lined with a rigid drum liner, possibly with a lid, in an SWB, or in a TDOP. There are no layers of confinement.
AE 116B AE 216B	Waste is placed directly in a filtered inner bag and then may be placed in a can or other rigid container. Can or container lids are closed with a "crimped" or "friction" seal, but the seals are not air-tight. Packaged waste is then placed in a 55-gallon drum lined with a rigid drum liner, or is placed directly in an SWB or a TDOP. Waste may also be placed directly in a filtered inner bag and then placed in a 55-gallon drum, possibly lined with a rigid drum liner, possibly with a lid, in an SWB, or in a TDOP.
AE 116C AE 216C	Waste is placed directly in an inner bag closed by the twist-and-tape, fold-and-tape, or vented heat-sealed method and then may be placed in a can or other rigid container. Can or container lids are closed with a "crimped" or "friction" seal, but the seals are not air-tight. Packaged waste is then placed in a 55-gallon drum, possibly lined with a rigid drum liner, possibly with a lid, or placed directly in an SWB or a TDOP. Waste may also be placed directly in an inner bag closed by the twist-and-tape, fold-and-tape, or vented heat-sealed method and then placed in a 55-gallon drum lined with a rigid drum liner or placed directly in an SWB or a TDOP.
AE 116D AE 216D	All waste is placed in a 55-gallon drum lined with a twist-and-tape or fold-and-tape plastic liner bag and possibly a rigid drum liner, possibly with a lid, or is placed in an SWB or a TDOP lined with a fold-and-tape or filtered plastic liner bag.
AE 116E AE 216E	All waste is placed in a 55-gallon drum lined with a twist-and-tape, fold-and-tape, or a filtered plastic liner bag and possibly a rigid drum liner, possibly with a lid, or is placed in an SWB or a TDOP lined with a filtered plastic liner bag.

Code	Description*
AE 116F AE 216F	All waste is placed in a 55-gallon drum lined with a twist-and-tape, fold-and-tape, or a filtered plastic liner bag, maximum 1 plastic inner bag closed with a twist-and-tape, fold-and-tape, or a vent filter, and possibly a rigid drum liner, possibly with a lid.
AE 116G AE 216G	All waste is placed in a 55-gallon drum lined with a twist-and-tape, fold-and-tape, and/or a filtered plastic liner bag, maximum 2 plastic inner bags closed with a twist-and-tape, fold-and-tape, or a vent filter, and possibly a rigid drum liner, possibly with a lid.
AE 116H AE 216H	All waste is placed in a 55-gallon drum lined with a twist-and-tape, fold-and-tape, and/or a filtered plastic liner bag, maximum 3 plastic inner bags closed with a twist-and-tape, fold-and-tape, or a vent filter, and possibly a rigid drum liner, possibly with a lid.
AE 116I AE 216I	All waste is placed in a 55-gallon drum lined with a twist-and-tape, fold-and-tape, and/or a filtered plastic liner bag, maximum 4 plastic inner bags closed with a twist-and-tape, fold-and-tape, or a vent filter, and possibly a rigid drum liner, possibly with a lid.
AE 116J AE 216J	All waste is placed in a 55-gallon drum lined with a twist-and-tape, fold-and-tape, and/or a filtered plastic liner bag, maximum 5 plastic inner bags closed with a twist-and-tape, fold-and-tape, or a vent filter, and possibly a rigid drum liner, possibly with a lid.

*If drums are overpacked in an SWB, no closed liner bags are used in the SWB. All drums and rigid drum liners are inspected by the Quality Assurance coordinator before they are acceptable for use.

ASSAY: Radionuclide assay may be performed using a segmented gamma scanner (SGS), active-passive neutron (APNEA), and/or the WIT system. The results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error) for each waste package.

The SGS with a density compensator that compensates for the material of the receptacle is routinely checked for accuracy by the nondestructive assay operator who uses sources of U-235 and Pu-239 of known quantities. Accountability records for isotopic distribution in known mixtures of radionuclides are used in conjunction with SGS to calculate isotopic composition.

The APNEA system is designed to measure both the fissile and the spontaneous emitting isotopes in transuranic waste. The isotopic composition must be furnished by gamma-ray spectroscopy. The spontaneous emitting isotope mass is measured by counting the coincident neutrons occurring in helium-3 detectors. The system is calibrated using working reference sources traceable to the New Brunswick Laboratory standards. The fissile isotope mass is measured by actively injecting ten microsecond pulses of 10^5 - 10^6 neutrons per burst into the waste containing chamber every ten milliseconds. The helium-3 detectors register excess neutrons in the waste from the fissioning from the injected neutrons. The active and passive measurements complement each other and together allow the requirements for the measurement of the TRU waste alpha activity to be assayed for every waste drum in a stream.

The NDA Waste Inspection Technology (WIT) has six high-purity germanium (HPGe) detectors. This system uses the principles of computed tomography (CT) to acquire data in both active (A) and passive (P) CT mode. The active or ACT mode uses six HPGe detectors to map the attenuation characteristics of a waste drum's matrix by recording the attenuation of six 152Eu sources located opposite the six HPGe detectors. For this measurement, six shutters are opened to permit a 'mapping' of the attenuation as a function of both gamma-ray energy and geometric position within a drum. The passive or PCT mode records the gamma-ray emissions from radioactive sources located within a waste drum in a CT manner. The PCT measurement determines the location and attenuation strength of all detectable sources within a drum. The actual source strength for all detected sources is obtained by using the waste matrix attenuation ‘map’ obtained from ACT data to correct the PCT emissions data, e.g., the 413.7-keV Pu-239 gamma-ray.

FREE LIQUIDS: A Solid Radioactive Waste Disposal Requisition is used by the waste generator to document the waste in a filled receptacle. In addition to providing the radionuclides and estimates of each in the waste, the generator must also answer eight waste form questions with either "yes" or "no." The questions include whether or not the waste contains liquids in any form, pyrophoric materials, pressurized vessels, or corrosive materials. If "yes" is answered to any of these questions, the waste stream specialist is alerted that the waste must be reprocessed or it is not certifiable. The containers will also be examined using RTR and/or DR/CT to check for the presence of free liquids.

EXPLOSIVES/COMPRESSED GASES: All pressure vessels and aerosol cans will have the valve removed or will be punctured. As a part of the certification process, all containers undergo NDE and/or VE as verification to the acceptable knowledge to insure explosives/compressed gasses are not a part of the waste.

PYROPHORICS: Pyrophoric materials will be reacted and/or solidified using an inorganic solidification media (e.g., Plaster of Paris, etc.) to render them nonreactive.

CORROSIVES: Corrosive solids will be reacted and/or solidified using an inorganic solidification media (e.g., cement, Plaster of Paris, etc.) to render them nonreactive.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable chemicals for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a vent filter, and the rigid drum liner cover, if present, has a hole about 0.75-inch minimum diameter (0.44-in.^{2}). Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: AE 129, AE 229 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Combined Solidified Organics

GENERATING SITE: Argonne National Laboratory - East (ANL-E)

WASTE DESCRIPTION: The waste is solidified/sorbed neutralized aqueous waste and/or solidified/sorbed neutralized organic waste and/or mixtures of neutralized aqueous and organic waste. The waste may contain debris materials (metal, paper, plastic, cement, inorganic solids, etc.) from research activities and decontamination and decommissioning activities. The waste may be in containers or bags with twist-and-tape closure or in sealed containers or bags with volumes smaller than 4 liters.

GENERATING SOURCES: The waste is generated at various locations at ANL-E.

WASTE FORM: The waste is discrete solid items and/or containers, up to 55-gallon drums, of solidified/immobilized liquid waste. The liquid waste is solidified by mixing it with an inorganic solidification and/or sorption media (e.g., Aquaset products, cement, vermiculite, etc.).

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
AE 129A AE 229A	The waste is packaged inside a DOT Type A or UN 1A2 55-gallon drum with or without a rigid plastic liner. The cover of the drum liner, if present, has a 0.75-inch minimum diameter hole. No sealed plastic bags or sealed containers greater than 1 gallon are used. The waste also may be placed directly inside an SWB or a TDOP, neither of which contains a liner bag. The containers are inspected before waste is placed in them. If the drum is overpacked in an SWB, no closed liner bags are used in the SWB.
AE 129B AE 229B	The waste is packaged inside a twist-and-tape plastic inner bag and then placed in a DOT Type A or UN 1A2 55-gallon drum with or without a rigid plastic liner. The cover of the drum liner, if present, has a 0.75-inch minimum diameter hole. The waste also may be placed directly inside a twist-and-tape plastic inner bag and then placed in an SWB or a TDOP, neither of which contains a liner bag. The containers are inspected before waste is placed in them. If the drum is overpacked in an SWB, no closed liner bags are used in the SWB.

ASSAY: The 55-gallon drums, SWBs, or TDOPs are assayed using a passive/active neutron and gamma spectroscopy system for calculating Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error). This is supplemented by radiological characterization information provided by the waste generator.

FREE LIQUIDS: The debris items will be visually inspected to verify that there are no free liquids. Liquids are sorbed and/or solidified using inorganic solidification and/or sorption media (e.g., Aquaset products, cement, vermiculite, etc.) and visually verified to contain no free liquids. The solidified product is visually inspected for the presence of free liquid and additional sorbent is added, if required, before the liner cover is installed.

EXPLOSIVES/COMPRESSED GASES: All pressure vessels and aerosol cans will have the valve removed or will be punctured. A piece of metal will be placed through the opening in punctured containers to facilitate verification that the container is not sealed using RTR.

PYROPHORICS: Pyrophoric materials will be reacted and/or solidified using an inorganic solidification media (e.g., cement, Plaster of Paris, etc.) to render them nonreactive.

CORROSIVES: The pH of the liquids is adjusted to between 4 and 10 before they are solidified. Corrosive solids will be reacted and/or solidified using an inorganic solidification media (e.g., cement, Plaster of Paris, etc.) to render them nonreactive.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type IV.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid is fitted with a filter and the top of the rigid plastic drum liner has a 0.75-inch minimum diameter hole. Each SWB is fitted with at least two (2) and up to four (4) filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: AW 111, AW 211 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Solidified Aqueous or Homogeneous Inorganic Solids

STORAGE SITE: Argonne National Laboratory-West and Lockheed-Martin Idaho Radioactive Waste Management Complex; both located at the Idaho National Engineering and Environmental Laboratory.

GENERATING SITE: Argonne National Laboratory-West (ANL-W)

WASTE DESCRIPTION: This waste consists primarily of sample preparation and analysis expendables such as liquid acids and bases that are neutralized and then solidified. Other materials such as solidified scrubber liquid, solidified coolant liquid from sample coring operations, and solidified decontamination liquids may also be included. The radioactive constituents are dispersed in a relatively homogeneous matrix.

GENERATING SOURCES: The waste originates from Buildings 704, 720, 752, 765, 774, 775, 776, 785, and 787 at ANL-W.

WASTE FORM: The waste originates as a liquid stream, which is then neutralized to a pH of 5 to 9 and then solidified in polyethylene bottles or metal cans with Aquaset or Petroset-type products, or absorbed in diatomaceous earth.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
AW 111A AW 211A	Containers of solidified waste will be collected in a plastic bag inside a glovebox or other confinement, and the bag will be closed by twisting and taping or folding and taping. Each plastic bag of waste will then be bagged out of the glovebox or other confinement into the payload container liner bag. The liner bag will then be closed by twisting and taping. For drums, the liner bag may be placed on the inside or outside of a rigid, punctured HDPE drum liner, depending on which glovebox the waste comes from. Some filled, liner bags are placed in HDPE liners and some are placed directly into drums. Drums without liners will be overpacked in SWBs. For SWBs, bagged waste will be placed into an SWB liner bag which will be closed by folding and taping.

ASSAY: Waste contents and or packaging configurations will be assayed using passive gamma methods (SGS), nuclear material accountability information, and/or radiochemical analysis, where possible. The assay results of the input stream may be used to conservatively estimate the assay values for each payload container. The results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error) for each waste package.

FREE LIQUIDS: Packaging procedures will prohibit free liquids. Compliance to this criterion will be controlled by independent verification prior to closure.

EXPLOSIVES/COMPRESSED GASES: Packaging procedures will prohibit explosives and compressed gases. Compliance to this criterion will be controlled by independent verification prior to closure.

PYROPHORICS: Packaging procedures will prohibit pyrophorics. Compliance to this criterion will be controlled by independent verification prior to closure.

CORROSIVES: Packaging procedures will prohibit corrosives. Compliance to this criterion will be controlled by independent verification prior to closure.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: Rigid HDPE liners will be present in all drums that are not overpacked in an SWB. In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured with a hole at least 1/3 inch in diameter or be installed with an equivalent filter vent. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: AW 121, AW 221 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Organic Solid Waste

STORAGE SITE: Argonne National Laboratory-West and Lockheed-Martin Idaho Radioactive Waste Management Complex; both located at the Idaho National Engineering and Environmental Laboratory.

GENERATING SITE: Argonne National Laboratory-West (ANL-W)

WASTE DESCRIPTION: This waste consists primarily of surface-contaminated, solid organic materials such as plastics, paper, cloth, rubber gloves, and Lexan (from glovebox windows). It may also contain oil absorbed in Petroset-type materials and materials included in the solid inorganic content code (AW 122/AW 222) that are not segregated from the organic materials. These wastes are generated in various gloveboxes, hot cells, and other confinements at ANL-W during repackaging, characterizing, handling, sampling and/or analyzing of feed materials and/or process residuals, and during decontamination and modification of facilities.

GENERATING SOURCES: The waste originates from Buildings 704, 720, 752, 765, 774, 775, 776, 785, and 787 at ANL-W.

WASTE FORM: The waste form consists of solid organic materials such as plastics, paper, cloth, etc.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
AW 121A AW 221A	Waste will be collected in a plastic bag inside a glovebox or other confinement, and the bag will be closed by twisting and taping or folding and taping. Sharp items may be taped inside or outside of their first layer of plastic to prevent bag tearing. Each plastic bag of waste will then be bagged out of the glovebox or other confinement, into the payload container liner bag. The bag-out method will use heat-sealing to close the liner bags. All bags will contain at least one filter vent. For drums, the liner bag may be placed on the inside or outside of a rigid, punctured HDPE drum liner, depending on which glovebox the waste comes from. For SWBs, bagged waste will be placed into an SWB liner bag, which will be heat-sealed.
AW 121B AW 221B	Waste items generated in or transferred into a glovebox will be segregated, and bagged out of the glovebox or other confinement into the payload container liner bag. Sharp items may be taped to prevent bag tearing. The bag-out method will use heat-sealing to close the liner bag, which will contain at least one filter vent. For drums, the liner bag may be placed on the inside or outside of a rigid, punctured HDPE drum liner, depending on which glovebox the waste comes from. For SWBs, waste will be placed into an SWB liner bag, which will be heat-sealed and filtered with one filter vent.

Code	Description
AW 121C AW 221C	The waste is collected in a plastic bag inside a glovebox or other confinement, and the bag is closed by twisting and taping or folding and taping. Some items are placed in vented metal cans (1-30 gallon) instead of plastic bags. Sharp items may be taped inside or outside of their first layer of plastic to prevent bag tearing. Each plastic bag or metal can of waste is then bagged out of the glovebox or other confinement into the payload container liner bag, which is then closed by twisting and taping. This liner bag constitutes the second layer of confinement for the waste. For drums, the liner bag may be placed on the inside or outside of a rigid, punctured HDPE drum liner, depending on which glovebox the waste comes from. Some filled liner bags are placed directly into drums; the drums without liners will be overpacked in an SWB. For SWBs, bagged waste is placed into an SWB liner bag, which is closed by folding and taping.

ASSAY: Waste contents and or packaging configurations will be assayed using passive gamma methods (SGS), nuclear material accountability information, and/or radiochemical analysis, where possible. The assay results of the input stream may be used to conservatively estimate the assay values for each payload container. The results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error) for each waste package.

FREE LIQUIDS: Packaging procedures will prohibit free liquids. Compliance to this criterion will be controlled by independent verification prior to closure.

EXPLOSIVES/COMPRESSED GASES: Packaging procedures will prohibit explosives and compressed gases. Compliance to this criterion will be controlled by independent verification prior to closure.

PYROPHORICS: Packaging procedures will prohibit pyrophorics. Compliance to this criterion will be controlled by independent verification prior to closure.

CORROSIVES: Packaging procedures will prohibit corrosives. Compliance to this criterion will be controlled by independent verification prior to closure.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: Rigid HDPE liners will be present in all drums that are not overpacked in an SWB. In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured with a hole at least 1/3 inch in diameter or be installed with an equivalent filter vent. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: AW 122, AW 222 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Inorganic Solid Waste

STORAGE SITE: Argonne National Laboratory-West and Lockheed-Martin Idaho Radioactive Waste Management Complex; both located at the Idaho National Engineering and Environmental Laboratory

GENERATING SITE: Argonne National Laboratory-West (ANL-W)

WASTE DESCRIPTION: This waste consists of surface-contaminated (and for some constituents, like slag, homogeneously dispersed in the matrix) inorganic materials. The waste is primarily process residuals from the high-temperature PHP thermal treatment demonstration, consisting of glassy slag, metal, and refractory material. Other wastes in this content code may also include solid inorganic wastes generated during repackaging, characterizing, handling, sampling and/or analyzing of feed materials and/or process residuals from various facilities at ANL-W. Examples of this latter type include tools, inorganic filter components, metal and glass containers, and sample preparation expendables.

GENERATING SOURCES: The waste originates from Buildings 704, 720, 752, 765, 774, 775, 776, 785, and 787 at ANL-W.

WASTE FORM: The PHP process residuals consist primarily of slag (oxides of Si, Al, Fe, Ca, Na, K, Mg), refractory (oxides of Al, Si, Cr, Mg), and reduced metal alloys. Potential solid inorganic waste items in this content code, such as contaminated instruments like hot plates, balances, or thermocouple wires, come from other gloveboxes at ANL-W.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
AW 122A AW 222A	Waste will be packaged directly into metal cans, ranging in size from 1 quart up to 55 gallons. Metal cans 4 liters and larger in volume will be vented. The metal cans may be placed in plastic bags or be placed directly into the payload container. Drums will contain a punctured, rigid HDPE drum liner, unless they are overpacked into an SWB. If the pipe overpack is used, waste will be placed directly into the pipe component, and the pipe components will be overpacked into drums.
AW 122B AW 222B	The waste will be collected in a plastic bag that contains one filter inside a glovebox or other confinement, and the bag will be closed by twisting and taping or folding and taping. Sharp items may be taped inside or outside of their first layer of plastic to prevent bag tearing. Each plastic bag of waste will then be bagged out of the glovebox or other confinement into the payload container liner bag. The bag-out method will use heat-sealing to close the liner bags, which will contain at least one filter vent. This liner bag constitutes the second layer of confinement for the waste. For drums, the liner bag may be placed on the inside or outside of a rigid, punctured HDPE drum liner, depending on which glovebox the waste comes from. For SWBs, bagged waste will be placed into an SWB liner bag that will be heat-sealed and filtered with one filter vent.

Code	Description
AW 122C AW 222C	Waste items generated in or transferred into a glovebox will be segregated and bagged out of the glovebox or other confinement into the payload container liner bag. Sharp items may be taped to prevent bag tearing. The bag-out method will use heat-sealing to close the liner bag, which will contain at least one filter vent. This liner bag constitutes the single layer of confinement for the waste. For drums, the liner bag may be placed on the inside or outside of a rigid, punctured HDPE drum liner, depending on which glovebox the waste comes from. For SWBs, waste will be placed into an SWB liner bag that will be heat-sealed and filtered with one filter vent.
AW 122D AW 222D	The waste will be collected in a plastic bag inside a glovebox or other confinement, and the bag will be closed by twisting and taping or folding and taping. Sharp items may be taped inside or outside of their first layer of plastic to prevent bag tearing. Each plastic bag of waste will then be bagged out of the glovebox or other confinement into the payload container liner bag, which will then be closed by twisting and taping. Several small bags may be placed inside one liner bag. For drums, the liner bag may be placed on the inside or outside of a rigid, punctured HDPE drum liner, depending on which glovebox the waste comes from. For SWBs, bagged waste will be placed into an SWB liner bag that will be closed by folding and taping.

<u>ASSAY</u>: Waste contents and or packaging configurations will be assayed using passive gamma methods (SGS), nuclear material accountability information, and/or radiochemical analysis, where possible. The assay results of the input stream may be used to conservatively estimate the assay values for each payload container. The results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error) for each waste package.

<u>FREE LIQUIDS</u>: Packaging procedures will prohibit free liquids. Compliance to this criterion will be controlled by independent verification prior to closure.

<u>EXPLOSIVES/COMPRESSED GASES</u>: Packaging procedures will prohibit explosives and compressed gases. Compliance to this criterion will be controlled by independent verification prior to closure.

<u>PYROPHORICS</u>: Packaging procedures will prohibit pyrophorics. Compliance to this criterion will be controlled by independent verification prior to closure.

<u>CORROSIVES</u>: Packaging procedures will prohibit corrosives. Compliance to this criterion will be controlled by independent verification prior to closure.

<u>CHEMICAL COMPATIBILITY</u>: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types II.1 and II.2 in the CH-TRAMPAC.

<u>PAYLOAD CONTAINER VENTING AND ASPIRATION</u>: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

<u>ADDITIONAL CRITERIA</u>: Rigid HDPE liners will be present in all drums that are not overpacked into an SWB. In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured with a hole at least 1/3 inch in diameter or be installed with an equivalent filter vent. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: AW 125, AW 225 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Combustible and Noncombustible Wastes

STORAGE SITE: Argonne National Laboratory-West and Lockheed-Martin Idaho Radioactive Waste Management Complex; both located at the Idaho National Engineering and Environmental Laboratory.

GENERATING SITE: Argonne National Laboratory-West (ANL-W)

WASTE DESCRIPTION: This content code is a combination of the waste described in the ANL-W content codes AW 121C/221C (solid organics), AW 122/222 (inorganic solid waste), and AW 111A/211A (solidified aqueous or homogeneous inorganic solids), packaged together in the same payload container.

GENERATING SOURCES: The waste originates from Buildings 704, 720, 752, 765, 774, 775, 776, 785, and 787 at ANL-W.

WASTE FORM: This waste is a combination of waste forms in ANL-W content codes AW 121C/221C, AW 122/222, and AW 111A/211A.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
AW 125A AW 225A AW 125AF AW 225AF	The waste is collected in a glovebox bag-out sleeve or a plastic bag, closed by twisting and taping. Each waste sleeve or plastic bag is then placed in a filtered metal container. The waste package is then placed into a payload container liner bag inside the payload container. When full, the liner bag is closed by twisting and taping. (This liner bag constitutes the third layer of confinement for the waste.) Most filled liner bags are placed in HDPE liners, and a few are placed directly into drums. Drums without liners will be overpacked in an SWB.
AW 125B AW 225B	The waste is collected in a glovebox bag-out sleeve or a plastic bag, closed by twisting and taping. Each waste sleeve or plastic bag is then placed in a second plastic bag, twisted and taped. The waste package is then placed into a payload container liner bag inside the payload container. When full, the liner bag is closed by twisting and taping. (This liner bag constitutes the third layer of confinement for the waste.) Most filled liner bags are placed in HDPE liners, and a few are placed directly into drums. Drums without liners will be overpacked in an SWB.

ASSAY: Waste contents and or packaging configurations will be assayed using passive gamma methods (SGS), nuclear material accountability information, and/or radiochemical analysis, where possible. Assay results of the input stream may be used to conservatively estimate assay values for each payload container.

FREE LIQUIDS: Packaging procedures prohibit free liquids. Compliance to this criteria will be controlled by process knowledge, analyses, and/or visual verification.

EXPLOSIVES/COMPRESSED GASES: Packaging procedures prohibit explosives and compressed gases. Compliance to this criteria will be controlled by process knowledge, analyses, and/or visual verification.

PYROPHORICS: Packaging procedures prohibit pyrophorics. Compliance to this criteria will be controlled by process knowledge, analyses, and/or visual verification.

CORROSIVES: Packaging procedures prohibit corrosives. Compliance to this criteria will be controlled by process knowledge, analyses, and/or visual verification.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: Rigid HDPE liners will be present in all drums that are not overpacked in an SWB, and the liner will be punctured with a hole at least 1/3 inch in diameter or be installed with an equivalent filter vent. Each drum will be fitted with one filter, and each SWB will be fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: AW 127, AW 227 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Combined Solid Organics, Solid Inorganics, and Solidified Inorganics

STORAGE SITE: Argonne National Laboratory-West and Lockheed-Martin Idaho Radioactive Waste Management Complex; both located at the Idaho National Engineering and Environmental Laboratory.

GENERATING SITE: Argonne National Laboratory-West (ANL-W)

WASTE DESCRIPTION: This content code is a combination of the waste described in the ANL-W content codes AW 121C/221C (solid organics), AW 122/222 (inorganic solid waste), and AW 111A/211A (solidified aqueous or homogeneous inorganic solids), packaged together in the same payload container. These waste streams are generally packaged in glovebox cleanup campaigns.

GENERATING SOURCES: The waste originates from Buildings 704, 720, 752, 765, 774, 775, 776, 785, and 787 at ANL-W.

WASTE FORM: This waste is a combination of the waste forms in ANL-W content codes AW 121C/221C, AW 122/222, and AW 111A/211A.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
AW 127A AW 227A	The waste is collected in a plastic bag inside a glovebox or other confinement, and twisted and taped or folded and taped. Each plastic bag of waste is then bagged out of the glovebox or other confinement into the payload container liner bag. The liner bag is then closed by twisting and taping. This liner bag constitutes the second layer of confinement for the waste. Some filled, liner bags are placed in HDPE liners and some are placed directly into drums. Drums without liners will be overpacked in an SWB.

ASSAY: Waste contents and or packaging configurations will be assayed using passive gamma methods (SGS), nuclear material accountability information, and/or radiochemical analysis, where possible. The assay results of the input stream may be used to conservatively estimate the assay values for each payload container. The results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error) for each waste package.

FREE LIQUIDS: Packaging procedures prohibit free liquids. Compliance to this criterion will be controlled by process knowledge, analysis, and/or visual verification.

EXPLOSIVES/COMPRESSED GASES: Packaging procedures prohibit explosives and compressed gases. Compliance to this criterion will be controlled by process knowledge, analysis, and/or visual examination.

PYROPHORICS: Packaging procedures prohibit pyrophorics. Compliance to this criterion will be controlled by process knowledge, analysis, and/or visual verification.

CORROSIVES: Packaging procedures prohibit corrosives. Compliance to this criterion will be controlled by process knowledge, analysis, and/or visual verification.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: Rigid HDPE liners will be present in all drums that are not overpacked in an SWB. In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured with a hole at least 1/3 inch in diameter or be installed with an equivalent filter vent. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: ID 111, ID 211 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Aqueous Waste

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: For ID 111A/211A, this RFETS waste consists of aqueous effluent generated from Buildings 374 and 774 and other uranium and plutonium processing activities at RFETS. The wet sludge is mixed with approximately 30% volume Portland cement or with absorbents such as Oil-Dri to absorb any free liquid.

For all other ID 111/211 codes, this waste consists of absorbed or cemented aqueous sludges or liquids generated from uranium and plutonium processing and recovery activities at various sites. The waste material may include wastewater from Pu-238 processing areas that was treated to adjust pH level prior to absorption/ solidification. The waste has been mixed with cement or absorbent to eliminate any detected free liquids.

GENERATING SOURCES: The waste originated from uranium and plutonium processing activities at various sites.

WASTE FORM: For ID 111A/211A, sludges from chemical processing of aqueous wastes were produced by adjusting for pH level and adding a flocculating agent to precipitate radioactive elements such as plutonium and americium. The slurry was filtered to produce a wet sludge. Portland cement was added to ensure absorption of any free liquids. Sludge was removed from tanks that collected liquid effluent from floor drains or from laundry tanks and consisted of dirt, sand, gravel, floor sweepings, lint, spent detergents, and similar materials. The sludge was mixed with Portland cement and/or Aquaset to ensure absorption of any free liquids.

For all other ID 111/211 codes, the waste may include aqueous sludges produced from chemical processing to precipitate radioactive elements such as plutonium and americium. It may also include neutralized acidic and caustic liquids generated from plutonium and uranium processing activities. Portland cement or absorbents were added to ensure absorption of any free liquids. The waste may also include aqueous effluent sludge, fly-ash, or diatomite filter media. The waste may include wastewater that was neutralized with calcium chloride, amorphous carbon, and sodium hydroxide prior to solidification/absorption.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 111A ID 211A	The cemented sludge is placed in a 55-gallon drum which is lined with an HDPE liner, 14-mil PVC O-ring bag, and a 5-mil polyethylene bag. While the polyethylene bag is not required from a waste packaging standpoint, it aids in contamination control. Uncemented and second-stage sludge and wet sludge from Building 374 have all been packaged by adding the sludge to a prepared waste drum that contained Portland cement for absorption of liquid. In 1972, use of 90-mil polyethylene drum liners began. The drum liner was lined with two drum bags. Each drum bag and the liner contained a layer of Portland cement at the bottom. The inner drum bag was filled with sludge and taped shut. Another layer of cement was placed over the top of the sealed bag, and the second drum bag was taped shut over the top of that configuration. A layer of Oil-Dri was placed over the outer sealed bag, and the lid was placed on the 90-mil liner. Prior to use of the 90-mil liner, the same configuration was used without the liner. A layer of Portland cement was added to the bottom of the 55-gallon drum and Oil-Dri was usually not used over the top of the outer drum bag. Process sludge from Building 776 and laundry sludge was shoveled out of each tank and placed in a 55-gallon drum with a 90-mil liner and one or two drum bags. Portland cement was added to each drum and mixed into the sludge with a paddle. The bags were sealed, the lid was placed on the liner and the drum was sealed.
ID 111G ID 211G	Each 55-gallon drum is lined with a 90-mil rigid polyethylene liner. Plywood spacers (0.25- to 0.75-inch thick) may be placed between the rigid liner lid and the drum lid. The drum lid is then installed. The rigid liner lid is punctured with a minimum 0.3-inch hole or an equivalent filter.
ID 111H ID 211H	Each sealed plastic half-gallon bottle of waste is placed in a plastic bag, which is taped shut. Up to 45 of the bags are placed in a 55-gallon drum that is lined with a 90-mil liner and may also be lined with a liner bag. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 111I ID 211I	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and up to three drum liner bags (e.g., 14-mil PVC O-ring bag, and/or 5-mil polyethylene bag). Prior to 1972, the same configuration was used without the 90-mil liner. The SWB contains waste packaged in either drum liner bags or SWB liner bags. Drums are generated in an unvented condition. If needed, headspace gas sampling is performed at the time of venting or subsequent to venting.
ID 111J ID 211J	The waste is directly placed into a rigid liner (without a lid) that is enclosed within a drum liner bag. The liner bag and its contents are packaged inside of a 55-gallon drum lined with a 90-mil rigid polyethylene liner with no lid. The drums may be overpacked in an SWB for shipping.
ID 111K ID 211K	The waste is directly placed into a rigid liner (without a lid) that is enclosed within a liner bag. The liner bag is slit with a minimum 1-inch diameter hole so that there are no layers of confinement around the waste. The slit liner bag and its contents are packaged inside of a 55-gallon drum lined with a 90-mil rigid polyethylene liner with no lid. The drums may be overpacked in an SWB for shipping.
ID 111L ID 211L	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two drum liner bags (e.g., 14-mil PVC O-ring bag, and a 5-mil polyethylene bag). Prior to 1972, the same configuration was used without the 90-mil liner. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 111M ID 211M	The waste is packaged in plastic bags, 1-gallon metal paint cans, or 1 to 4 liter plastic bottles. The containers are double-bagged and placed into prepared 55-gallon drums lined with a 90-mil drum liner and up to two drum liner bags. Prior to 1972, the same configuration may have been used without the 90-mil liner.

Code	Description*
ID 111MA ID 211MA	The absorbed liquid is placed in a 55-gallon drum, which is lined with a 90-mil thick rigid polyethylene liner. In some cases, when small amounts of waste are disposed, the waste and absorbent are placed in 1-, 2-, or 4-liter plastic bottles, which are placed in a 5-gallon drum. The drum liner is lined with a polyethylene drum bag. After addition of the liquid waste and the time allowed for solidification, the drum bag is sealed with tape and the rigid drum liner lid installed. Plywood spacers (0.25- to 0.75-inch thick) are placed between the rigid liner lid and the drum lid before the drum lid is installed. The rigid liner lid is punctured with a minimum 0.3-inch hole or an equivalent filter.
ID 111N ID 211N	ID 111L/211L packaging configuration (up to four 55-gallon containers) packaged directly into an SWB or (up to ten 55-gallon containers) packaged directly into a TDOP.
ID 111P ID 211P	Waste is direct loaded into a 55-gallon drum, SWB, or TDOP with one liner bag. The rigid liner lid is punctured with a minimum 0.3-inch hole or an equivalent filter.
ID 111Q ID 211Q	The waste is placed in a 55-gallon drum with a rigid liner and up to two plastic drum liner bags. The 55-gallon drum is placed into an 85-gallon drum. The 85-gallon drum, 55-gallon drum, and rigid liner are vented with one long-stem filter (e.g., Model BNFLSM or BNFLLM or equivalent/higher diffusivity filter) with a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/s/mol fraction. Up to six 85-gallon drums are placed into a TDOP filtered with a minimum hydrogen diffusivity value of 166.5×10^{-6} mol/s/mol fraction.
ID 111R ID 211R	The waste is placed in up to three inner plastic bags. The bags are placed into a 1-gallon paint can. The can(s) are placed into a 55-gallon drum with up to two plastic liner bags and a 90-mil liner. The 55-gallon drum and rigid liner are vented with a filter and 0.3-inch minimum diameter hole, respectively. Alternatively, the 55-gallon drum and rigid liner are vented with one long-stem filter (e.g., Model BNFLSS or BNFLLS, or equivalent/higher diffusivity filter) with a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/s/mol fraction. If the 55-gallon drum and rigid liner are vented with a Model BNFLSS or BNFLLS filter, then the 55-gallon drum will be loaded into a TDOP or SWB for shipment. If drums are overpacked in an SWB, the SWB shall be filtered with a minimum total hydrogen diffusivity value of 14.8×10^{-6} mol/s/mol fraction.

* 1. If drums are overpacked in SWBs, TDOPs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB, TDOP, or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If drums have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB or TDOP is considered to be a direct loaded SWB or TDOP. No liner bags will be used in the SWB or TDOP.

ASSAY: Each container is assayed using approved assay method(s). These assay results remain valid if a drum is overpacked into an SWB. The total quantity and isotopic distribution of radioactive material contained in an SWB is calculated by appropriately summing the assay results for each of the drums packaged into the payload container. These assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error).

FREE LIQUIDS: TRU solidified aqueous waste is processed into a solid by adding Portland cement, diatomite, or other absorbents to aqueous waste or sludge in a controlled process per procedure. Absence of free liquids is verified by RTR or VE. Residual liquids (<1% volume) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. The waste is produced in a closed system, which precludes the introduction of extraneous materials such as pressure vessels or explosives. No explosives, explosive mixtures or compressed gases have been identified in this waste. No explosives or compressed gases have been identified by waste characterization. Absence of these materials is verified by RTR or VE.

PYROPHORICS: No pyrophoric materials have been identified in this content code. Pyrophorics are prohibited by waste packaging procedures. Absence of these materials is verified by RTR or VE. Nonradioactive pyrophoric materials have not been identified by characterization of the waste streams.

CORROSIVES: No corrosive materials have been identified in this waste. Precipitated sludges are chiefly hydroxides with a pH of 10 to 12. Using the criteria for corrosivity in 40 CFR 261, this sludge would not be a corrosive. No corrosive materials have been identified by waste characterization. Absence of corrosive materials is verified by the absence of free liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and/or unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured, equipped with an equivalent filter, or used without a lid. Each SWB is fitted with at least two and up to four filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: ID 112, ID 212 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Organics

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: This waste consists of various organic liquids (oil, solvents, degreaser, coolants, etc.) that are cemented (e.g., mixed with gypsum cement such as Envirostone) and packaged. The organic setups consist of liquid organic wastes, such as 1,1,1-trichloroethane, oils, carbon tetrachloride, trichloroethylene, tetrachloroethylene, etc., that have been mixed with calcium silicate to form a grease or paste-like material. Small amounts of Oil-Dri may be added to the waste. The waste may be commingled with small quantities of interstitial soil and/or traces of other buried waste materials.

GENERATING SOURCE: Waste generated from various plutonium and nonplutonium areas at RFETS and other sites.

WASTE FORM: The organics and cement are mixed together within a 55-gallon drum prepared as described below. The oil/solvent mixtures may contain machining oil, lathe coolant, carbon tetrachloride, 1,1,1-trichloroethane, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene, tetrachloroethylene, and some containers may contain trace concentrations of organic laboratory waste such as organophosphates, nitrobenzene, etc. The waste laboratory solvents contain chloroform or a mix of chloroform and xylene. Some of the degreasing solvents are contaminated with trace concentrations (<1% by weight) beryllium.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 112B ID 212B	The waste is placed in a 55-gallon drum without a 90-mil liner, and up to two liner bags. The drum lid may be fitted with up to two filters. The SWB contains 55-gallon drums with the drum lids removed. If drums are overpacked in an SWB, the SWB shall be filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
ID 112C ID 212C	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and up to three liner bags. The drum lid may be fitted with up to two filters. If drums are overpacked in an SWB, the SWB shall be filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction. Drums are generated in an unvented condition. If needed, headspace gas sampling is performed at the time of venting or subsequent to venting.
ID 112D ID 212D	The waste is placed in a 55-gallon drum without a 90-mil liner and up to three liner bags. The drum lid may be fitted with up to two filters. The SWB contains 55-gallon drums with the drum lids removed. If drums are overpacked in an SWB, the SWB shall be filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction. Drums are generated in an unvented condition. If needed, headspace gas sampling is performed at the time of venting or subsequent to venting.
ID 112E ID 212E	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and one liner bag. The drum lid may be fitted with up to two filters. If drums are overpacked in an SWB, the SWB shall be filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.

Code	Description*
ID 112F ID 212F	The waste is placed in a 55-gallon drum without a 90-mil liner and one liner bag. The drum lid may be fitted with up to two filters. The SWB contains 55-gallon drums with the drum lids removed. If drums are overpacked in an SWB, the SWB shall be filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
ID 112G ID 212G	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and zero bag layers. The drum lid may be fitted with up to two filters. If liner bags were present, all liner bags have been slit with a minimum of one 1-inch diameter hole. If drums are overpacked in an SWB, the SWB shall be filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
ID 112H ID 212H	The waste is placed in a 55-gallon drum without a 90-mil liner and zero bag layers. The drum lid may be fitted with up to two filters. If bags were present, all bags have been slit with a minimum of one 1-inch diameter hole. The SWB contains 55-gallon drums with the drum lids removed. If drums are overpacked in an SWB, the SWB shall be filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.
ID 112I ID 212I	The waste is directly placed into a rigid liner (without a lid) that is enclosed within a liner bag. The liner bag and its contents are packaged inside of a 55-gallon drum equipped with a filter vent. The drums may be overpacked in an SWB for shipping.
ID 112J ID 212J	The waste is directly placed into a rigid liner (without a lid) that is enclosed within a liner bag. The liner bag is slit with a minimum 1-inch diameter hole so that there are no layers of confinement around the waste. The slit liner bag and its contents are packaged inside of a 55-gallon drum equipped with a filter vent. The drums may be overpacked in an SWB for shipping.
ID 112K ID 212K	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags. The drum lid may be fitted with up to two filters. If drums are overpacked in an SWB, the SWB shall be filtered with a minimum total hydrogen diffusivity value of 14.8 x 10^{-6} mol/s/mol fraction.

*1. If drums are overpacked in SWBs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If drums have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.

ASSAY: Each container is assayed using approved assay method(s). These assay results remain valid if a drum is overpacked into an SWB. The total quantity and isotopic distribution of radioactive material contained in an SWB is calculated by appropriately summing the assay results for each of the drums packaged into the payload container. These results then are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error)

FREE LIQUIDS: TRU solidified organic waste is cast into a solid by mixing gypsum cement or other solidification material with the organic waste in a controlled process per procedure. Waste certification inspection of process parameters ensures that operational controls produce a solid cast. The RTR or VE ensures that free liquids have not developed after the waste package was closed. Waste may have been damp when packaged; therefore, Oil-Dri was added to some containers to absorb any free liquid. Absence of free liquids is verified by RTR or VE. Residual liquids (<1% volume) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. No explosives, explosive mixtures, or compressed gases have been identified in this waste. The RTR or VE ensures the absence of these materials.

PYROPHORICS: No pyrophoric materials have been identified in this content code. Pyrophorics are prohibited by waste packaging procedures. Absence of pyrophoric materials is verified by RTR or VE.

CORROSIVES: No corrosive materials have been identified in this waste. Absence of corrosive materials is verified by the absence of free liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type IV.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters. Each waste container is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: ID 113, ID 213 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Laboratory Waste

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: Aqueous laboratory wastes that are not compatible (e.g., strong acids or bases) with the primary aqueous treatment system are neutralized and solidified. The final waste form is obtained by mixing cement (e.g., Portland and magnesia) with the waste. The waste consists of solidified liquid waste containing complexing chemicals, such as chelating agents, that are absorbed in a cement mixture. All liquid is made basic before adding it to the cement mixture.

GENERATING SOURCES: Solidified laboratory waste was generated by various operations in plutonium recovery.

WASTE FORM: The liquid waste is accumulated. The waste is adjusted to be slightly basic and added to the premixed cement (e.g., Portland and magnesia) mixture in the drum. The waste consists of solidified liquids that contain plutonium complexing chemicals such as alcohols, organic acids, and chelating agents such as EDTA (ethylenediaminetetraacetic acid).

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 113A ID 213A	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two bags (e.g., a 14-mil PVC O-ring bag and a 5-mil polyethylene bag). The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 113B ID 213B	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and up to three bags (e.g., 14-mil PVC O-ring bags and/or 5-mil polyethylene bags). The SWB contains waste packaged in either drum liner bags or SWB liner bags. Drums are generated in an unvented condition. If needed, headspace gas sampling is performed at the time of venting or subsequent to venting.
ID 113C ID 213C	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and zero bag layers. The drum lid may be fitted with up to two filters. If liner bags were present, all liner bags have been slit with a minimum of one 1-inch diameter hole. If drums are overpacked in an SWB, the SWB shall be filtered with a minimum total hydrogen diffusivity value of 14.8×10^{-6} mol/s/mol fraction.

* 1. If drums are overpacked in SWBs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If drums have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.

ASSAY: Each container is assayed using approved assay method(s). These assay results remain valid if a drum is overpacked into an SWB. The total quantity and isotopic distribution of radioactive material contained in an SWB is calculated by appropriately summing the assay results for each of the drums packaged into the payload container. These results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

FREE LIQUIDS: TRU solidified laboratory waste is cast into a solid by mixing Portland and magnesia cement with the neutralized laboratory waste in a controlled process per procedure. Waste certification inspection of process parameters ensures that operational controls produce a solid cast. Absence of free liquids is verified by RTR or VE. Residual liquids (<1% by volume) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. No explosives, explosive mixtures or compressed gases have been identified in this waste. The RTR or VE ensures the absence of these materials.

PYROPHORICS: No pyrophoric materials have been identified in this content code. Pyrophorics are prohibited by waste packaging procedures. Absence of these materials is verified by RTR or VE.

CORROSIVES: No corrosives are included in this content code. The pH of the liquid waste is adjusted to be slightly basic prior to solidification. The basic liquid wastes (pH < 12.5) are reacted with cement and immobilized. Absence of corrosive materials is verified by the absence of free liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type IV.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: ID 114, ID 214 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Solidified Inorganic Process Solids

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: All particulate wastes that are generated and containerized during plutonium recovery operations are solidified with Portland cement. The resultant waste is designated inorganic cemented process solids. The waste may contain miscellaneous tramp metal, bits of unburned feed material, and carbon from the incomplete oxidation of feed material during incineration. Examples of the wastes are filter sludge, incinerator sludge, soot, grit, and firebrick fines.

GENERATING SOURCES: The waste originates from various sites.

WASTE FORM: The waste consists of incinerator ash and sludge, soot, sand, slag, and crucible heels, immobilized into a solid monolith by mixing in 1-gallon molds with a Portland cement mixture. The cement mixture used varies by procedure with the type of waste being cemented.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
ID 114A ID 214A	The waste is double-bagged and then placed into a 55-gallon drum lined with up to two drum bags, which are twisted and taped closed. If drums are overpacked in SWBs or 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. All bag closures are in accordance with the CH-TRAMPAC. If drums have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.
ID 114B ID 214B	The waste is double-bagged and then placed into a 55-gallon drum lined with up to three drum liner bags, which are twisted and taped closed. If drums are overpacked in SWBs or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. All bag closures are in accordance with the CH-TRAMPAC. If drums have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.
ID 114C ID 214C	The 55-gallon drum has a dual lid (inner and outer) configuration without a rigid liner. After the drum is filled, a filter vented inner lid is snapped into place. The packaging configuration does not include any plastic layers of confinement. Filters placed on both the inner and outer lids have a hydrogen diffusivity value greater than or equal to 3.7×10^{-6} moles/second/mole fraction. Drums may be overpacked into an SWB or a TDOP if any nonconformance in packaging cannot be corrected. No sealed liner bags will be used with drums overpacked in an SWB or a TDOP.

Code	Description
ID 114E ID 214E	The waste is placed in up to 2 inner plastic bags. The inner bags are placed in a 55-gallon drum with a rigid liner and up to 2 plastic drum liner bags. The 55-gallon drum is placed into an 85-gallon drum. The 85-gallon drum, 55-gallon drum, and rigid liner are vented with one long-stem filter (such as Model BNFLSM or BNFLLM, or equivalent/higher diffusivity filter) with a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/s/mol fraction. Up to six 85-gallon drums are placed into a TDOP filtered with a minimum hydrogen diffusivity value of 166.5×10^{-6} mol/s/mol fraction.

ASSAY: Each container is assayed using approved assay method(s). These assay results remain valid if a drum is overpacked into an SWB. The total quantity and isotopic distribution of radioactive material contained in an SWB is calculated by appropriately summing the assay results for each of the drums packaged into the payload container. These results are then used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

FREE LIQUIDS: The waste is inspected prior to packaging to ensure that no free liquids are present. The absence of free liquids is verified by RTR or VE. Residual liquids (<1% volume) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. Explosives and compressed gases are prohibited by waste packaging procedures. The RTR or VE ensures the absence of these materials.

PYROPHORICS: Pyrophorics would be rendered innocuous by the solidified cement matrix. Pyrophorics are prohibited by waste packaging procedures. Absence of these materials is verified by RTR or VE.

CORROSIVES: No corrosive materials have been identified in this waste. Corrosive materials are prohibited by waste packaging procedures. Absence of corrosive materials is verified by the absence of free liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.3 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: ID 115, ID 215 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Graphite Waste

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: Discarded graphite from plutonium casting and laboratory operations, plutonium foundry operations, recovery processes, and analytical procedures.

GENERATING SOURCES: Waste originated from plutonium areas at various sites. Limited amounts of graphite waste were also generated by research and development projects.

WASTE FORM: Graphite waste consists of broken graphite molds, graphite furnace equipment, graphite chunks and pieces from mold cleaning and declassification, and graphite spacers and liners used in high-temperature furnaces and ovens. Discarded laboratory equipment is also included in this content code.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 115A ID 215A	The waste is placed directly into a 55-gallon drum or double-bagged (two PVC bags or one PVC and one polyethylene bag) prior to loading. The 55-gallon drum may contain a rigid liner and up to 2 plastic drum liner bags. A fiberboard liner may be placed between the waste bags and the drum liners for puncture protection. Some graphite pieces and chunks were placed in a 13-inch high by 15.5-inch diameter cardboard Fibre-Pak and bagged out of the glovebox in up to two plastic bags. Two Fibre-Paks will fit into each prepared waste drum. Graphite chunks may also have been collected in ½ or 1-gallon polyethylene bottles, and graphite scarfings were collected in 1-gallon polyethylene bottles before being bagged out of the glovebox line. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 115B ID 215B	The waste is directly loaded into a 55-gallon drum. The drum has a rigid liner with no lid.
ID 115C ID 215C	The waste is directly loaded into a 55-gallon drum. The drum has a rigid liner with no lid and one filtered plastic liner bag with a filter with a minimum hydrogen diffusivity value of 5.375 x 10^{-5} mol/sec/mol fraction.

* 1. If drums are overpacked in SWBs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If drums have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.

ASSAY: Each container is assayed using approved assay method(s). These assay results remain valid if a drum is overpacked into an SWB. The total quantity and isotopic distribution of radioactive material contained in an SWB is calculated by appropriately summing the assay results for each of the drums packaged into the payload container. These results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error).

FREE LIQUIDS: The waste contains no free liquid. The absence of free liquids (<1% volume) is verified by RTR or VE. Residual liquids (<1% volume) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. Pressurized containers may not be packaged with this content code. No explosives or compressed gases have been identified by characterization. The RTR or VE ensures the absence of these materials.

PYROPHORICS: The waste contains no pyrophoric material other than discard levels of radionuclides. Other pyrophorics are prohibited by waste packaging procedures. Nonradioactive materials have not been identified by characterization of waste streams. Absence of these materials is verified by RTR or VE.

CORROSIVES: No corrosive materials are used in conjunction with this waste. Also, corrosives are prohibited by waste packaging procedures. No corrosive materials have been identified by characterization of waste streams. Absence of these materials is verified by the absence of free liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type II.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: ID 116, ID 216 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Combustible Waste

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: The waste consists of a variety of combustible wastes such as paper, rags, cloth, coveralls, plastic, rubber, cardboard, wood, and other similar items.

GENERATING SOURCES: Waste originated from the plutonium areas at various sites.

WASTE FORM: The combustible waste may contain dry, damp or moist solids. The solid materials consist of paper; rags; plastics such as polyethylene, PVC, and Teflon; surgeons' gloves; cloth overalls and booties; cardboard; wood in the form of lumber; plywood sheeting; filter frames; ladders; empty polyethylene bottles; laundry lint; Kimwipes; canvas; sample vials; respirator facemasks; etc. Some of the combustibles may be coated with paint. Old wet combustible waste generated prior to 1975 contains nitric acid in trace quantities.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 116A ID 216A	The waste is contained in two PVC bags or a PVC and a polyethylene bag. The bagged waste is then placed into a 55-gallon drum which is lined with a 90-mil liner and up to two liner bags (e.g., a 14-mil PVC O-ring bag or a 14-mil polyethylene round bottom liner or both). The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 116B ID 216B	This waste was placed directly into a 55-gallon drum with 90-mil liner and up to two drum liner bags or, prior to 1972, a 55-gallon drum without the 90-mil liner but lined with one or two drum liner bags. Absorbent material was added if any residual liquids were suspected in the waste. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 116C ID 216C	The wastes were triple-contained in plastic when removed from the glovebox. Some wastes were placed in polyethylene bottles (less than or equal to one gallon) and then double bagged out of the glovebox. The waste drums packaged since 1972 contain a 90-mil liner that is lined with one or two drum bags. Waste drums packaged prior to the use of the 90-mil liners were lined with one or two drum bags. Absorbent material (Oil-Dri, Portland cement, vermiculite, etc.) was added to the waste if any free liquids were suspected. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 116D ID 216D	The waste accumulated in drums may be dumped into an SWB. Each bag of waste is opened prior to placement in the SWB. The SWB is lined with one 14-mil PVC liner. All liner bags are closed by taping along the folds.
ID 116E ID 216E	The waste is directly loaded into a 55-gallon drum. The drum has a rigid liner with no lid.

Code	Description*
ID 116F ID 216F	The waste is directly loaded into a 55-gallon drum. The drum has a rigid liner with no lid and one filtered plastic liner bag with a filter with a minimum hydrogen diffusivity value of 5.375×10^{-5} mol/sec/mol fraction.

* 1. If drums are overpacked in SWBs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If drums have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.

ASSAY: Each container is assayed using approved assay method(s). The results are expressed as grams of radionuclides per individual container. For SWBs, the drum assays are totaled to determine the amount of radionuclides in each box. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error).

FREE LIQUIDS: Liquids are prohibited by procedure from being placed in the waste package. The waste packaging procedure also instructs that absorbents (e.g., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the drum is closed. Absence of free liquids was verified by RTR or VE. Residual liquids (<1% volume) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. Pressurized containers are prohibited by packaging procedures. No explosives or compressed gases have been identified by waste characterization. The RTR or VE ensures the absence of these materials.

PYROPHORICS: No pyrophorics have been identified in this content code. Pyrophorics are prohibited by waste packaging procedures. Nonradioactive pyrophoric materials have not been identified by waste characterization. Absence of these materials is verified by RTR or VE.

CORROSIVES: Corrosives are prohibited by waste packaging procedures. No corrosive materials have been identified by waste characterization. Absence of corrosive materials is verified by the absence of free liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: ID 117, ID 217 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Metal Waste

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: The waste consists of non-pyrophoric waste metals (e.g., iron, copper, aluminum, beryllium chips, stainless steel, tungsten, lead and tantalum), metal filters, metal equipment, hand tools, furnace brick, equipment, crucibles, funnels, and billets of a zinc-magnesium alloy. Naturally occurring salt, clay (bentonite) and wire screen (steel) have been added to some of the payload containers for experimental purposes.

GENERATING SOURCES: The waste originated from plutonium processing areas at various sites.

WASTE FORM: The waste form includes items such as gloveboxes, used shielding, tools, valves, trays, clamps, pipes, crucibles, small billets of zinc-magnesium (10 to 30% magnesium) alloy metal, machinery, and empty containers. The light metal waste consists of non-line and line-generated metal wastes in the form of gloveboxes, glovebox windows, furnaces, piping, angle iron, tanks, respirator filters, ultrasonic cleaners, control panels, electronic instrumentation, vacuum sweepers, pumps, motors, trays, hotplates, empty cans, power tools, hand tools, etc. The waste includes non-Special Source metals such as iron, copper, aluminum, and primarily stainless steel. Other metals such as tungsten, platinum, and lead were also included. The items that are difficult to size reduce and would not fit in a drum are placed in SWBs.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 117A ID 217A	All sharp edges were taped. The waste is either loaded directly into a drum or contained in two PVC bags or a PVC and a polyethylene bag. Some items are then placed in a Fibre-Pak. The bagged waste is then placed into a 55-gallon drum that is lined with a 90-mil liner and up to two liner bags (e.g., a 14-mil PVC O-ring bag or a 14-mil polyethylene round bottom liner or both). A fiberboard liner is placed between the waste and the drum liners for puncture protection in some containers. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 117B ID 217B	All inner bags of containment immediately around the waste are punctured or breached prior to closure of the large liner bags in drums, SWBs, or experimental bins. The waste is packaged in a maximum of two large liner bags in a payload container. For stripout operations, the metal waste is wrapped in several layers of PVC sheeting and then placed in the SWB. A liner (made of metal or wood) may be inserted between the waste and the inner PVC liner to support the PVC liner during loading. A fiberboard liner may also placed between the waste and the PVC liner for puncture protection.

Code	Description*
ID 117C ID 217C	The waste was double-bagged prior to placement in a 55-gallon drum that was lined with up to three polyethylene drum bags and a cardboard liner. Since approximately 1972, the 55-gallon drum was lined with a 90-mil liner that was then lined with up to three plastic drum bags and a cardboard liner. The light metal waste was usually triple-contained in plastic before being placed in a prepared 55-gallon drum. Any sharp metal edges were usually taped before packaging. Non-line-generated wastes were usually placed directly into the prepared 55-gallon drum. The 55-gallon drums were lined with one or two plastic drum bags. Since approximately 1972, the drums were lined with a 90-mil rigid polyethylene liner that was lined with the two plastic drum bags. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 117D ID 217D	Waste, typically billets of the zinc-magnesium alloy, were individually packaged in a produce can, and the can lid was sealed on the can with a roll seam. Each can was contained in double plastic bags and then placed into a Vollrath can. The can was then placed into a 55-gallon drum that contained a 90-mil rigid polyethylene liner that was lined with one or two plastic drum bags.

* 1. If drums are overpacked in SWBs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If drums have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.

ASSAY: Each container is assayed using approved assay method(s). The results are expressed as grams of radionuclides per individual container. The assays of the individual containers are totaled to determine the amount of radionuclides in each drum or bin. For SWBs and bins that contain waste dumped from drums, the drum assays are totaled to calculate the amount of radionuclides in each waste box. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error).

FREE LIQUIDS: Liquids are prohibited by procedure from being placed in the waste package. The waste packaging procedure also instructs that absorbents (e.g., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. RTR or VE of the waste package is performed as a conclusive verification that no unacceptable free liquids are present. Residual liquids (<1% volume) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. Pressurized containers are vented prior to placement in a waste package. No explosives or compressed gases have been identified by waste characterization. The RTR or VE ensures the absence of these materials.

PYROPHORICS: Pyrophorics are prohibited by waste packaging procedures. Nonradioactive pyrophoric materials have not been identified by characterization of the waste streams. Absence of pyrophoric materials is verified by RTR or VE.

CORROSIVES: Packaging procedures require that all corrosive materials must be neutralized or removed from the metal waste prior to packaging. No corrosive materials have been identified by waste characterization. Absence of corrosive materials is verified by the absence of free liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types II.1 and II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters. Each bin is fitted with at least two filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: ID 118, ID 218 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Glass Waste

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: The waste consists of glass and ceramic waste, leached glass neutron absorbers (Raschig rings), and a variety of other glass waste from laboratory glassware to glass equipment. Naturally occurring salt, clay (bentonite), and wire screen (steel) have been added to some of the payload containers for experimental efforts.

GENERATING SOURCES: The waste originated from plutonium processing areas at various sites.

WASTE FORM: The waste form includes items such as Raschig rings (borosilicate glass - neutron poison), ceramic crucibles, glovebox windows, laboratory glassware, process equipment and empty containers, as well as glass sample vials and bottles. The Raschig rings are borated glass rings approximately 1.75 inches high by 1.50 inches in diameter with a wall thickness of approximately 0.25 inches.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 118A ID 218A	The waste is either loaded directly into a drum or contained in two PVC bags or a PVC and a polyethylene bag. In addition, the waste may be collected in a metal can or polyethylene bottle (one gallon or less) that would then be wrapped within the two bags. The bagged waste is then placed into a 55-gallon drum that is lined with a 90-mil liner and up to two liner bags (e.g., a 14-mil PVC O-ring bag or a 14-mil polyethylene round bottom liner or both). The drums may have a fiberboard liner placed between the waste and the container liners for puncture protection. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 118B ID 218B	All inner bags of containment immediately around the waste are punctured or breached prior to closure of the large liner bags in drums, SWBs, or experimental bins. The waste is packaged in a maximum of two drum liner bags in a payload container. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 118C ID 218C	The waste is contained in up to three plastic bags and a Fibre-Pak and then placed in a 55-gallon drum with a 90-mil rigid liner (depending on the packaging date) and up to two drum liner bags. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 118D ID 218D	The waste was packaged in several different ways. Waste may have been packaged in 1-gallon polyethylene bottles; Fibre-Paks (the glass may be loose or contained in plastic bags inside the Fibre-Paks); or double contained in plastic bags with the outside of the bag taped for protection against sharp edges, or simply taped together before it is removed from the glovebox. All waste was double contained in plastic, regardless of the initial packaging. Since approximately 1972, the waste was placed in a 55-gallon drum with a 90-mil liner that was lined with one or two drum bags. Prior to that the 90-mil liners were not used, but the 55-gallon drums were still lined with one or two drum bags. The SWB contains waste packaged in either drum liner bags or SWB liner bags.

Code	Description*
ID 118E ID 218E	The waste accumulated in drums may be dumped into an SWB. Each bag of waste is opened prior to placement in the SWB. The SWB has a fiberboard liner placed between the waste and the container liners for puncture protection. The SWB is lined with a 14-mil PVC liner. All bag liners are closed by taping along the folds.

* 1. If drums are overpacked in SWBs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If drums have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.

<u>ASSAY</u>: Each container is assayed using approved assay method(s). The results are expressed as grams of radionuclides per individual container. For SWBs and bins, the individual drum assays are totaled to determine the amount of radionuclides present in each box. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error).

<u>FREE LIQUIDS</u>: Liquids are prohibited by procedure from being placed in the waste package. The waste packaging procedure also instructs that absorbents (e.g., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the drum is closed. Absence of free liquids was verified by RTR or VE. Residual liquids (<1% volume) are permitted.

<u>EXPLOSIVES/COMPRESSED GASES</u>: Explosives are prohibited. Pressurized containers are vented prior to placement in a waste package. No explosives or compressed gases have been identified by waste characterization. The RTR or VE ensures the absence of these materials.

<u>PYROPHORICS</u>: No pyrophorics have been identified in this content code. Pyrophorics are prohibited by waste packaging procedures. Nonradioactive pyrophoric materials have not been identified by characterization of the waste streams. Absence of pyrophoric materials is verified by RTR or VE.

<u>CORROSIVES</u>: Packaging procedures require that all corrosive materials must be neutralized or removed from the glass waste prior to packaging. No corrosive materials have been identified by waste characterization. Absence of corrosive materials is verified by the absence of free liquids as confirmed by RTR or VE.

<u>CHEMICAL COMPATIBILITY</u>: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type II.1 in the CH-TRAMPAC.

<u>PAYLOAD CONTAINER VENTING AND ASPIRATION</u>: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

<u>ADDITIONAL CRITERIA</u>: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters. Each bin is fitted with at least two filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: ID 119, ID 219 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Filter Waste

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: Filter waste includes absolute dry box filters, HEPA filters, filter media (separated from the filter frame) and Ful-Flo (liquid) filters, absolute filters used for filtering glovebox intake and exhaust air, HEPA filters, Chemical Warfare Service (CWS) filters, fiberglass and asbestos filter media, asbestos pipe insulation, and asbestos gloves and fire blankets. The waste may contain limited amounts of combustible materials such as surgical gloves.

GENERATING SOURCES: This waste was generated at all plutonium areas at various sites.

WASTE FORM: HEPA filters and drybox filters are of various sizes. The frames are made of wood or metal and the medium is a fiberglass-type or Nomex-type medium. Ful-Flo filter cartridges consist of polypropylene plastic. Some types of filter and/or insulation waste are processed by the addition of dry Portland cement to the waste. The majority of the Absolute filters were 8 x 8 x 6 inches, but the waste also includes some 8 x 8 x 4-inch and 12 x 12 x 6-inch filters. Other filters include 24 x 24 x 12-inch HEPA filters, 8 x 6-inch diameter CWS filters, 24 x 24 x 2-inch and 10 x 10 x 2-inch prefilters, and 8 x 8 x 6-inch and 8 x 8 x 4-inch Absolute filters. Filter frames are wood, particleboard, or aluminum. The filter media is usually either fiberglass or asbestos. Other asbestos materials such as pipe insulation, gloves, and fire blankets are included.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 119A ID 219A	The waste is double bagged (two PVC bags or one each PVC and polyethylene bags). In addition, the waste may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags (e.g., 14-mil thick polyethylene round bottom liners). The drums may have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 119C ID 219C	ID 119A/ID 219A packaging configuration (up to four 55-gallon containers) packaged directly into an SWB.
ID 119D ID 219D	The waste is placed in three bags (PVC bags or polyethylene) and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags. The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either drum liner bags or SWB liner bags.
ID 119E ID 219E	The waste is single bagged (PVC bags or polyethylene) and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags. The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either drum liner bags or SWB liner bags.

Code	Description*
ID 119F ID 219F	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags (e.g., 14-mil thick polyethylene round bottom liners). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either drum liner bags or SWB liner bags.
ID 119G ID 219G	The waste is placed in three bags and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum, which is lined with a 90-mil liner and one liner bag (e.g., a 14-mil thick polyethylene round bottom liner). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either a drum liner bag or SWB liner bag.
ID 119H ID 219H	The waste is single bagged (PVC or polyethylene) and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum, which is lined with a 90-mil liner and one liner bag (e.g., a 14-mil thick polyethylene round bottom liner). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either a drum liner bag or SWB liner bag.
ID 119I ID 219I	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and one liner bag (e.g., a 14-mil thick polyethylene round bottom liner). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB contains waste packaged in either a drum liner bag or SWB liner bag.
ID 119J ID 219J	The waste is double bagged (two PVC bags or one each PVC and polyethylene bags). In addition, the waste may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a payload container. The container has a fiberboard liner placed between the waste and the container liners as puncture protection. All bag liners are sealed by taping along the folds.

* 1. If drums are overpacked in SWBs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If drums have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.

ASSAY: Each container is assayed using approved assay method(s). These assay results remain valid if a drum is overpacked into an SWB. The total quantity and isotopic distribution of radioactive material contained in an SWB is calculated by appropriately summing the assay results for each of the drums packaginged into the payload container. SWBs may be assayed using a PAN crate counter. The results are expressed as grams of radionuclides per individual container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error).

FREE LIQUIDS: Filters and filter media are dried, drained or otherwise segregated from liquids and, in addition, absorbents (e.g., Oil-Dri) are added to the bottom of SWBs to absorb any liquids that may desorb after the box is closed. Absence of free liquids was verified by RTR or VE. Residual liquids (<1% volume) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited Pressurized containers are prohibited by packaging procedures. No explosives or compressed gases have been identified by waste characterization. The RTR or VE ensures the absence of these materials.

PYROPHORICS: No pyrophorics have been identified in this content code. Pyrophorics are prohibited by waste packaging procedures. Nonradioactive pyrophoric materials have not been identified by characterization of the waste streams. Absence of pyrophoric materials is verified by RTR or VE.

CORROSIVES: All corrosive materials are neutralized or removed from this waste as required by waste packaging procedures. No corrosives have been identified by waste characterization. Absence of these materials is verified by the absence of free liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine and up to ten filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: ID 121, ID 221 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Organic Solid Waste

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: Organic solid waste that is non-combustible. Benelex and Plexiglas neutron shielding, blacktop, concrete, dirt and sand are included in this content code. The Benelex was usually coated with fire-retardant paint and sometimes had lead sheeting attached to it. In addition to Plexiglas, some leaded glass may be present. Some of the waste consists of retrievably stored, inorganic debris (e.g., metal, glass, graphite, firebrick, etc.) that contains organic debris/material (e.g., combustibles, plastic, rubber, Plexiglas, Benelex, etc.) that is compacted.

GENERATING SOURCES: The waste was generated from plutonium processing areas at various sites.

WASTE FORM: This waste consists of organic debris/material (e.g., combustibles, plastic, rubber, resins, Plexiglas, Benelex, etc.) with inorganic debris (e.g., metal, glass, graphite, firebrick, etc.). It may also include Benelex and Plexiglas neutron shielding in slabs that are two or four inches thick. This content code also encompasses blacktop, concrete, dirt and sand. Benelex is a dense, laminated, lignocellulose hardboard made from wood chips and particles. The Benelex in this waste is usually two inches thick. The Benelex was used as neutron shielding and weighs approximately 90 lb/ft^3. Plexiglas is a trade name for a transparent plastic material made from methyl methacrylate. Plexiglas glovebox windows are usually two to four inches thick and are various sizes. Some debris waste to be compacted is examined by RTR or VE and, if necessary, packed into 55-gallon transfer drums. During this RTR/VE operation, prohibited materials are identified and segregated. Drums containing debris are supercompacted into pucks.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 121A ID 221A	The waste is contained in up to two layers of plastic (two PVC bags or one each PVC and polyethylene). The bagged waste is then placed in a 55-gallon drum which is lined with an HDPE liner and up to two 14-mil polyethylene round bottom liners. Some drums have a fiberboard liner placed between the waste and the container liners for puncture protection. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 121C ID 221C	The waste may be wrapped with several layers of PVC sheeting and then placed in an SWB. The SWB is lined with a maximum of one 14-mil PVC liner. A fiberboard liner is placed between the waste and the box liner for puncture protection. All bag liners are closed by taping along the folds.

Code	Description*
ID 121CD ID 221CD	Waste is contained in or placed into 55-gallon drums. These drums are then punctured to allow for gas release and supercompacted to reduce their volume and breach any and all plastic layers of confinement. Several compacted pucks are loaded into a specially designed, approximately 100-gallon drum (product drum). The product drum is the payload container, having the same height as a 55-gallon drum, but a larger diameter to accommodate compacted pucks. The product drum has a dual lid (inner and outer) configuration for bagless transfer of the compacted pucks out of the glovebox containment where they were processed. After the pucks are loaded, a filter vented inner lid is snapped into place, and the drum is taken away from the glovebox. Finally, the outer filter vented metal lid is placed on the product drum and secured with a clamp ring. The packaging configuration does not contain any plastic layers of confinement. Filters placed on the inner and outer lids have hydrogen diffusivity values greater than or equal to 92.5×10^{-6} moles/second/mole fraction and 18.5×10^{-6} moles/second/mole fraction, respectively.
ID 121D ID 221D	Waste is contained in or placed into 55-gallon drums. These drums are then punctured to allow for gas release and supercompacted to reduce their volume and breach any and all plastic layers of confinement. Several compacted pucks are loaded into a specially designed, approximately 100-gallon drum (product drum). The product drum has the same height as a 55-gallon drum but a larger diameter to accommodate compacted pucks. The product drum has a dual lid (inner and outer) configuration for bagless transfer of the compacted pucks out of the glovebox containment where they were processed. After the pucks are loaded, a filter vented inner lid is snapped into place, and the drum is taken away from the glovebox. The outer filter vented metal lid is placed on the product drum. The packaging configuration does not contain any plastic layers of confinement. The filter placed on the inner lid has a hydrogen diffusivity value greater than or equal to 1.1×10^{-4} moles/second/mole fraction. The 100-gallon drums are loaded into SWBs. No additional layers of confinement will be generated. Up to two 100-gallon drums with filtered inner lids (hydrogen diffusivity values greater than or equal to 1.1×10^{-4} moles/second/mole fraction) will be loaded into an SWB. The outer lid of the 100-gallon drum will be removed and placed next to the drums inside the SWB. Two or more filters, each with a hydrogen diffusivity value greater than or equal to 18.5×10^{-6} moles/second/mole fraction, will be installed on the SWB.

* 1. If drums are overpacked in SWBs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If 55-gallon drums overpacked in an SWB have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.

<u>ASSAY</u>: Each container is assayed using approved assay method(s). The results are expressed as grams of radionuclides per individual drum. These assay results remain valid after the drum is compacted into a puck or overpacked into an SWB. The total quantity and isotopic distribution of radioactive material contained in a product drum or SWB is calculated by appropriately summing the assay results for each of the compacted pucks or uncompacted drums packaged into the payload container. These results are then used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

<u>FREE LIQUIDS</u>: Liquids are prohibited by procedure from being placed in the waste package. If any moisture was detected, absorbent such as Oil-Dri, is added. Absence of free liquids was verified by RTR or VE. Residual liquids (<1% volume) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. Pressurized containers are prohibited by packaging procedures. No explosives or compressed gases have been identified by waste characterization. VE and sorting/segregating of waste contents that is performed prior to compacting ensures and verifies the absence of explosives and compressed gases. The RTR or VE examination ensures the absence of these materials.

PYROPHORICS: No pyrophorics have been identified in this content code. Pyrophorics are prohibited by waste packaging procedures. Nonradioactive pyrophoric materials have not been identified by characterization of the waste streams. RTR or VE and sorting/segregating of waste contents that is performed prior to compacting ensures and verifies the absence of pyrophoric material.

CORROSIVES: All corrosive materials are neutralized or removed from this waste as required by waste packaging procedures. No corrosives have been identified by waste characterization. Absence of these materials is verified by the absence of free liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each inner and outer drum lid is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: ID 122, ID 222 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Inorganic Solid Waste

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: The waste consists of ash, ash heel, soot, grit, ceramic crucibles, firebrick, clay absorbent, and insulation. The firebrick waste consists of whole and broken pieces of construction bricks, cinderblocks, and incinerator firebrick. The Leco crucible waste consists of silicate-based ceramic crucibles and caps that were used for analyzing plutonium samples. The crucibles are 1-inch high by 1-inch diameter. The waste also consists of retrievably stored, inorganic debris (e.g., metal, glass, graphite, firebrick, etc.) containing no more than 1 percent by weight organic debris/material (e.g., combustibles, plastic, rubber, etc.). The waste may be commingled with small quantities of interstitial soil and/or traces of other buried waste materials.

GENERATING SOURCES: The waste originated from plutonium processing areas at various sites.

WASTE FORM: Some of the waste generated during maintenance/stripout activities (i.e., replacement of firebrick refractory or insulation). The waste also includes ash, ash heel, soot, grit, ceramic crucibles, insulation, fire blankets, and Oil-Dri (clay absorbent). The firebrick waste is a high-alumina, high-strength, Class F brick manufactured by Plibrico (trade name: Plicast 40). The waste may also contain cinderblocks and construction brick. The Leco crucible waste contains 1-inch high by 1-inch diameter silicate-based ceramic crucibles that were used for analyzing plutonium. Some Leco crucibles contain an accelerator (iron, tin, copper, titanium, stainless steel, etc.) used to calibrate the analyzer. The plutonium and accelerating metal are fused into the Leco crucible. The waste may be commingled with small quantities of interstitial soil and/or traces of other buried waste materials.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 122A ID 222A	The waste is removed from the glovebox contained in up to two layers of plastic (two PVC bags or one each PVC and polyethylene). The bagged waste is then placed in a 55-gallon drum which is lined with a 90-mil liner and up to two 14-mil polyethylene round bottom liners. The drums have a fiberboard liner placed between the waste and the container liners for puncture protection. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 122B ID 222B	The waste was packaged by a variety of methods. It was placed directly into a prepared 55-gallon drum, it was double contained in plastic before placement in the prepared 55-gallon drum, or it was double contained in plastic and then placed into a Fibre-Pak before placement into a prepared 55-gallon drum. The 55-gallon drums were lined with one or two plastic drum bags. Cardboard liners were sometimes used to line the inner drum bags. Since 1972, the drums were lined with 90-mil rigid polyethylene liners and lined with one or two plastic drum bags. Some drums contained as many as three or four inner bags and one or two drum liner bags, but never exceeded five total layers of plastic. The SWB contains waste packaged in either drum liner bags or SWB liner bags.

Code	Description*
ID 122C ID 222C	The waste was placed in a 1-gallon metal paint can, the lid placed on and sealed with tape, and the paint can was double bagged out of the glovebox. The paint cans were then placed in a 55-gallon drum lined with two plastic drum bags. Since 1972, a 90-mil rigid liner was used inside each 55-gallon drum and the two plastic drum bags were placed inside the rigid plastic liner.
ID 122D ID 222D	The SWB is lined with a 14-mil PVC liner. Waste is directly loaded into the SWB and contains no inner bags. The SWBs have a fiberboard liner placed between the waste and the container liners for puncture protection. All standard SWB liner bags are closed by taping along the folds.
ID 122E ID 222E	Waste materials were packaged by a variety of methods. Glovebox wastes were bagged out in up to 2 plastic bags. Polyethylene bottles, Fibre-Paks, or tape was used to protect against sharp edges (glass or metals). Other bagged wastes were either placed into Fibre-Paks or were placed directly in a prepared waste drum. Use of the 90-mil rigid drum liner began in 1972. The rigid drum liner was lined with one liner bag. Lead shielding and lead taping may have been used to reduce radiation exposure levels for some of the waste materials. Cardboard liners may also be used in drums. The SWB and TDOP contain waste packaged in either a drum liner bag or SWB liner bag.
ID 122F ID 222F	The waste is placed in three bags (PVC bags or polyethylene) and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags. The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either drum liner bags or SWB liner bags.
ID 122G ID 222G	The waste is single bagged (PVC bags or polyethylene) and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags. The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either drum liner bags or SWB liner bags.
ID 122H ID 222H	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags (e.g., 14-mil thick polyethylene round bottom liners). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either drum liner bags or SWB liner bags.
ID 122I ID 222I	The waste is placed in three bags and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum, which is lined with a 90-mil liner and one liner bag (e.g., a 14-mil thick polyethylene round bottom liner). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either a drum liner bag or SWB liner bag.
ID 122J ID 222J	The waste is single bagged (PVC or polyethylene) and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum which is lined with a 90-mil liner and one liner bag (e.g., a 14-mil thick polyethylene round bottom liner). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either a drum liner bag or SWB liner bag.
ID 122K ID 222K	The waste is directly placed into a rigid liner (without a lid) that is enclosed within a vented/filtered liner bag with a minimum hydrogen diffusivity value of 1.08E-05 mol/s/mol fraction. The liner bag and its contents are packaged inside of a 55-gallon drum equipped with a filter vent. The drums may be overpacked in an SWB for shipping.
ID 122L ID 222L	The waste is directly placed into a rigid liner (without a lid) that is enclosed within a liner bag. The liner bag is slit with a minimum 1-inch diameter hole so that there are no layers of confinement around the waste. The slit liner bag and its contents are packaged inside of a 55-gallon drum equipped with a filter vent. The drums may be overpacked in a SWB for shipping.

Code	Description*
ID 122M ID 222M	Waste may be packaged directly in a SWB. The SWB will have a plastic transfer sleeve attached to the internal walls of the box that stretches across the top of the waste. The SWB will be vented with 2-4 filters. The plastic layer has 1-2 filters with a minimum hydrogen diffusivity value of 1.85E-5 mol/s/mol fraction.

* 1. If drums are overpacked in SWBs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If 55-gallon drums overpacked in an SWB have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.

ASSAY: Each container is assayed using approved assay method(s). For SWBs, the drum assays are totaled to determine the amount of radionuclides in each box. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

FREE LIQUIDS: Liquids are prohibited by procedure from being placed in the waste package. If any moisture was detected, absorbent such as Oil-Dri, Portland cement, vermiculite or clay was added. Absence of free liquids is verified by RTR or VE. Residual liquids (<1% volume) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. Pressurized containers are prohibited by packaging procedures. No explosives or compressed gases have been identified by waste characterization. The RTR or VE examination ensures the absence of these materials.

PYROPHORICS: No pyrophorics have been identified in this content code. Pyrophorics are prohibited by waste packaging procedures. Nonradioactive pyrophoric materials have not been identified by characterization of the waste streams. Absence of pyrophoric materials is verified by RTR or VE.

CORROSIVES: Corrosives are prohibited by waste packaging procedures. No corrosives have been identified by waste characterization. Absence of these materials is verified by the absence of liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types II.1 and II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid is fitted with a minimum of one filter, and the rigid liner (if present) will be fitted with a filter or punctured. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine and up to ten filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: ID 123, ID 223 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Leaded Rubber

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: The waste consists of leaded gloves and aprons, glovebox gloves, aprons, unleaded gloves, lead bricks, and lead sheeting.

GENERATING SOURCES: The waste originated from plutonium areas at various sites.

WASTE FORM: Discarded leaded gloves and aprons are comprised of layers of Hypalon rubber and lead oxide impregnated neoprene. Leaded rubber that has been exposed to nitric acid is washed to remove any lead nitrate that may have formed.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 123A ID 223A	The waste is removed from the glovebox line wrapped in two bags (two PVC bags or one PVC and one polyethylene bag) and placed in a 55-gallon drum which may be lined with a 90-mil liner and up to two 14-mil polyethylene round bottom liners. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 123B ID 223B	The waste is single bagged (PVC bags or polyethylene) and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags. The drums have a fiberboard liner placed between the waste and the container liners as puncture protection.
ID 123C ID 223C	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags (e.g., 14-mil thick polyethylene round bottom liners). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection.
ID 123D ID 223D	The waste is single bagged (PVC or polyethylene) and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum which is lined with a 90-mil liner and one liner bag (e.g., a 14-mil thick polyethylene round bottom liner). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection.
ID 123E ID 223E	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and one liner bag (e.g., a 14-mil thick polyethylene round bottom liner). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection.

* 1. If drums are overpacked in SWBs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If drums have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.

ASSAY: Each container is assayed using approved assay method(s). These assay results remain valid if a drum is overpacked into an SWB. The total quantity and isotopic distribution of radioactive material contained in a SWB is calculated by appropriately summing the assay results for each of the drums packaged into the payload container. These results are then used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

FREE LIQUIDS: Leaded rubber is dried, drained or otherwise segregated from free liquids as required by waste packaging procedures. In addition, sufficient absorbent is added directly to the waste to immobilize any liquid that may be present. Absence of free liquids is verified by RTR or VE. Residual liquids (<1% volume) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. Pressurized containers are prohibited by packaging procedures. No explosives or compressed gases have been identified by waste characterization. The RTR or VE examination ensures the absence of these materials.

PYROPHORICS: The washing of the leaded rubber that was exposed to nitric acid removes any lead nitrate that may have formed. No other pyrophorics have been identified. Pyrophorics are prohibited by waste packaging procedures. Nonradioactive pyrophoric materials have not been identified by characterization of the waste streams. Absence of pyrophoric materials is verified by RTR or VE.

CORROSIVES: All corrosive materials are neutralized or removed from this waste as required by waste packaging procedures. No corrosives have been identified by waste characterization. Absence of these materials is verified by the absence of free liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: ID 124, ID 224 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Pyrochemical Salt Waste

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: The waste consists of spent chloride salt from molten salt extraction, electrorefining or direct oxide reduction.

GENERATING SOURCES: The waste originated from plutonium processing areas at various sites.

WASTE FORM: The salt is composed of various combinations of cesium, calcium, magnesium, potassium, and sodium chloride salts from pyrochemical operations. Some of the salts may contain calcium fluoride or calcium oxide.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 124A ID 224A	The waste is placed in a produce can (approximately one-quart) with the lids rolled-seam sealed to the can, then bagged and placed in a larger can. The larger can is then double-bagged (two PVC bags or one PVC and one polyethylene bag) and removed from the glovebox line. The waste is placed in a 55-gallon drum which is lined with a 90-mil liner and up to two 14-mil polyethylene round bottom liners. A fiberboard liner is placed between the waste and the drum liners for puncture protection in some containers.

* 1. If drums are overpacked in SWBs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If drums have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.

ASSAY: Each container is assayed using approved assay method(s). These assay results remain valid if a drum is overpacked into an SWB. The total quantity and isotopic distribution of radioactive material contained in an SWB is calculated by appropriately summing the assay results for each of the drums packaged into the payload container. These results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error).

FREE LIQUIDS: The waste was dry and packaged in a dry environment. Absence of free liquids is verified by RTR or VE. Residual liquids (<1% volume) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. Pressurized containers are prohibited by waste packaging procedure. The absence of pressurized containers is verified by periodic waste certification inspection of the waste packaging. No explosives or compressed gases have been identified by waste characterization. The RTR or VE ensures the absence of these materials.

PYROPHORICS: No pyrophorics have been identified in this waste. Direct oxide-reduction salt will be air sparged to oxidize any free calcium metal prior to packaging. Pyrophorics are prohibited by waste packaging procedures. Nonradioactive pyrophoric materials have not been identified by characterization of the waste streams. Absence of pyrophoric materials is verified by RTR or VE.

CORROSIVES: No corrosives have been identified in this waste. Corrosives are neutralized or removed from transuranic waste prior to packaging as required by waste packaging procedures. No corrosive materials have been identified by waste characterization. Absence of corrosive materials is verified by the absence of free liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: ID 125, ID 225 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: INL Stored TRU Combustible and Noncombustible Waste

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: This waste consists of a variety of different waste forms such as dissolved laboratory samples absorbed in Oil-Dri, uranium pellets, plutonium sources, glassware, gloves, Kimwipes, used equipment, leached and unleached glass neutron absorbers (Raschig rings), filters, metal equipment, hand tools, funnels, cellulosics, plastics, rubber, furnace brick, metal crucibles, construction bricks, cinderblocks, incinerator firebrick, and combustible waste.

GENERATING SOURCES: This waste was generated at plutonium processing areas.

WASTE FORM: This waste consists of piping, flanges, valves, tools, glassware, filters, polyethylene bottles, glovebox gloves, paper, plastics, glass Raschig rings, gloveboxes, glovebox windows, furnaces, piping, angle iron, tanks, respirator filters, ultrasonic cleaners, control panels, electronic instrumentation, vacuum sweepers, pumps, motors, trays, hotplates, empty cans, power tools, hand tools, glass sample vials, bottles, laboratory equipment, laboratory glassware, and glovebox windows. The firebrick waste is a high-alumina, high-strength, Class F brick manufactured by Plibrico (trade name: Plicast 40). The waste may also contain cinderblocks and construction brick. The waste also contains miscellaneous combustible debris, such as cellulosics, plastic, and rubber.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 125A ID 225A	The waste was bagged out of the glovebox in one or two plastic bags. Most of the waste was then placed in a 13-inch high by 15.5-inch diameter Fibre-Pak. The Fibre-Paks were then placed in a prepared waste drum. In approximately 1972, use of the 90-mil rigid drum liner began. The rigid drum liner was lined with one or two plastic drum bags. Prior to use of the rigid drum liner, the drum was lined with two plastic drum bags. Lead shielding and lead taping may have been used to reduce radiation exposure levels. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 125C ID 225C	The waste is usually triple-contained in plastic before being placed in a prepared 55-gallon drum. Any sharp metal edges are usually taped before packaging. Non line-generated wastes are usually placed directly into the prepared 55-gallon drum. The 55-gallon drums are lined with one or two plastic drum bags. Since approximately 1972, the drums are lined with a 90-mil rigid polyethylene liner that was lined with up to two plastic drum bags. The SWB contains waste packaged in either drum liner bags or SWB liner bags.

Code	Description*
ID 125D ID 225D	The waste was packaged in several different ways. The waste may have been packaged in 1-gallon polyethylene bottles, Fibre-Paks (the waste may be loose or contained in plastic bags inside the Fibre-Paks), or double-contained in plastic bags with the outside of the bag taped for protection against sharp edges, or simply taped together before it is removed from the glovebox. All waste was double-contained in plastic when it was removed from the glovebox, regardless of the initial packaging. Since approximately 1972, the waste was placed in a 55-gallon drum with a 90-mil liner with one or two drum bags inside the liner. Prior to that, the 90-mil liners were not used, but the 55-gallon drums were still lined with one or two drum bags. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 125E ID 225E	Waste was double-contained in plastic and then placed directly into a prepared 55-gallon drum, or it was double-contained in plastic and then placed into a Fibre-Pak before placement into a prepared 55-gallon drum. The 55-gallon drums were lined with one plastic drum bag. Cardboard liners were sometimes used to line the inner drum bags. Since 1972, the drums were lined with a 90-mil rigid polyethylene liner with one plastic drum bag inside the liner. Some drums contained as many as three or four inner bags and one drum liner bag, but never exceeded five total layers of plastic. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 125F ID 225F	The waste is directly loaded into a 55-gallon drum. The drum has a rigid liner with no lid.
ID 125G ID 225G	The waste is directly loaded into a 55-gallon drum. The drum has a rigid liner with no lid and one filtered plastic liner bag with a filter with a minimum hydrogen diffusivity value of 5.375 x 10^{-5} mol/sec/mol fraction.
ID 125H ID 225H	The waste is single bagged (PVC bags or polyethylene) and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags. The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either drum liner bags or SWB liner bags.
ID 125I ID 225I	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags (e.g., 14-mil thick polyethylene round bottom liners). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either drum liner bags or SWB liner bags.
ID 125J ID 225J	The waste is placed in three bags and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum, which is lined with a 90-mil liner and one liner bag (e.g., a 14-mil thick polyethylene round bottom liner). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either a drum liner bag or SWB liner bag.
ID 125K ID 225K	The waste is single bagged (PVC or polyethylene) and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum which is lined with a 90-mil liner and one liner bag (e.g., a 14-mil thick polyethylene round bottom liner). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either a drum liner bag or SWB liner bag.
ID 125L ID 225L	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and one liner bag (e.g., a 14-mil thick polyethylene round bottom liner). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB contains waste packaged in either a drum liner bag or SWB liner bag.

Code	Description*
ID 125M ID 225M	Waste materials were packaged by a variety of methods. Glovebox wastes were bagged out in up to 2 plastic bags. Polyethylene bottles, Fibre-Paks, or tape was used to protect against sharp edges (glass or metals). Other bagged wastes were either placed into Fibre-Paks or were placed directly in a prepared waste drum. Use of the 90-mil rigid drum liner began in 1972. The rigid drum liner was lined with one liner bag. Lead shielding and lead taping may have been used to reduce radiation exposure levels for some of the waste materials. Cardboard liners may also be used in drums. The SWB and TDOP contain waste packaged in either a drum liner bag or SWB liner bag.

* 1. If drums are overpacked in SWBs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If drums have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.

ASSAY: Each container is assayed using approved assay method(s). These assay results remain valid if a drum is overpacked into an SWB. The total quantity and isotopic distribution of radioactive material contained in a SWB is calculated by appropriately summing the assay results for each of the drums packaged into the payload container. These results are then used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

FREE LIQUIDS: The waste was usually dry when packaged. If any moisture was detected, absorbent such as Oil-Dri, is added. Absence of free liquids was verified by RTR or VE. Residual liquids (<1 volume %) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. No explosives or compressed gases have been identified by waste characterization. The RTR or VE examination ensures the absence of these materials.

PYROPHORICS: Nonradioactive pyrophoric materials have not been identified by characterization of the waste streams. Absence of pyrophoric materials is verified by RTR or VE.

CORROSIVES: No corrosive materials have been identified by waste characterization. Absence of corrosive materials is verified by the absence of liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine and up to ten filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: ID 126, ID 226 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Cemented Organic Process Solids

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: This waste consists of washed, spent anion and cation exchange resins, particulates, and sludge-type waste generated from plutonium and/or americium processes. Resins may or may not be leached and may or may not be both cemented. Resin waste is plastic beads with a copolymer layer (typically polystyrene and divinylbenzene copolymers). Various types of anion and cation resins were used during the ion exchange process (e.g., DOWEX 1x5, DOWELL 11, Rohm and Haas Amberlite IRA-938). The resin is between 20 and 100 mesh range. Examples of the other waste contents are grit, firebrick fines, and filter sludge.

GENERATING SOURCES: The waste originated from plutonium processing areas at various sites.

WASTE FORM: The waste consists of resins that may have been mixed with cement or absorbent. The cemented/absorbed waste is allowed to cure and then placed in a 55-gallon drum. The resins are a polystyrene and divinylbenzene copolymer. The anion resins are DOWEX 1x4, DOWEX 11, and Rohm and Haas Amberlite IRA-938. The cation resin is DOWEX 50x8. All resins are in the 20 to 100-mesh range. The resins were leached with hot 0.35 N nitric acid to remove radioactive material, washed with water twice to remove nitric acid, and vacuum-dried.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 126A ID 226A	The waste is double-bagged with plastic (two layers of PVC or one each of PVC and polyethylene) and then placed in a 55-gallon drum that is lined with a 90-mil liner and up to two liner bags. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 126C ID 226C	The waste is placed in a 55-gallon drum that is lined with a 90-mil liner and up to two liner bags.
ID 126D ID 226D	The waste is double-bagged with plastic (two layers of PVC or one each of PVC and polyethylene) and then placed in a 55-gallon drum that is lined with a 90-mil liner and one liner bag.
ID 126E ID 226E	The waste is bagged with plastic (one layer of PVC or polyethylene) and then placed in a 55-gallon drum that is lined with a 90-mil liner and one liner bag.
ID 126F ID 226F	The waste is placed in a 55-gallon drum that is lined with a 90-mil liner and one liner bag.
ID 126G ID 226G	The waste is bagged with plastic (one layer of PVC or polyethylene) and then placed in a 55-gallon drum that is lined with a 90-mil liner and up to two liner bags.

* 1. If drums are overpacked in SWBs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If 55-gallon drums overpacked in an SWB have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB is considered to be a direct loaded SWB. No liner bags will be used in the SWB.

ASSAY: Each container is assayed using approved assay method(s). The total quantity and isotopic distribution of radioactive material contained in an SWB is calculated by appropriately summing the assay results for each of the drums packaged into the payload container. These results are then used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

FREE LIQUIDS: The cemented waste is inspected prior to packaging to ensure that no free liquids are present. Waste may have been damp when packaged. Cement or absorbent was added to absorb any free liquid. Absence of free liquids is verified by RTR or VE. Residual liquids (<1% volume) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. Explosives and compressed gases are prohibited by waste packaging procedures. The RTR or VE ensures no pressurized containers are present. No explosives or compressed gases have been identified by waste characterization. RTR or VE ensures the absence of these materials.

PYROPHORICS: Pyrophorics would be rendered innocuous by the solidified cement matrix. Also, pyrophorics are prohibited by waste packaging procedures. Nonradioactive pyrophoric materials have not been identified by characterization of the waste streams. Absence of pyrophoric materials is verified by RTR or VE.

CORROSIVES: No corrosive materials have been identified in this waste. Corrosive materials are also prohibited by waste packaging procedures. No corrosive materials have been identified by waste characterization. Absence of corrosive materials is verified by the absence of liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each inner and outer drum lid is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: ID 127, ID 227 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Combined Solid Organics, Solid Inorganics, and Solidified Inorganics

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: The waste consists of paper, rags, cloth, coveralls, plastic, rubber, wood and other similar items. The waste also consists of discarded graphite from plutonium casting and laboratory operations, and non-pyrophoric waste metals (i.e., iron, copper, aluminum, stainless steel, tungsten, lead and tantalum); glass and ceramic waste from recovery, maintenance, and laboratory operations; firebrick, clay absorbent, and insulation; and spent chloride salt from molten salt extraction, electrorefining, or direct oxide reduction. The aqueous effluent from uranium and plutonium processing activities is mixed with approximately 30% Portland cement. Naturally occurring salt, clay (bentonite) and wire screen (steel) have been added to the payload containers for experimental purposes. The waste may be commingled with small quantities of interstitial soil and/or traces of other buried waste materials.

GENERATING SOURCES: The waste originates from various sites.

WASTE FORM: The solid organic waste consists of combustibles such as cloth and paper products from cleanup of gloveboxes and spills; wood in the form of lumber; cardboard; plywood sheeting; surgeons' gloves; plastics such as polyethylene, PVC, and Teflon; filter wastes such as absolute dry box filters and HEPA filters; Plexiglas and Benelex; leaded rubber such as discarded leaded gloves and aprons; and cemented process solids such as grit, filter sludge, and resins. The solid inorganic waste consists of graphite waste in the form of molds, chunks, pieces, furnace equipment, and discarded laboratory equipment; metal waste in the form of gloveboxes, used shielding, tools, crucibles, and machinery; glass waste such as Raschig rings, ceramic crucibles, glovebox windows, laboratory glassware, and process equipment and empty containers; waste generated during maintenance/stripout activities including firebrick, clay absorbent, insulation, fire blankets, and Oil-Dri; and pyrochemical salt waste composed of various combinations of cesium, calcium, magnesium, potassium, and sodium chloride salts from pyrochemical operations. The solidified inorganic waste is produced by vacuum filtration of precipitated solids from an aqueous waste slurry. The filter medium is an inert diatomaceous earth medium that accumulates on a rotating drum. Solids are trapped on the surface of the filter medium as the solution passes through. The surface of the filter medium with entrapped solids is skimmed off as wet sludge. The precipitated solids are chiefly hydroxides with a pH of 10-12. The particulate and sludge-type wastes are mixed with a Portland cement mixture in a one-gallon mold. The cement mixture used varies by procedure with the type of waste being cemented.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 127A ID 227A	All plastic bags will be punctured prior to placement in a bin which has been specifically outfitted with test apparatus. The bin will contain a maximum of two layers of liner bags equivalent in size to the liner bags used in an SWB. The bin will be overpacked in an SWB.
ID 127B ID 227B	The waste is directly placed into a rigid liner (without a lid) that is enclosed within a vented/filtered liner bag with a minimum hydrogen diffusivity of 1.08×10^{-5} mol/s/mol fraction. The liner bag and its contents are packaged inside of a 55-gallon drum equipped with a filter vent. The drums may be overpacked in a SWB for shipping.

Code	Description*
ID 127C ID 227C	The waste is directly placed into a rigid liner (without a lid) that is enclosed within a liner bag. The liner bag is slit with a minimum 1-inch diameter hole so that there are no layers of confinement around the waste. The slit liner bag and its contents are packaged inside of a 55-gallon drum equipped with a filter vent. The drums may be overpacked in a SWB for shipping.
ID 127D ID 227D	Waste may be packaged directly in a SWB. The SWB will have a plastic transfer sleeve attached to the internal walls of the box that stretches across the top of the waste. The SWB will be vented with 2-4 filters. The plastic layer has 1-2 filters with a minimum hydrogen diffusivity value of 1.85×10^{-5} mol/s/mol fraction.

* Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are complaint with the CH-TRAMPAC.

ASSAY: Each container is assayed using approved assay method(s). Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

FREE LIQUIDS: Liquids are prohibited by procedure from being placed in the waste package. If any moisture was detected, absorbent such as Oil-Dri, Portland cement, vermiculite, or clay was added. Residual liquids (<1% volume) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. Pressurized containers are prohibited by packaging procedures. No explosives or compressed gases have been identified by waste characterization. The RTR or VE ensures the absence of these materials.

PYROPHORICS: No pyrophoric materials have been identified in this content code. Pyrophorics are prohibited by waste packaging procedures. Absence of pyrophoric materials is verified RTR or VE.

CORROSIVES: Packaging procedures require that all corrosive materials must be neutralized or removed from the metal waste prior to packaging. No corrosive materials have been identified in this waste. Absence of corrosive materials is verified by the absence of free liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, the bin lid contains at least two filters and the SWB is fitted with at least two and up to four filters. Each drum lid is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured, equipped with an equivalent filter, or used without a lid. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: ID 130, ID 230 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solid Inorganic with Residual Organic Waste

GENERATING SITE: Various sites

WASTE DESCRIPTION: The waste consists of inorganic debris (e.g., metal glass, graphite, firebrick, etc.) containing no more than 10 percent by weight organic debris/material (e.g., combustibles, plastic, rubber, etc.).

GENERATING SOURCES: The waste material originates from various sites.

WASTE FORM: The waste consists of inorganic debris (e.g., metals, glass, graphite, etc.) with residual organic debris (e.g., plastics, combustibles, etc.).

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
ID 130A ID 230A	Waste materials were packaged by a variety of methods. Glovebox wastes were bagged out in one or two plastic bags. Waste may have been packaged in metal cans or 1-gallon or less polyethylene bottles, Fibre-Paks (loose or contained in plastic bags inside the Fibre-Paks), or double-contained in plastic bags with the outside of the bag taped for protection against sharp edges. Other bagged wastes were either placed into Fibre-Paks or were placed directly in a prepared waste drum. In approximately, 1972, use of the 90-mil rigid drum liner began. The rigid drum liner was lined with one or two drum bags. Cardboard liners may also be used in the drums. Lead shielding and lead taping may have been used to reduce radiation exposure levels for some of the waste materials. The SWB and TDOP contain waste packaged in either drum liner bags or SWB liner bags.
ID 130B ID 230B	Waste materials were packaged by a variety of methods. Glovebox wastes were bagged out in up to 2 plastic bags. Polyethylene bottles, Fibre-Paks, or tape was used to protect against sharp edges (glass or metals). Other bagged wastes were either placed into Fibre-Paks or were placed directly in a prepared waste drum. Use of the 90-mil rigid drum liner began in 1972. The rigid drum liner was lined with one liner bag. Lead shielding and lead taping may have been used to reduce radiation exposure levels for some of the waste materials. Cardboard liners may also be used in drums. The SWB and TDOP contain waste packaged in either a drum liner bag or SWB liner bag.
ID 130C ID 230C	The waste is placed in three bags (PVC bags or polyethylene) and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags. The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either drum liner bags or SWB liner bags.
ID 130D ID 230D	The waste is single bagged (PVC bags or polyethylene) and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags. The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either drum liner bags or SWB liner bags.

Code	Description
ID 130E ID 230E	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two liner bags (e.g., 14-mil thick polyethylene round bottom liners). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either drum liner bags or SWB liner bags.
ID 130F ID 230F	The waste is placed in three bags and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum, which is lined with a 90-mil liner and one liner bag (e.g., a 14-mil thick polyethylene round bottom liner). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either a drum liner bag or SWB liner bag.
ID 130G ID 230G	The waste is single bagged (PVC or polyethylene) and may be collected within a polyethylene bottle (less than or equal to one gallon). The waste is then placed in a 55-gallon drum which is lined with a 90-mil liner and one liner bag (e.g., a 14-mil thick polyethylene round bottom liner). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB and TDOP contain waste packaged in either a drum liner bag or SWB liner bag.
ID 130H ID 230H	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and one liner bag (e.g., a 14-mil thick polyethylene round bottom liner). The drums have a fiberboard liner placed between the waste and the container liners as puncture protection. The SWB contains waste packaged in either a drum liner bag or SWB liner bag.

ASSAY: Each container is assayed using approved assay method(s). The total quantity and isotopic distribution of radioactive material contained in an SWB is calculated by appropriately summing the assay results for each of the drums packaged into the payload container. These results are then used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

FREE LIQUIDS: Absence of excess liquids is verified by RTR or VE. Residual liquids (<1 volume %) are permitted.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited. RTR or VE of waste contents ensures and verifies the absence of explosives and compressed gases. No explosives or compressed gases have been identified by characterization. The RTR or VE examination ensures the absence of these materials.

PYROPHORICS: RTR or VE of the waste contents ensures and verifies the absence of pyrophoric material.

CORROSIVES: No corrosive materials have been identified in this waste. Absence of corrosive materials is verified by the absence of liquids as confirmed by RTR or VE.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.3 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid is fitted with a minimum of one filter. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine and up to ten filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: ID 132, ID 232 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Aqueous Waste/Sludge Waste (Greater Than One Weight Percent Beryllium)

STORAGE SITE: Idaho National Laboratory (INL)

GENERATING SITE: Various sites

WASTE DESCRIPTION: This waste material is the same as described in Content Code ID 111/211 except that it may contain beryllium at levels greater than one weight percent. This waste consists of absorbed or cemented sludges or aqueous liquids generated from uranium and plutonium processing and recovery activities at various sites. The waste material may include wastewater from Pu-238 processing areas that was treated to adjust pH level prior to absorption/solidification. The waste has been mixed with cement or absorbent has been added to eliminate any detected free liquids.

GENERATING SOURCES: The waste originated from uranium and plutonium processing activities at various sites.

WASTE FORM: The waste may include aqueous sludges produced from chemical processing to precipitate radioactive elements such as plutonium and americium. It may also include acidic and caustic liquids generated from plutonium and uranium processing activities. Portland cement or absorbents were added to ensure absorption of any free liquids. The waste may also include aqueous effluent sludge, fly-ash, or diatomite filter media. The waste may include wastewater that was neutralized with calcium chloride, amorphous carbon, and sodium hydroxide prior to solidification/absorption.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
ID 132G ID 232G	Each 55-gallon drum is lined with a 90-mil rigid polyethylene liner. Plywood spacers (0.25- to 0.75-inch thick) are placed between the rigid liner lid and the drum lid. The drum lid is then installed. The rigid liner lid is punctured with a minimum 0.3-inch hole or an equivalent filter.
ID 132H ID 232H	Each sealed plastic half-gallon bottle of waste is placed in a plastic bag, which is taped shut. Up to 45 of the bags are placed in a 55-gallon drum that is lined with a 90-mil liner and may also be lined with a liner bag. The SWB contains waste packaged in either drum liner bags or SWB liner bags.
ID 132I ID 232I	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and up to three drum liner bags (e.g., 14-mil PVC O-ring bag and/or 5-mil polyethylene bag). Prior to 1972, the same configuration was used without the 90-mil liner. The SWB contains waste packaged in either drum liner bags or SWB liner bags. Drums are generated in an unvented condition. If needed, headspace gas sampling is performed at the time of venting or subsequent to venting.
ID 132J ID 232J	The waste is placed in a 55-gallon drum, which is lined with a 90-mil liner and up to two drum liner bags (e.g., 14-mil PVC O-ring bag, and a 5-mil polyethylene bag). Prior to 1972, the same configuration was used without the 90-mil liner. The SWB contains waste packaged in either drum liner bags or SWB liner bags.

Code	Description*
ID 132K ID 232K	The waste is packaged in plastic bags, 1-gallon metal paint cans, or 1 to 4 liter plastic bottles. The containers are double-bagged and placed into prepared 55-gallon drums lined with a 90-mil liner and up to two drum bags. Prior to 1972, the same configuration may have been used without the 90-mil liner.
ID 132L ID 232L	ID 132J/232J packaging configuration (up to four 55-gallon containers) packaged directly into an SWB or (up to ten 55-gallon containers) packaged directly into a TDOP.
ID 132M ID 232M	Waste is direct loaded into a 55-gallon drum, SWB, or TDOP with one liner bag. The rigid liner lid is punctured with a minimum 0.3-inch hole or an equivalent filter.
ID 132N ID 232N	The waste is placed in a 55-gallon drum with a rigid liner and up to two plastic drum liner bags. The 55-gallon drum is placed into an 85-gallon drum. The 85-gallon drum, 55-gallon drum, and rigid liner are vented with one long-stem filter (e.g., Model BNFLSM or BNFLLM or equivalent/higher diffusivity filter) with a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/s/mol fraction. Up to six 85-gallon drums are placed into a TDOP filtered with a minimum hydrogen diffusivity value of 166.5×10^{-6} mol/s/mol fraction.
ID 132P ID 232P	The waste is placed in up to three inner plastic bags. The bags are placed into a 1-gallon paint can. The can(s) are placed into a 55-gallon drum with up to two plastic liner bags and a 90-mil liner. The 55-gallon drum and rigid liner are vented with a filter and 0.3-inch minimum diameter hole, respectively. Alternatively, the 55-gallon drum and rigid liner are vented with one long-stem filter (e.g., Model BNFLSS or BNFLLS or equivalent/higher diffusivity filter) with a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/s/mol fraction. If the 55-gallon drum and rigid liner are vented with a Model BNFLSS or BNFLLS filter, then the 55-gallon drum will be loaded into a TDOP or SWB for shipment. If drums are overpacked in an SWB, the SWB shall be filtered with a minimum total hydrogen diffusivity value of 14.8×10^{-6} mol/s/mol fraction.
ID 132Q ID 232Q	The waste is directly placed into a rigid liner (without a lid) that is enclosed within a drum liner bag. The liner bag and its contents are packaged inside of a 55-gallon drum lined with a 90-mil rigid polyethylene liner with no lid. The drums may be overpacked in an SWB for shipping.
ID 132R ID 232R	The waste is directly placed into a rigid liner (without a lid) that is enclosed within a liner bag. The liner bag is slit with a minimum 1-inch diameter hole so that there are no layers of confinement around the waste. The slit liner bag and its contents are packaged inside of a 55-gallon drum lined with a 90-mil rigid polyethylene liner with no lid. The drums may be overpacked in an SWB for shipping.

* 1. If drums are overpacked in SWBs, TDOPs, or in 85-gallon drums (overpacked in TDOPs), no closed liner bags are used in the SWB, TDOP, or in the 85-gallon drum. Bag closures are by the fold-and-tape method, the twist-and-tape method, or the twist, tie, and tape method and are compliant with the CH-TRAMPAC. 2. If drums have a 2-inch diameter hole in the drum lid and rigid liner for direct gas communication, the SWB or TDOP is considered to be a direct loaded SWB or TDOP. No liner bags will be used in the SWB or TDOP.

ASSAY: Each container is assayed using approved assay method(s). These assay results remain valid if a drum is overpacked into an SWB. The total quantity and isotopic distribution of radioactive material contained in an SWB is calculated by appropriately summing the assay results for each of the drums packaged into the payload container. These results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and total decay heat (plus error).

FREE LIQUIDS: TRU solidified aqueous waste is cast into a solid by adding Portland cement, diatomite and sludge in a controlled process per procedure. Absence of free liquids is verified by RTR or VE. Residual liquids (<1% volume) are permitted.

<u>EXPLOSIVES/COMPRESSED GASES</u>: Explosives are prohibited. The waste is produced in a closed system, which precludes the introduction of extraneous materials such as pressure vessels or explosives. No explosives, explosive mixtures, or compressed gases have been identified in this waste. No explosives or compressed gases have been identified by waste characterization. Absence of these materials is verified by RTR or VE.

<u>PYROPHORICS</u>: No pyrophoric materials have been identified in this content code. Pyrophorics are prohibited by waste packaging procedures. Absence of materials is verified by RTR or VE. Nonradioacive pyrophoric materials have not been identified by characterization of the waste streams.

<u>CORROSIVES</u>: No corrosive materials have been identified in this waste. Precipitated sludges are chiefly hydroxides with a pH of 10 to 12. Using the criterion for corrosivity in 40 CFR 261, this sludge would not be a corrosive. Absence of corrosive materials is verified by the absence of liquids as confirmed by RTR or VE.

<u>CHEMICAL COMPATIBILITY</u>: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.1 in the CH-TRAMPAC.

<u>PAYLOAD CONTAINER VENTING AND ASPIRATION</u>: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and/or unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

<u>ADDITIONAL CRITERIA</u>: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured, equipped with an equivalent filter, or used without a lid. Each SWB is fitted with at least two and up to four filters. Each waste drum is weighed and evaluated by RTR or VE to determine compliance with WIPP WAC. Container integrity is determined by VE. Compliance with all criteria is verified by quality control inspection and statistical sampling of waste certified for WIPP.

<u>SHIPPING CATEGORY</u>: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

<u>MAXIMUM ALLOWABLE WATTAGE</u>: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: LA 111, LA 211 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Solidified Aqueous or Homogeneous Inorganic Solids

GENERATING SITE: Los Alamos National Laboratory (LANL)

WASTE DESCRIPTION: Cemented or dewatered sludge from precipitation/flocculation of aqueous waste from the Technical Area 50 (TA-50) Waste Water Treatment Facility (RLWTF).

GENERATING SOURCES: The waste originates from TA-50 Waste Water Treatment Plant.

WASTE FORM: The majority of the waste is vacuum filter cake sludge produced at the RLWTF by vacuum filtration of precipitated solids from an aqueous waste slurry. The filter agent is an inert diatomaceous earth or perlite medium that accumulates on a rotation drum. Solids are trapped on the surfaces of the filter medium as the solution passes through. The surface of the filter medium with entrapped filtrate is skimmed off as wet sludge. The precipitated solids are chiefly iron hydroxide. The waste form may contain trace (<1% weight) organics. Additional wastes are produced from cementation of sludge produced in a pretreatment processing room (Room 60) of the RLWTF.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LA 111A LA 211A	The waste is placed into a 55-gallon drum which is lined with a 90-mil thick HDPE liner (lid has a one-inch diameter hole or has been punctured with a minimum 0.3-inch hole) and a 5-mil plastic liner bag. The 5-mil plastic liner bag is twisted and taped closed in a horse-tail shape.
LA 111B LA 211B	The waste is placed into a 55-gallon drum which is lined with a 90-mil thick HDPE liner (lid has a one-inch diameter hole or has been punctured with a minimum 0.3-inch hole) and a 5-mil plastic liner bag. The 5-mil plastic bag is not sealed with tape but is folded over.
LA 111G LA 211G	In SWBs, the open drums from packaging configurations LA 111A, LA 111B, LA 211A, and LA 211B above are packaged in a maximum of one bag-out bag (assumed to be equivalent to a twist-and-tape liner bag) and then placed in an SWB lined with a maximum of one fold-and-tape SWB liner bag. SWBs will have 2 or 4 filters installed.
LA 111H LA 211H	In SWBs, the open drums from packaging configurations LA 111A, LA 111B, LA 211A, and LA 211B above are placed in an SWB lined with a maximum of two fold-and-tape SWB liner bags. SWBs will have 2 or 4 filters installed.

* If drums are overpacked in an SWB, no closed liner bags are used in the SWB. SWB configurations are for waste in a 55-gallon drum repackaged in an SWB. Drum lids are removed, allowing the payload configuration to be considered a direct-load SWB, and not an SWB Overpack. All layers of confinement inside the drum have been opened or breached. Additional packaging around the drum, if any, is described in the table above.

ASSAY: Drums are assayed by means of a neutron or gamma counter according to written procedures. The instrument used depends on the matrix and nuclide content of the drum. The results of the assay are expressed in terms of grams of each radionuclide present. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error), plutonium equivalent curies (plus error), and decay heat (plus error).

FREE LIQUIDS: Cement is used to bound free water by either direct cementation with sludge or the drum is initially filled with approximately six to eight pounds of cement and the sludge is then placed into the drum with an additional six to eight pounds of cement added on top of the sludge. Drums will be examined by RTR to ensure the continued absence of any free liquids prior to shipment to WIPP.

EXPLOSIVES/COMPRESSED GASES: The waste is produced in a closed system which precludes any mechanism in the process from producing compressed gas or the introduction of extraneous material such as pressure vessels or explosives. Neither the ingredients nor the finished cement is explosive.

PYROPHORICS: No pyrophoric materials have been identified in this waste form and are prohibited by waste packaging procedures. In addition, any pyrophorics placed in this aqueous system would react with the water, and immobilization in cement renders pyrophorics non-reactive.

CORROSIVES: No corrosives have been identified in this waste. Precipitated sludges are chiefly hydroxides with a pH of less than 12.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the tables of allowable materials for Waste Material Type I.2 (LA 111A/211A, LA 111B/211B, LA 111G/211G, and LA 111H/211H) in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be used without a lid or will have a minimum 0.3-inch diameter hole. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: LA 112, LA 212 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Organic Waste

GENERATING SITE: Los Alamos National Laboratory (LANL)

WASTE DESCRIPTION: Solidified organic TRU waste is generated from plutonium processing activities at Los Alamos facilities.

GENERATING SOURCES: The waste originates from TA-55 at LANL.

WASTE FORM: Solidified organics consist of absorbed or solidified oils and organic liquids.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
LA 112A LA 212A	Absorbed or solidified organic liquid waste is packaged within a maximum of two plastic bags, or in an unsealed metal can within a single plastic bag. Bags are closed by the twist, tie, and tape method. Bagged out items are placed in a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags, which are folded over, without closures. If drums are overpacked in an SWB, no closed liner bags are used in the SWB.

ASSAY: Drums are assayed by means of a neutron or gamma counter according to written procedures. Which instrument is used depends on the matrix and nuclide content of the drum. The results of the assay are expressed in terms of grams of each radionuclide present. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error), plutonium equivalent curies (plus error), and decay heat (plus error).

FREE LIQUIDS: The oil or organic liquid is solidified by mixing with an absorbent material or solidifying agent in a controlled process per written procedures. Each drum is inspected for the absence of free liquids prior to closure. The final solidified waste form contains no free liquids. RTR examination of a sample of these drums may be performed to verify that free liquids are not present.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited in TA-55 waste and no vessels or cans potentially containing gases under pressure are present in the waste stream.

PYROPHORICS: No pyrophoric materials will be present as determined by visual inspection of each waste item in accordance with written procedures.

CORROSIVES: Visual inspections of each waste item for corrosive materials are performed in accordance with written procedures. Corrosive materials identified during the inspection are either neutralized or diverted from the waste stream.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type IV.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: LA 114, LA 214 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Solidified Inorganic Process Solids

GENERATING SITE: Los Alamos National Laboratory (LANL)

WASTE DESCRIPTION: Process residues and leached solids are from the processing of plutonium at the Los Alamos Plutonium Facility (TA-55). The final waste product is obtained by immobilization with cement.

GENERATING SOURCE: The waste originates from TA-55 at LANL.

WASTE FORM: Solidified inorganic process solids (process residue from evaporator bottoms and other discarded solutions, process leached solids, ash, filter cakes, salts, metal oxides, fines, etc.) are immobilized in cement to form a solid monolith. The waste form may contain trace (<1% weight) organics.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LA 114A LA 214A	One-Gallon Cement Fixation Process In the one-gallon cement fixation process, the waste was mixed with cement in one-gallon cans to form a solid matrix. The one-gallon cans served only as mixing containers for the cement parts and not as the ultimate packaging confinement. The one-gallon cans were then placed in a 55-gallon drum. The packaging within the drum included a 1/16-inch thick lead sheet, a 5-mil plastic bag, and a 12-mil plastic bag that contains the cans. The lead serves as a shielding material for gamma radiation to reduce personnel exposure during drum mixing and subsequent drum handling. The lead shielding consists of two disks, placed at the top and bottom of a 1/16-inch thick lead sheet fitted to the inside circumference of the drum wall. All bag closures are by the twist-and-tape method.
LA 114B LA 214B	55-Gallon Cement Fixation Process In the 55-gallon cement fixation process, the waste is mixed with cement and water in a 90-mil thick polyethylene mixing container to form a solid monolith. The mixing container is used only as a container for the cement paste and is not considered as an integral part of the packaging. The packaging within the drum includes a 1/16-inch thick lead sheet, a 5-mil plastic bag, and a 12-mil plastic bag. The 12-mil bag contains the 1/8-inch polyethylene mixing container. One or more two-inch thick styrofoam disks are placed on top of the 12-mil outer bag as bracing for the top lead sheet. The lead serves as a shielding material for gamma radiation to reduce personnel exposure during drum loading and subsequent drum handling. The lead shielding consists of two disks, placed at the top and bottom of a 1/16-inch thick lead sheet fitted to the inside circumference of the drum wall. All bag closures are by the twist and tape method or the twist, tie, and tape method.
LA 114C LA 214C	Waste from LA 114A, LA 114B, LA 214A, and LA 214B is repackaged in a 55-gallon drum with all plastic bags breached. The punctured bags are not considered to be part of the packaging; therefore, there are no layers of confinement.

Code	Description*
LA 114E LA 214E	Waste is placed directly into a slip-top metal can and then placed into a pipe component. The metal can may be bagged out and/or placed into another slip-top metal can. Once the material is emplaced, the pipe component lid with filter is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner with packing material between the pipe component and liner. The rigid liner has a one-inch diameter opening or will be punctured with a 0.3-inch diameter hole. The inner plastic bag used for bagging out the waste will be twisted and taped.

*If drums are overpacked in an SWB, no closed liner bags are used in the SWB.

ASSAY: Drums are assayed by means of a neutron or gamma counter according to written procedures. The instrument used depends on the matrix and nuclide content of the drum. The results of the assay are expressed in terms of grams of each radionuclide present. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error), plutonium equivalent curies (plus error), and decay heat (plus error).

FREE LIQUIDS: The TRU process solids and discardable liquids are cast into a solid monolith by mixing with cement in a controlled process per written procedures. Each monolith drum or container is inspected for hardness and the absence of free liquids prior to drum closure. The final concrete waste form contains no free liquids. RTR examination of these drums will be performed to verify that free liquids are not present.

EXPLOSIVES/COMPRESSED GASES: Neither the ingredients nor the finished cement is explosive. Explosives are prohibited at TA-55. No pressure vessels or spray cans that can contain gases under pressure enter these waste streams. Strong acids that might react with other materials to generate gases are neutralized so that reaction is no longer possible. The waste is produced in a closed system which precludes any mechanism in the process from producing compressed gas or the introduction of extraneous material such as pressure vessels or explosives.

PYROPHORICS: No pyrophoric materials have been identified in this waste form and are prohibited by waste packaging procedures. In addition, immobilization in cement renders pyrophorics non-reactive.

CORROSIVES: The TRU process solids and other discardable solutions are to be solidified with cement per written procedures. No corrosives have been identified in this waste. The final form of the waste is a dry, solid monolith, which is noncorrosive.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.3 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: LA 115, LA 215 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Graphite Waste

GENERATING SITE: Los Alamos National Laboratory (LANL)

WASTE DESCRIPTION: Graphite waste is generated from plutonium processing activities at Los Alamos facilities.

GENERATING SOURCES: The waste originates from TA-55 at LANL.

WASTE FORM: The waste consists of discarded graphite mold and furnace equipment from plutonium casting operations, etc., which may contain some small fraction of combustible waste such as plastics (mainly packaging), etc.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LA 115A LA 215A	The waste is placed into an unsealed tin or stainless steel can, which is then placed into a maximum of three plastic bags. All bag closures are by the twist and tape, or the twist, tie, and tape method. Bagged out items are placed in a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over, without closures.
LA 115B LA 215B	The waste is packaged within a single filtered inner plastic bag. The bag closure is by the twist, tie, and tape method. Bagged out items are placed into a 55-gallon drum lined with two 5-mil plastic bags. Liner bags are folded over without closures.

*If drums are overpacked in an SWB, no closed liner bags are used in the SWB.

ASSAY: Each waste item is assayed prior to placement into a drum. Drums are assayed by means of a thermal neutron coincidence counter or segmented gamma scan counter according to written procedures. The instrument used depends on the matrix and nuclide content of the drum. The results of the assay are expressed in terms of grams of each radionuclide present. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error), plutonium equivalent curies (plus error), and decay heat (plus error).

FREE LIQUIDS: Visual inspections of each waste item for free liquids are performed in accordance with written procedures. Special emphasis during waste inspection is always applied to containers such as bottles and cans. RTR examination of a sample of these drums may be performed to verify that free liquids are not present.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited in TA-55 waste. Only used pressure vessels or spray cans could potentially contain gases under pressure and they are blocked open, punctured, completely flattened, or cut in half in accordance with written procedures.

PYROPHORICS: No pyrophoric materials will be present as determined by visual inspection of each waste item in accordance with written procedures.

CORROSIVES: Visual inspections of each waste item for corrosive materials are performed in accordance with written procedures. Corrosive materials identified during this inspection are either neutralized or diverted from the waste stream.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: LA 116, LA 216 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Combustible Waste

GENERATING SITE: Los Alamos National Laboratory (LANL)

WASTE DESCRIPTION: Combustible TRU waste is generated from plutonium processing activities at Los Alamos facilities.

GENERATING SOURCES: The waste originates from TAs 03-29 (CMR), 48, 50-1, and 55 at LANL.

WASTE FORM: Combustible solids consist of paper, rags, plastic, rubber, etc., which may contain some small fraction of absorbed oils and noncombustible solids as scrap metals, etc.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LA 116A LA 216A	Waste is packaged within a maximum of two layers of plastic bags. All bag closures are by the twist and tape method. Bagged out items are placed into a 55-gallon drum lined with a maximum of two 5-mil plastic bags.
LA 116B LA 216B	Waste is packaged within a maximum of two layers of plastic bags. The bags are filtered. The bags are closed by either the twist and tape method or the twist, tie, and tape method. Bagged out items are placed into a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 116C LA 216C	Waste is packaged either in an unsealed metal can within a single plastic bag or directly into one plastic bag. All bag closures are by either the twist and tape method, or the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, an unlined TDOP, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 116D LA 216D	Waste is packaged within a maximum of two layers of plastic bags. The bags are closed by either the twist and tape method, or the twist, tie, and tape method. Bagged out items are placed into a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 116E LA 216E	Waste is packaged either in an unsealed metal can within a single filtered plastic bag or directly into one filtered plastic bag. All bag closures are by either the twist and tape method or the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, an unlined TDOP, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 116F LA 216F	Waste is packaged either in an unsealed metal can within a single filtered drum liner bag or into one filtered drum liner bag. The bag closure is by either the twist and tape method, or the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. The outer two liner bags are folded over without closures.

Code	Description*
LA 116G LA 216G	Waste is packaged in a 55-gallon drum, an SWB, or a TDOP within plastic bags that have been breached upon repackaging. The punctured bags are not considered to be part of the packaging; therefore, there are no layers of confinement. Oversized waste items may be wrapped in plastic and placed in an SWB or a TDOP. No closed liner bags are used in the SWB or TDOP.
LA 116H LA 216H	Waste is packaged in a maximum of three layers of inner plastic bags. Bagged out items are placed in a 55-gallon drum lined with a maximum of two polyethylene liner bags. All bag closures are by the twist and tape method, or the twist, tie, and tape method.
LA 116I LA 216I	Waste is packaged in a maximum of four layers of inner plastic bags. Bagged out items are placed in a 55-gallon drum lined with a maximum of two plastic liner bags. All bag closures are by the twist and tape method, or the twist, tie, and tape method.
LA 116J LA 216J	Waste is placed directly into a metal can and then placed into a pipe component. The metal can may be bagged out and/or placed in another can. Once the material is emplaced, the pipe component lid with filter is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner with packing material between the pipe component and liner. The rigid liner will be punctured. The inner plastic bags used for bagging out the waste will be twisted and taped.

*If drums are overpacked in an SWB or in a TDOP, no closed liner bags are used in the SWB or TDOP.

ASSAY: Drums are assayed by means of a neutron or gamma counter according to written procedures. The instrument used depends on the matrix and nuclide content of the drum. SWBs and TDOPs are assayed by means of a portable nondestructive assay hold-up system according to written procedures. The results of the assay are expressed in terms of grams of each radionuclide present. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error), plutonium equivalent curies (plus error), and decay heat (plus error).

FREE LIQUIDS: Visual inspections of each waste item for free liquids are performed in accordance with written procedures. Special emphasis during waste inspection is always applied to containers such as bottles and cans. RTR examination of a sample of these drums may be performed to verify that free liquids are not present.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited at TA-03-29, TA-48, and TA-50-1; and in TA-55 waste. Only used pressure vessels or spray cans could potentially contain gases under pressure and they are blocked open, punctured, completely flattened, or cut in half in accordance with written procedures.

PYROPHORICS: No pyrophoric materials will be present as determined by visual inspection of each waste item in accordance with written procedures.

CORROSIVES: Visual inspections of each waste item for corrosive materials are performed in accordance with written procedures. Corrosive materials identified during this inspection are either neutralized or diverted from the waste stream.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: LA 117, LA 217 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Metal Waste

GENERATING SITE: Los Alamos National Laboratory (LANL)

WASTE DESCRIPTION: TRU metal waste is generated from plutonium processing activities at the Los Alamos facilities.

GENERATING SOURCES: The waste originates from TAs 03-29 (CMR), 48, 50-1, and 55 at LANL.

WASTE FORM: TRU metal waste consists of process equipment, motors, pumps, tools, etc., and may contain some glass, ceramic, porcelain, etc., as well as some small fraction of combustible waste, such as plastics (mainly packaging), etc.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LA 117A LA 217A	The waste is packaged within a maximum of four layers of plastic bagging prior to placement in the unlined SWB. All bag closures are by either the twist and tape method, or the twist, tie, and tape method.
LA 117B LA 217B	Waste is packaged either in an unsealed metal can within a single plastic bag or directly into one plastic bag. All bag closures are by either the twist and tape method, or the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, an unlined TDOP, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 117C LA 217C	Waste is packaged either in an unsealed metal can within a single filtered plastic bag or directly into one filtered plastic bag. All bag closures are by either the twist and tape method, or the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, an unlined TDOP, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 117D LA 217D	Waste is packaged within a maximum of two layers of plastic bags. The bags are closed by either the twist and tape method, or the twist, tie, and tape method. Bagged out items are placed into a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 117E LA 217E	Waste is packaged in a filtered metal can within a single plastic bag. All bag closures are by either the twist and tape method, or the twist, tie, and tape method. Bagged out items are placed into a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 117F LA 217F	Waste is packaged either in an unsealed metal can within a single filtered drum liner bag or directly into one filtered drum liner bag. The bag closure is by either the twist and tape method, or the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. The outer two liner bags are folded over without closures.

Code	Description*
LA 117G LA 217G	Waste is packaged in a 55-gallon drum, an SWB, or a TDOP within plastic bags that have been breached upon repackaging. The punctured bags are not considered to be part of the packaging; therefore, there are no layers of confinement. Oversized waste items may be wrapped in plastic and placed in an SWB or in a TDOP. In this packaging configuration, no closed liner bags are used in the SWB or TDOP.
LA 117H LA 217H	Waste is packaged in a maximum of three layers of inner plastic bags. Bagged out items are placed in a 55-gallon drum lined with a maximum of two plastic liner bags. All bag closures are by the twist and tape method or the twist, tie, and tape method.
LA 117I LA 217I	Waste is packaged in a maximum of two inner plastic bags. Bagged out items are placed in an SWB lined with a maximum of two plastic liner bags or a 55-gallon drum lined with a maximum of two plastic liner bags. All bag closures are by either the twist and tape method, or the twist, tie, and tape method.
LA 117J LA 217J	Waste is packaged in a maximum of four layers of inner plastic bags. Bagged out items are placed in a 55-gallon drum lined with a maximum of two plastic liner bags. All bag closures are by the twist and tape method, or the twist, tie, and tape method.

*If drums are overpacked in an SWB or in a TDOP, no closed liner bags are used in the SWB or TDOP.

ASSAY: Drums are assayed by means of a neutron or gamma counter according to written procedures. Which instrument is used depends on the matrix and nuclide content of the drum. The results of the assay are expressed in terms of grams of each radionuclide present.

SWBs and TDOPs are assayed by means of a portable nondestructive assay hold-up system according to written procedures. The results of the assay are expressed in terms of grams of each radionuclide present. For LA 117A/217A, each SWB will then be assayed by a PAN assay system.

Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error), plutonium equivalent curies (plus error), and decay heat (plus error).

FREE LIQUIDS: Visual inspections of each waste item for free liquids are performed in accordance with written procedures. Special emphasis during waste inspection is always applied to containers such as bottles and cans. In addition, special emphasis is always applied to motors and pumps to assure that all liquids are properly drained and/or solidified. RTR examination of a sample of these drums may be performed to verify that free liquids are not present.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited at TA-03-29, TA-48, and TA-50-1; and in TA-55 waste. Only used pressure vessels or spray cans could potentially contain gases under pressure and they are blocked open, punctured, completely flattened, or cut in half in accordance with written procedures.

PYROPHORICS: No pyrophoric materials will be present as determined by visual inspection of each waste item in accordance with written procedures.

CORROSIVES: Visual inspections of each waste item for corrosive materials are performed in accordance with written procedures. Corrosive materials identified during the inspection are either neutralized or diverted from the waste stream.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types II.1 and II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: LA 118, LA 218 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Glass Waste

GENERATING SITE: Los Alamos National Laboratory (LANL)

WASTE DESCRIPTION: TRU glass waste is generated from plutonium processing activities at the Los Alamos Plutonium Facility (TA-55).

GENERATING SOURCES: The waste originates from TAs 03-29 (CMR), 48, 50-1, and 55 at LANL.

WASTE FORM: TRU glass waste consists of discarded labware, windows, bottles, ceramics, etc., which may contain some small fraction of combustible waste, such as plastics (mainly packaging), etc.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LA 118A LA 218A	The waste is packaged in a filtered tin or stainless steel can and bagged out in one layer of plastic bagging prior to placement in the drum. The drum used is a 55-gallon drum lined with two 5-mil plastic bags. All bag closures are by the twist and tape method.
LA 118B LA 218B	Waste is packaged within a single plastic bag. The bag closure is by the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, an unlined TDOP, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 118C LA 218C	Waste is packaged within a single filtered drum liner bag. The bag closure is by the twist, tie, and tape method. Bagged out items are placed into a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. The outer two liner bags are folded over without closures.
LA 118D LA 218D	Waste is packaged in an SWB, a TDOP, or a 55-gallon drum within plastic bags that have been breached upon repackaging. The punctured bags are not considered to be part of the packaging; therefore, there are no layers of confinement.
LA 118E LA 218E	Waste is packaged in a maximum of three layers of inner plastic bags. Bagged out items are placed in a 55-gallon drum lined with a maximum of two plastic liner bags. All bag closures are by the twist and tape method or the twist, tie, and tape method.
LA 118F LA 218F	Waste is packaged within a single filtered inner plastic bag. The bag closure is by the twist, tie, and tape method. Bagged out items are placed into a 55-gallon drum lined with two 5-mil plastic bags and no rigid drum liner. Liner bags are folded over without closures.
LA 118G LA 218G	Waste is packaged in a maximum of four layers of inner plastic bags. Bagged out items are placed in a 55-gallon drum lined with a maximum of two plastic liner bags. All bag closures are by the twist and tape method, or the twist, tie, and tape method.

*If drums are overpacked in SWBs, no closed liner bags are used in the SWB.

ASSAY: For LA 118A/218A, each waste item is assayed prior to placement into a drum. Drums are assayed by means of a neutron or gamma counter according to written procedures. Which instrument is used depends on the matrix and nuclide content of the drum. The results of the assay are expressed in terms of grams of each radionuclide present. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error), plutonium equivalent curies (plus error), and decay heat (plus error).

FREE LIQUIDS: Visual inspections of each waste item for free liquids are performed in accordance with written procedures. Special emphasis during waste inspection is always applied to containers such as bottles and cans. RTR examination of a sample of these drums may be performed to verify that free liquids are not present.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited in TA-55 waste. Only used pressure vessels or spray cans could potentially contain gases under pressure and they are blocked open, punctured, completely flattened, or cut in half in accordance with written procedures.

PYROPHORICS: No pyrophoric materials will be present as determined by visual inspection of each waste item in accordance with written procedures.

CORROSIVES: Visual inspections of each waste item for corrosive materials are performed in accordance with written procedures. Corrosive materials identified during the inspection are either neutralized or diverted from the waste stream.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types II.1 and II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: LA 119, LA 219 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Filter Waste

GENERATING SITE: Los Alamos National Laboratory (LANL)

WASTE DESCRIPTION: TRU filter waste is generated from plutonium processing activities at the Los Alamos Plutonium Facility (TA-55).

GENERATING SOURCES: The waste originates from TAs 03-29 (CMR), 48, 50-1, and 55 at LANL.

WASTE FORM: Filter waste consists of HEPA filters and filter media, and some small fraction of glass, metal, other combustible waste, etc.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LA 119A LA 219A	Waste is packaged within a single plastic bag, which is closed by the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, an unlined TDOP, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic liner bags. Liner bags are folded over, without closures.
LA 119B LA 219B	Waste is packaged within a single filtered plastic bag. All bag closures are by the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, an unlined TDOP, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic liner bags. Liner bags are folded over, without closures.
LA 119C LA 219C	Waste is packaged within a single filtered drum liner bag. The bag closure is by the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. The outer two liner bags are folded over without closures.
LA 119D LA 219D	Waste is packaged in a 55-gallon drum, an SWB, or a TDOP within plastic bags that have been breached upon repackaging. The punctured bags are not considered to be part of the packaging; therefore, there are no layers of confinement. Oversized waste items may be wrapped in plastic and placed in an SWB or a TDOP. No closed liner bags are used in the SWB or the TDOP.
LA 119E LA 219E	Waste is packaged in a maximum of three layers of inner plastic bags. Bagged out items are placed in a 55-gallon drum lined with a maximum of two plastic liner bags. All bag closures are by the twist and tape method or the twist, tie, and tape method.
LA 119F LA 219F	Waste is packaged in a maximum of four layers of inner plastic bags. Bagged out items are placed in a 55-gallon drum lined with a maximum of two plastic liner bags. All bag closures are by the twist and tape method, or the twist, tie, and tape method.

*If drums are overpacked in an SWB, no closed liner bags are used.

ASSAY: Drums are assayed by means of a neutron or gamma counter according to written procedures. Which instrument is used depends on the matrix and nuclide content of the drum. The results of the assay are expressed in terms of grams of each radionuclide present. SWBs are assayed by means of a portable nondestructive assay hold-up system according to written procedures. The results of the assay are expressed in terms of grams of each radionuclide present. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error), plutonium equivalent curies (plus error), and decay heat (plus error).

FREE LIQUIDS: Visual inspections of each waste item for free liquids are performed in accordance with written procedures. RTR examination of a sample of these drums will be performed to verify that free liquids are not present.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited in TA-55 waste. Only used pressure vessels or spray cans could potentially contain gases under pressure and they are blocked open, punctured, completely flattened, or cut in half in accordance with written procedures.

PYROPHORICS: No pyrophoric materials will be present as determined by visual inspection of each waste item in accordance with written procedures.

CORROSIVES: Visual inspections of each waste item for corrosive materials are performed in accordance with written procedures. Corrosive materials identified during the inspection are either neutralized or diverted from the waste stream.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: LA 120, LA 220 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Isotopic Source Waste

GENERATING SITE: Los Alamos National Laboratory (LANL)

WASTE DESCRIPTION: The waste consists of sealed sources.

GENERATING SOURCE: These wastes are generated from various operations or are repackaged at LANL.

WASTE FORM: The waste consists of solid, inorganic source material and sources sealed in metal jackets. Sources may include well logging sources used for oil exploration, neutron sources for university research, heat sources, cardiac pacemaker components (source capsules, batteries, and pacemakers), gamma gauges, gauge sources (moisture density gauges, level gauges, bone density gauges), calibration sources (smoke detectors and instrument calibration), and X-ray fluorescence sources for scientific and research applications. Source constituents may include americium-241, plutonium-238, plutonium-239, cesium-137, and beryllium.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table.

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
LA 120A LA 220A	The isotopic source is sealed in a metal jacket and/or placed in a metal can. The metal jacket/can is then placed in a pipe component.

ASSAY: The waste consists of manufactured, sealed isotopic sources. Radiological data are typically well documented by the manufacturer for these sources. Therefore, the isotopic composition of the waste need not be determined by direct analysis or measurement of the waste unless documentation is not available. If necessary, assay for all payload containers shall be performed in accordance with the CH-TRAMPAC.

FREE LIQUIDS: There are no free liquids in this waste.

EXPLOSIVES/COMPRESSED GASES: There are no explosives and/or compressed gases in this waste.

PYROPHORICS: There are no pyrophorics in this waste.

CORROSIVES: There are no corrosives in this waste.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each pipe component and each drum is fitted with a minimum of one filter vent, and the rigid liner (if present) is punctured. Site personnel shall ensure that packaged isotopic source wastes comply with the external radiation dose rate limits for the payload container and the packaging, as stated in the CH-TRAMPAC.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: LA 122, LA 222 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solid Inorganic Waste

GENERATING SITE: Los Alamos National Laboratory (LANL)

WASTE DESCRIPTION: Solid inorganic waste is generated from plutonium processing activities at Los Alamos facilities.

GENERATING SOURCES: The waste originates from TA-55 at LANL.

WASTE FORM: The waste consists of (1) ash from the thermal decomposition of contaminated cleaning rags or (2) evaporator bottoms or filter cakes mixed with glass frit in a vitrified waste form or (3) non-hydrogenous, non-metallic, solids such as concrete. Concrete waste from demolition activities may include incidental metal, pipes, and wires.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LA 122A LA 222A	The ash waste is placed into a filtered tin or stainless steel can, which is then placed into a filtered plastic bag. The non-hydrogenous, non-metallic solids including concrete from demolition with incidental metal and wires are placed in a filtered metal can. Bagged out items are placed in a pipe overpack or 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over, without closures. The vitrified waste form is poured in an unfiltered stainless steel can. The can is placed in a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over, without closures.
LA 122B LA 222B	Non-hydrogenous, non-metallic solids such as concrete from demolition including incidental metal and wires is packaged in a filtered inner plastic bag, which will be placed in a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over, without closure.
LA 122C LA 222C	Waste is packaged either in an unsealed metal can within a single filtered plastic bag or directly into one filtered plastic bag. All bag closures are by either the twist-and-tape method or the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, an unlined TDOP, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.

* If drums are overpacked in an SWB, no closed liner bags are used in the SWB.

ASSAY: Drums are assayed by means of a neutron or gamma counter according to written procedures. Which instrument is used depends on the matrix and nuclide content of the drum. The results of the assay are expressed in terms of grams of each radionuclide present.

Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error), plutonium equivalent curies (plus error), and decay heat (plus error).

FREE LIQUIDS: No free liquids are present in the waste form. RTR examination of a sample of these drums may be performed to verify that free liquids are not present.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited in TA-55 waste and no vessels or cans potentially containing gases under pressure are present in the waste stream.

PYROPHORICS: No pyrophoric materials will be present in the waste form.

CORROSIVES: No corrosive materials are present in this waste form.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types II.1 and II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be used without a lid. Each SWB is fitted with at least two and up to four filters. Each pipe component is fitted with a minimum of one filter and is overpacked in a filtered 55-gallon drum to form a pipe overpack. Each TDOP is fitted with a minimum of nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: LA 123, LA 223 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Leaded Rubber and Metal Waste

GENERATING SITE: Los Alamos National Laboratory (LANL)

WASTE DESCRIPTION: TRU leaded rubber and metal waste is generated from plutonium processing activities at the Los Alamos Plutonium Facility (TA-55).

GENERATING SOURCES: The waste originates from TA-55 at LANL.

WASTE FORM: TRU leaded rubber waste consists of discarded lead-lined glovebox gloves and may contain other combustible items and some small fraction of noncombustible solids such as scrap metals, etc.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LA 123A LA 223A	The waste is double bagged prior to placement in 55-gallon drums. The drum is lined with two 5-mil plastic bags. Occasionally, a 1/8-inch plastic liner is used in the packaging of heavy, bulky, sharp-edged metal items (liner is used without a lid). All bag closures are by either the twist and tape method or the twist, tie, and tape method.
LA 123B LA 223B	Waste is packaged either in an unsealed metal can within a single plastic bag or directly into one plastic bag. All bag closures are by the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, an unlined TDOP, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 123C LA 223C	Waste is packaged either in an unsealed metal can within a single filtered plastic bag or directly into one filtered plastic bag. All bag closures are by the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, an unlined TDOP, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 123D LA 223D	Waste is packaged within a maximum of two layers of plastic bags. The bags are filtered. All bag closures are by the twist, tie, and tape method. Bagged out items are placed into a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 123E LA 223E	Waste is packaged either in an unsealed metal can within a single filtered liner bag, or directly into one filtered liner bag. The bag closure is by the twist, tie, and tape method. Bagged out items are placed into a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. The outer two liner bags are folded over without closures.
LA 123F LA 223F	Waste is packaged in an unlined SWB, an unlined TDOP, or a 55-gallon drum within plastic bags that have been breached upon repackaging. The punctured bags are not considered to be part of the packaging; therefore, there are no layers of confinement.
LA 123G LA 223G	Waste is packaged in a maximum of three layers of inner plastic bags. Bagged out items are placed in a 55-gallon drum lined with a maximum of two plastic liner bags. All bag closures are by the twist and tape method or the twist, tie, and tape method.

Code	Description*
LA 123H LA 223H	Waste is packaged in a maximum of four layers of inner plastic bags. Bagged out items are placed in a 55-gallon drum lined with a maximum of two plastic liner bags. All bag closures are by the twist and tape method, or the twist, tie, and tape method.

* If drums are overpacked in SWBs, no closed liner bags are used in the SWB.

ASSAY: For LA 123A/223A, each waste item is assayed prior to placement into a drum. Drums are assayed by means of a neutron or gamma counter according to written procedures. Which instrument is used depends on the matrix and nuclide content of the drum. The results of the assay are expressed in terms of grams of each radionuclide present. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error), plutonium equivalent curies (plus error), and decay heat (plus error).

FREE LIQUIDS: Visual inspections of each waste item for free liquids are performed in accordance with written procedures. Special emphasis during waste inspection is always applied to containers such as bottles and cans. RTR examination of a sample of these drums may be performed to verify that free liquids are not present.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited in TA-55 waste. Only used pressure vessels or spray cans could potentially contain gases under pressure, and they are blocked open, punctured, completely flattened, or cut in half in accordance with written procedures.

PYROPHORICS: No pyrophoric materials will be present as determined by visual inspection of each waste item in accordance with written procedures.

CORROSIVES: Visual inspections of each waste item for corrosive materials are performed in accordance with written procedures. Corrosive materials identified during the inspection are either neutralized or diverted from the waste stream.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: LA 124, LA 224 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Pyrochemical Salt Waste

GENERATING SITE: Los Alamos National Laboratory (LANL)

WASTE DESCRIPTION: Pyrochemical salt waste is generated from plutonium processing activities at the Los Alamos Plutonium Facility (TA-55).

GENERATING SOURCES: The waste originates from TA-55 at LANL.

WASTE FORM: The waste consists of used chloride salts from pyrochemical processes such as electrorefining, molten salt extraction, salt stripping, fluoride reduction, direct oxide reduction, etc., which may contain some small fraction of combustible waste such as plastics (mainly packaging), etc.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LA 124A LA 224A	The waste is placed into a tin or stainless steel can, which is then placed into a plastic bag. All bag closures are by the twist and tape method. Bagged out items are placed in a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags.
LA 124B LA 224B	Waste is packaged either in an unsealed metal can within a single filtered plastic bag or directly into one filtered plastic bag. All bag closures are by either the twist-and-tape method or the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, an unlined TDOP, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 124C LA 224C	Waste is placed directly into a metal can and then placed into a pipe component. The metal can may be bagged out and/or placed in another can. Once the material is emplaced, the pipe component lid with filter is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner with packing material between the pipe component and liner. The rigid liner will be punctured. The inner plastic bags used for bagging out the waste will be twisted and taped.

* If drums are overpacked in an SWB, no closed liner bags are used in the SWB.

ASSAY: Each waste item is assayed prior to placement into a drum. Drums are assayed by means of a neutron or gamma counter according to written procedures. Which instrument is used depends on the matrix and nuclide content of the drum. The results of the assay are expressed in terms of grams of each radionuclide present. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error), plutonium equivalent curies (plus error), and decay heat (plus error).

FREE LIQUIDS: Visual inspections of each waste item for free liquids are performed in accordance with written procedures. Special emphasis during waste inspection is always applied to containers such as bottles and cans. RTR examination of a sample of these drums may be performed to verify that free liquids are not present.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited in TA-55 waste. Only used pressure vessels or spray cans could potentially contain gases under pressure, and they are blocked open, punctured, completely flattened, or cut in half in accordance with written procedures.

PYROPHORICS: No pyrophoric materials will be present as determined by visual inspection of each waste item in accordance with written procedures. Any small amounts of pyrophoric materials that could be present in the content code are oxidized at high temperatures in the presence of oxygen.

CORROSIVES: Visual inspections of each waste item for corrosive materials are performed in accordance with written procedures. Corrosive materials identified during the inspection are either neutralized or diverted from the waste stream.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with a minimum of nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: LA 125, LA 225 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Mixed Combustible/Noncombustible Waste

GENERATING SITE: Los Alamos National Laboratory (LANL)

WASTE DESCRIPTION: Mixed Combustible/Noncombustible TRU waste is generated from plutonium processing activities at Los Alamos facilities.

GENERATING SOURCES: The waste originates from TAs 03-29 (CMR), 48, 50-1, and 55 at LANL.

WASTE FORM: Mixtures of combustible and noncombustible waste consist of paper, rags, plastic, rubber, absorbed organic liquids, leaded glovebox gloves, glass, motors, pumps, tools, and miscellaneous metal waste.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LA 125A LA 225A	The waste is placed into an SWB. A 12-mil plastic sleeve is used as a bag-out bag with one end sealed directly to the inside of the SWB body. After the SWB is filled, the plastic sleeve is gathered with a hose clamp and cut to form a horsetail.
LA 125B LA 225B	Waste is packaged within a single plastic bag. All bag closures are by either the twist and tape method, or the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, an unlined TDOP, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 125C LA 225C	Waste is packaged within a single filtered plastic bag. All bag closures are by either the twist and tape method, or the twist, tie, and tape method. Bagged out items are placed into an unlined SWB, an unlined TDOP, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. Liner bags are folded over without closures.
LA 125D LA 225D	Waste is packaged within a single filtered drum liner bag. The bag closure is by the twist, tie, and tape method. Bagged out items are placed into an SWB, or a 55-gallon drum lined with a maximum of two 5-mil or greater plastic bags. The two outer liner bags are folded over without closures.
LA 125E LA 225E	Waste is packaged in a 55-gallon drum within plastic bags that have been breached upon repackaging. The punctured bags are not considered to be part of the packaging; therefore, there are no layers of confinement. Oversized waste items may be wrapped in plastic and placed in an SWB or a TDOP; no closed liner bags are used in the SWB or TDOP.
LA 125F LA 225F	Waste is packaged in a maximum of three layers of inner plastic bags. Bagged out items are placed in a 55-gallon drum lined with a maximum of two plastic liner bags. All bag closures are by the twist and tape method or the twist, tie, and tape method.
LA 125G LA 225G	Waste is packaged in a maximum of four layers of inner plastic bags. Bagged out items are placed in a 55-gallon drum lined with a maximum of two plastic liner bags. All bag closures are by the twist and tape method, or the twist, tie, and tape method.

Code	Description*
LA 125H LA 225H	Waste is placed directly into a metal can and then placed into a pipe component. The metal can may be bagged out and/or placed in another can. Once the material is emplaced, the pipe component lid with filter is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner with packing material between the pipe component and liner. The rigid liner will be punctured. The inner plastic bags used for bagging out the waste will be twisted and taped.

* If drums are overpacked in an SWB or in a TDOP, no closed liner bags are used in the SWB or TDOP.

ASSAY: Drums are assayed by means of a neutron or gamma counter according to written procedures. Which instrument is used depends on the matrix and nuclide content of the drum. The results of the assay are expressed in terms of grams of each radionuclide present. SWBs and TDOPs are assayed by means of a portable nondestructive assay hold-up system according to written procedures. The results of the assay are expressed in terms of grams of each radionuclide present. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error), plutonium equivalent curies (plus error), and decay heat (plus error).

FREE LIQUIDS: Visual inspections of each waste item for free liquids are performed in accordance with written procedures. Special emphasis during waste inspection is always applied to containers such as bottles and cans. In addition, for this content code, special emphasis is always applied to motors and pumps to assure that all liquids are properly drained and/or solidified. RTR examination of a sample of these drums may be performed to verify that free liquids are not present.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited at TA-03-29, TA-48, and TA-50-1; and in TA-55 waste. Only used pressure vessels or spray cans could potentially contain gases under pressure and they are blocked open, punctured, completely flattened, or cut in half in accordance with written procedures.

PYROPHORICS: No pyrophoric materials will be present as determined by visual inspection of each waste item in accordance with written procedures.

CORROSIVES: Visual inspections of each waste item for corrosive materials are performed in accordance with written procedures. Corrosive materials identified during the inspection are either neutralized or diverted from the waste stream.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with a minimum of nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: LA 126, LA 226 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Organic Process Solids

GENERATING SITE: Los Alamos National Laboratory (LANL)

WASTE DESCRIPTION: Aqueous effluent and leached solids are from the processing of plutonium at the Los Alamos Plutonium Facility (TA-55). The resultant waste is immobilized in gypsum cement or Portland cement.

GENERATING SOURCES: The waste originates from TA-55 at LANL.

WASTE FORM: Solidified organic process solids (process residue from evaporator bottoms and other discardable solutions, process leached solids, ash, filter cakes, salts, metal oxides, fines, etc.) are immobilized in gypsum cement or Portland cement to form a noncorrosive solid matrix in a 55-gallon drum or a one-gallon can. The waste form will contain a minor amount of organics (one to ten percent by weight).

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LA 126A LA 226A	May 1987 - September 1988: One-Gallon Cement Fixation Process In the one-gallon cement fixation process, the waste was mixed with a cement powder in one-gallon cans to form a noncorrosive solid matrix. The one-gallon cans served only as mixing containers for the cement parts and not as the ultimate packaging confinement. The one-gallon cans were then packaged in a 55-gallon drum. The packaging within the drum included a 1/16-inch thick lead sheet, a 5-mil plastic bag, and a 12-mil plastic bag that contains the cans. The lead serves as a shielding material for gamma radiation to reduce personnel exposure during drum mixing and subsequent drum handling. The lead shielding consists of two disks, placed at the top and bottom of a 1/16-inch thick lead sheet fitted to the inside circumference of the drum wall. All bag closures are by the twist and tape method. July 1988 - Present: 55-Gallon Cement Fixation Process The waste is mixed with a cement powder and water in a 1/8-inch thick polyethylene mixing container to form a noncorrosive solid monolith. The mixing container is used only as a container for the cement paste and is not considered as an integral part of the packaging. The packaging within the drum includes a 1/16-inch thick lead sheet and two 12-mil plastic bags. The 12-mil bags contain the 1/8-inch poly mixing container. The lead serves as a shielding material for gamma radiation to reduce personnel exposure during drum loading and subsequent drum handling. The lead shielding consists of two disks, placed at the top and bottom of a 1/16-inch thick lead sheet fitted to the inside circumference of the drum wall. All bag closures are by the twist and tape, or by the twist, tie, and tape method.

Code	Description*
LA 126B LA 226B	July 1988 - Present: 55-Gallon Cement Fixation Process The waste is mixed with a cement powder and water in a 1/8-inch thick polyethylene mixing container to form a noncorrosive solid monolith. The mixing container is used only as a container for the cement paste and is not considered as an integral part of the packaging. The packaging within the drum includes a 1/16-inch thick lead sheet and one 12-mil plastic bag. The 12-mil bag contains the 1/8-inch poly mixing container. The lead serves as a shielding material for gamma radiation to reduce personnel exposure during drum loading and subsequent drum handling. The lead shielding consists of two disks, placed at the top and bottom of a 1/16-inch thick lead sheet fitted to the inside circumference of the drum wall. All bag closures are by the twist and tape, or by the twist, tie, and tape method.
LA 126C LA 226C	Waste is packaged in a 55-gallon drum within plastic bags that have been breached upon repackaging. The punctured bags are not considered to be part of the packaging; therefore, there are no layers of confinement.

* If drums are overpacked in an SWB, no closed liner bags are used in the SWB.

ASSAY: Aqueous effluent, other discardable solutions, and evaporator salts are sampled for analysis by radiochemical assay methods. The results of assays are expressed in grams per liter of solution. Process leached solids, ash, filter cake, salts, metal oxides, and other leachable solids are assayed by means of neutron or gamma counters according to written procedures. The results of these assays are expressed in the terms of grams of each radionuclide present. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error), plutonium equivalent curies (plus error), and decay heat (plus error).

FREE LIQUIDS: The TRU aqueous effluent is cast into a solid monolith by mixing with gypsum cement or Portland cement in a controlled process per written procedures. Each monolith drum is inspected for hardness and the absence of free liquids prior to drum closure. The final concrete waste form contains no free liquids.

EXPLOSIVES/COMPRESSED GASES: Neither the ingredients nor the finished cement are explosive. Explosives are prohibited in TA-55 waste. No pressure vessels or spray cans that can contain gases under pressure enter these waste streams.

PYROPHORICS: Pyrophorics will be passivated prior to mixing with aqueous solution-cement powder combinations. In addition, any pyrophorics placed in this aqueous system would react with the water and immobilization in cement renders pyrophorics non-reactive.

CORROSIVES: Aqueous effluents and other discardable solutions to be solidified with gypsum cement are neutralized to a pH between 2 and 6 with a caustic solution per written procedures. Aqueous effluents and other discardable solutions to be solidified with Portland cement are neutralized to a pH between 9.5 and 11.5 with a caustic solution per written procedures. Neutralized solutions are mixed with cement to form a noncorrosive solid monolith. Strong acids that might react with other materials to generate gases are neutralized so that reaction is no longer possible.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or will be used without a lid. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: LL 111, LL 211 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: (LL 111A/211A) Solidified Aqueous Waste
(LL 111B/211B) Tritium Contaminated Inorganic Waste

GENERATING SITE: Lawrence Livermore National Laboratory (LLNL)

WASTE DESCRIPTION: (LL 111A/211A) Solidified aqueous liquids from process lines.
(LL 111B/211B) Titanium sponges and molecular sieves.

GENERATING SOURCE: (LL 111A/211A) The waste originates from LLNL Buildings 251, 419, and 332.
(LL 111B/211B) The waste was generated in the Tritium Facility (B-331) at LLNL.

WASTE FORM: (LL 111A/211A) Aquaset or Portland cement is used to solidify water-based liquids. Only trace amounts of organics are present in the aqueous waste streams. Acids and caustics are neutralized to pH 8-12 before solidification.

(LL 111B/211B) This content code consists of the following:

- Titanium tritide in the form of marble size pieces of titanium sponge enclosed inside flow-through metal containers in which some of the titanium has been previously reacted at high temperature with tritium to form TiT_2, TiHT, and TiDT. The bonding reaction occurs at and above 300°C. To reverse the reaction and release the tritium from the titanium, the titanium tritide must be heated to over 400°C. Tritium will not be released at temperatures below 400°C.

- Tritiated water (HTO and T_2O) adsorbed onto molecular sieves (Linde 5A zeolite, a mineral consisting of alumina, that is, aluminum oxide, Al_2O_3). Temperatures of about 500º C are required to bake the tritiated water out of a molecular sieve.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LL 111A LL 211A	Liquids are solidified in individual 1- to 5-gallon open plastic containers, which are packaged in two plastic bags. The double-bagged solidified waste containers are then placed into a 55-gallon drum fitted with a vented high density polyethylene rigid liner. All waste placed in a drum is contained in a third, large plastic bag inside the drum liner. Bags and liners are either polyvinyl chloride or polyethylene.
LL 111B LL 211B	The titanium metal sponge is in large pieces about the size of marbles (3/8 to ½ inch), and these metal pieces are enclosed inside open mesh metal containers. The open mesh metal containers are disk shaped, approximately 2-inches thick, and are approximately 8 inches in diameter. The opening size in the metal mesh is small enough to retain the sponge pieces within the container.

Code	Description*
LL 111B LL 211B (cont.)	Several of the flow-through metal containers containing the titanium sponge are packed into a 5-gallon aluminum vessel. The density of titanium is 4.05 grams per cubic centimeter, and the density of the sponge is estimated to be no greater than 1 gram per cubic centimeter. Therefore, the maximum quantity of sponge that could be placed inside a single 5-gallon container is 42 pounds. After the sponge containers are placed inside the 5-gallon container, the remaining void space in the container is filled with adsorbent material to prevent the flow- through containers from moving around within the 5-gallon container during normal conditions of transport and hypothetical accident conditions, including handling and shock and vibration conditions. The 5-gallon container lid is sealed with an O-ring seal and is held closed with bolts threaded into the vessel, and the seam of the lid is caulked with RTV. (GE RTV silicone paste Acetoxy-cure, Adhesive Sealant, cures to a rubbery elastomer by reaction of moisture from air with acetoxy groups on a liquid silicone polymer. Chemically, it is composed of silicon, oxygen, carbon, and hydrogen.) Plastic tape is used to cover the RTV. These vessels, when sealed, contain air at a pressure of 1 atmosphere. Each 5-gallon container is packaged with Dry-sorb into a 55-gallon drum. The drum has a 4-mil plastic liner bag that is closed by the twist-and-tape method. The titanium tritides (TiT_2, TiHT, and TiDT) are very stable compounds that are stable in air and in high humidity, and they do not outgas or release hydrogen, deuterium or tritium until the temperature of the metal has been raised to over 400°C. Therefore, the release of tritium from the titanium sponge will not occur within the temperatures expected within the shipping package. Extreme heat (> 400°C) is the only mechanism by which tritium will be released from this configuration. Tritium is not released by damage to drums under hypothetical accident conditions. Therefore, under normal conditions of transport and hypothetical accident conditions, including shock, vibration, and exposure to air and humidity, the hydrogen concentration in any confinement layer within the package will not exceed 5 percent because no hydrogen is released.

* If drums are overpacked in SWBs, no liner bags are used in the SWB. All bag closures are in accordance with the CH-TRAMPAC.

ASSAY: (LL 111A/211A) LLNL assays drums in Building 332 using an SGS counter, or a combination of calorimetry and gamma counting. In Building 251, individual waste parcels are assayed using gamma spectrometry. Some drums having a low level of activity are assayed with LLNL's High Sensitivity Neutron Instrument, located in Building 331. LLNL may use other instruments, such as active and passive neutron detectors, gamma spectrometers, or an active and passive computed tomography gamma scanner, that meet WIPP requirements. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

(LL 111B/211B) Some tritium assay is performed solely by material balance based on acceptable knowledge, namely, knowledge of the process and ion chamber readings from the glove box where the process took place. Wastes whose initial forms are liquids are assayed by taking a sample, adding scintillation cocktail, and using a liquid scintillation counter.

FREE LIQUIDS: (LL 111A/LL 211A) After the solidification agent is added to the solidified aqueous waste, the waste is allowed to cure for 24 hours. It is then tested to verify the absence of free liquids. LLNL has certified that the waste contains less than 1% by volume of free liquids. (LL 111B/211B) No free liquids are contained in this waste.

EXPLOSIVES/COMPRESSED GASES: (LL 111A/211A) LLNL has certified that the waste does not contain any explosives or compressed gases. (LL 111B/211B) The tritium-contaminated waste was produced and loaded into the containers in a manner that precluded the introduction or production of explosive or compressed gases. None of the waste items by themselves are explosive at ambient temperatures. When sealed, the internal pressure of the primary container (55-gallon drums or smaller internal containers) will be 1 atmosphere, or less. Very small amounts of hydrogen gas may be generated, as detailed below.

The equilibrated partial pressure of tritium above a titanium sponge is $1x10^{-6}$ torr.

The partial pressure of tritium gas (HT or T_2) above molecular sieves would not be substantially different from that of hydrogen above any liquid water (for example, water adsorbed onto a kitchen sponge), and therefore would not be explosive.

18keV beta particles (electrons) from tritium decay can radiolytically hydrolyze water. However, the water adsorbed onto a molecular sieve exists as an essentially monomolecular layer. Therefore, the decay electron will most likely interact with the sieve or with air, rather than with the thin sheet of water.

The OH remaining after a tritium decay in an HTO molecule could make H_2O_2 and evolve H_2($2 H_2O + 2OH \longrightarrow 2H_2O_2 + H_2$). However, experiments show that the slight overpressure that develops in a sealed container containing tritium is consistent with the evolution of the decay product ^3He($^3H \longrightarrow {}^3He + e$), with no significant hydrogen component.

Prior to shipment, sampling will be performed on selected primary containers for internal pressure and hydrogen concentration to verify that the shipping package limits on pressure and hydrogen concentration are not exceeded during the 60-day shipping period.

PYROPHORICS: LLNL has certified that the waste does not contain any pyrophorics. No pyrophoric materials have been identified in this waste form. Pyrophorics are prohibited by waste packaging procedures.

CORROSIVES: LLNL has not identified any unneutralized corrosive materials in this waste.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.1 in the CH-TRAMPAC. All waste is chemically compatible to and between the containers and with the inner containment vessel and O-ring seals.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: LL 113, LL 213 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Liquid and Fine Particle Waste

GENERATING SITE: Lawrence Livermore National Laboratory (LLNL)

WASTE DESCRIPTION: Solidified waste from process lines including alcohols, acids, bases, and other aqueous solutions; also, oil-based liquids, solvents, and fine particles (primarily graphite).

GENERATING SOURCE: The waste originates from LLNL Buildings 251, 332, and 419. Building 419 has not been used to solidify TRU waste since 1989.

WASTE FORM: Only trace amounts of organics are present in the aqueous (water-based) waste streams. Oil-based liquids are considered 100% organic by weight. Acids and bases have a variable organic content; therefore, they are assumed 100% organic by weight. Aquaset is used to solidify water-based liquids, acids, and bases after neutralizing to pH 6 to 8. Portland cement was formerly used to solidify water-based liquids. Petroset is used to solidify organics (oils, solvents, etc.). Envirostone was formerly used to solidify oil-based liquids and solvents. Fine particles are generally mixed in with the Aquaset, Petroset, or Portland cement solidifications.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
LL 113A LL 213A	Liquids are solidified in individual 1- to 5-gallon plastic containers. Formerly, 1-gallon metal paint cans were used in B-419. The double bagged solidified waste containers are placed into a 55-gallon drum fitted with a vented high density polyethylene rigid liner. The solidification containers, although sometimes closed with a lid, are not themselves sealed. Each solidification container is wrapped in two plastic bags. All waste is then placed in a third large plastic bag inside the drum liner. If drums are overpacked in SWBs, no closed liner bags are used in the SWB. All bag closures are in accordance with the CH-TRAMPAC.

ASSAY: LLNL assays drums in Building 332 using an SGS, or a combination of calorimetry and gamma counting. In Building 251, individual waste parcels are assayed using gamma spectrometry. Some drums having a low level of activity are assayed with LLNL's High Sensitivity Neutron Instrument, located in Building 331. LLNL may use other instruments, such as active and passive neutron detectors, gamma spectrometers, or an active and passive computed tomography gamma scanner, that meet WIPP requirements. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

FREE LIQUIDS: After the solidification agent is added, the waste is allowed to cure. It is then tested to verify the absence of free liquids. LLNL has certified that the waste contains less than 1% by volume of free liquids.

EXPLOSIVES/COMPRESSED GASES: LLNL has certified that the waste does not contain any explosives or compressed gases.

PYROPHORICS: LLNL has certified that the waste does not contain any pyrophorics.

CORROSIVES: LLNL has certified that the waste does not contain any corrosive materials.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type IV.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: LL 116, LL 216 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Combustible Waste

GENERATING SITE: Lawrence Livermore National Laboratory (LLNL)

WASTE DESCRIPTION: The waste consists of glovebox bagout waste, non-glovebox-line generated laboratory trash, and some contaminated equipment. The waste may occasionally include small quantities of solidified liquids, especially if it is mixed waste, but this is usually segregated as Content Code LL 113A/213A.

GENERATING SOURCE: The waste originates from LLNL Buildings 251 and 332.

WASTE FORM: The waste consists mostly of dry solids such as tissues, paper, assorted plastics, glassware, ceramics and metals. Portland cement or Aquaset is used to solidify water-based liquids; Envirostone or Petroset is used to solidify small amounts of solvents and oil-based liquids. The composition varies considerably, but it is predominantly organics (>90% by weight).

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LL 116A LL 216A	The waste is packaged in two plastic bags, then placed in a 55-gallon drum fitted with a vented high density polyethylene rigid liner, itself lined inside with a large plastic bag. Bags and liners are either polyvinyl chloride or polyethylene. All bag closures are by the twist-and-tape or fold-and-tape method.
LL 116B LL 216B	The waste is packaged in three plastic bags, then placed in a 55-gallon drum fitted with a vented high density polyethylene rigid liner, itself lined inside with a large plastic bag. Bags and liners are either polyvinyl chloride or polyethylene. All bag closures are by the twist-and-tape or fold-and-tape method.
LL 116C LL 216C	The waste is packaged in four plastic bags, then placed in a 55-gallon drum fitted with a vented high density polyethylene rigid liner, itself lined inside with a large plastic bag. Bags and liners are either polyvinyl chloride or polyethylene. All bag closures are by the twist-and-tape or fold-and-tape method.
LL 116D LL 216D	The waste is packaged in a 55-gallon drum fitted with a high-density polyethylene liner lined inside with a large plastic liner bag. The liner bag is either polyvinyl chloride or polyethylene and closure is by the twist-and-tape or fold-and-tape method. The rigid liner has no lid.
LL 116E LL 216E	The waste is packaged in four plastic bags, then placed in a 55-gallon drum lined with a large plastic liner bag. Bags and liners are either polyvinyl chloride or polyethylene. All bag closures are by the twist-and-tape or fold-and-tape method. No rigid liner is used.
LL 116F LL 216F	The waste is packaged in a 55-gallon drum fitted with a high-density polyethylene rigid liner. The rigid liner has no lid.
LL 116G LL 216G	The waste is packaged in four plastic bags, then placed in a 55-gallon drum fitted with a high-density polyethylene rigid liner, itself lined inside with a large plastic bag. Bags and liners are either polyvinyl chloride or polyethylene. All bag closures are by the twist-and-tape or fold-and-tape method. The rigid liner has no lid.

* If the drums are overpacked in an SWB or a TDOP, no additional liner bags are used in the SWB or the TDOP.

ASSAY: LLNL assays drums in Building 332 using an SGS, or a combination of calorimetry and gamma counting. In Building 251, individual waste parcels are assayed using gamma spectrometry. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error). Some drums having a low level of activity are assayed with LLNL's High Sensitivity Neutron Instrument, located in Building 331. LLNL may use other instruments, such as active and passive neutron detectors, gamma spectrometers, or an active and passive computed tomography gamma scanner that meet WIPP requirements.

FREE LIQUIDS: Liquids are solidified according to procedure and allowed to cure before final sealing of the drum. LLNL has certified that the waste contains less than 1% by volume of free liquids.

EXPLOSIVES/COMPRESSED GASES: LLNL has certified that the waste does not contain any explosives or compressed gases. LLNL procedures call for all aerosol cans to be punctured before placement in a TRU waste drum.

PYROPHORICS: LLNL has certified that the waste does not contain any pyrophorics.

CORROSIVES: LLNL has certified that the waste does not contain any corrosive materials.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: LL 119, LL 219 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Filter Waste

GENERATING SITE: Lawrence Livermore National Laboratory (LLNL)

WASTE DESCRIPTION: Filter waste consists of the HEPA filters used for filtering glovebox or room intake and exhaust air or inert gas. The waste may also consist of small TEM filters (MSA cartridge filters from instruments). The waste may occasionally include small quantities of combustible materials such as lab trash, personal protective equipment, and surgical gloves.

GENERATING SOURCE: The waste originates primarily from LLNL Buildings 251 and 332. This waste may be generated at all areas at LLNL where transuranic materials are handled. The majority of HEPA filter waste at LLNL is generated by the Plutonium Facility (Building 332).

WASTE FORM: HEPA filters are of various sizes. The frames are made of wood, or occasionally metal, with an aluminum or steel support structure. The filter is fiberglass-type or Nomex-type medium, but may also be asbestos. In addition, there are several 1000-cfm open-face HEPA filters with gaskets or fluidic seals on room ventilation and large gas handling lines. There are some small MSA-type filters.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
LL 119A LL 219A	The filter inlet and outlet are closed (capped or covered and taped) with a steel or plastic cover. The filter is then normally packaged in two plastic bags and placed, if size allows, in a 55-gallon drum fitted with a vented high-density polyethylene liner. All waste placed in a drum is sealed in a third large plastic bag inside the drum liner. Bags and liners are either polyvinyl chloride or polyethylene. All bag closures are by the twist-and-tape method. Drums are DOT Type A certified and sealed and have filter vents. If the drums are overpacked in SWBs, no additional sealed liner bags are used. HEPA filters may also be placed directly within an SWB with a maximum of two plastic liner bags. The SWB has bracing placed between the waste and the container.

ASSAY: LLNL assays drums or drum components ("parcels") using an SGS or a combination of calorimetry and gamma counting. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error). A mobile vendor may be contracted to provide WIPP-certified assays should this prove convenient. The contractor may use any of a variety of acceptable radioassay methods, including, for example, imaging passive-active neutron/gamma energy analysis.

FREE LIQUIDS: All filters are dry when packaged. Absence of free liquids is verified by documented generator knowledge ("newly generated" waste) or by RTR. LLNL certifies that the waste contains less than 1% by volume of free liquids.

EXPLOSIVES/COMPRESSED GASES: LLNL certifies that the waste does not contain any explosives or compressed gases.

PYROPHORICS: LLNL certifies that the waste does not contain any pyrophorics.

CORROSIVES: LLNL certifies that the waste does not contain any corrosive materials.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, before shipping, each drum is fitted with a filter, and the rigid liner is punctured to provide venting if it does not already have a vent hole. Each SWB is fitted with at least two filters. Container integrity is assured by visual examination.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: LL 124, LL 224 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Pyrochemical Salt Waste

GENERATING SITE: Lawrence Livermore National Laboratory (LLNL)

WASTE DESCRIPTION: Solid Waste Pyrochemical Salt

GENERATING SOURCE: The waste originates from LLNL Building 332.

WASTE FORM: The waste consists of used chloride and fluoride salts from pyrochemical processes (electrorefining, molten salt extraction, and direct oxide reduction).

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
LL 124A LL 224A	The waste salt is contained in a metal can, which completely encloses the salt. The canned salt is placed in a 55-gallon drum, which is fitted with a vented HDPE liner.
LL 124B LL 224B	The waste salt is contained in a metal can. The metal can completely encloses the salt. These cans are generally contaminated on the outer surface with a small amount of radioactivity. There may be small amounts of organic materials inside the metal can with the contaminated salt blocks. The canned salt is packaged in two plastic bags and placed in a 55-gallon drum. The drum is fitted with a vented HDPE liner. All waste placed in the drum is enclosed in a third large plastic bag inside the drum liner. Bags and liners are either polyvinyl chloride or polyethylene.

* If the drums are overpacked in SWBs, no additional closed liner bags are used. All bag closures are in accordance with the CH-TRAMPAC.

ASSAY: LLNL assays drums in Building 332 using an SGS, or a combination of calorimetry and gamma counting. Some drums having a low level of activity are assayed with LLNL's High Sensitivity Neutron Instrument, located in Building 331. LLNL may use other instruments, such as active and passive neutron detectors, gamma spectrometers, or an active and passive computed tomography gamma scanner, that meet WIPP requirements. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

FREE LIQUIDS: None.

EXPLOSIVES/COMPRESSED GASES: LLNL has certified that the waste does not contain any explosives or compressed gases. LLNL procedures call for all aerosol cans to be punctured before placement in a TRU waste drum.

PYROPHORICS: LLNL has certified that the waste does not contain any pyrophorics.

CORROSIVES: LLNL has certified that the waste does not contain any corrosive materials.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types II.1 and II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: LL 125, LL 225 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Combined Metal Scrap and Incidental Combustibles

GENERATING SITE: Lawrence Livermore National Laboratory (LLNL)

WASTE DESCRIPTION: This waste form consists of contaminated equipment and laboratory trash that, because of physical size, usually cannot be packaged in 55-gallon drums. For these oversized objects, an SWB or TDOP is used as the waste container. Typical objects that become metal scrap waste include decommissioned glove boxes, hoods, and other large pieces of contaminated equipment (lathes, mills, etc.). The void space around the larger items is sometimes filled with other TRU-contaminated materials similar to Content Code LL 116A/216A. This waste form may also include small quantities of solidified liquids and sludges.

GENERATING SOURCES: The waste originates from LLNL Buildings B-251 and B-332.

WASTE FORM: TRU metal scrap waste consists of decommissioned glove boxes, hoods, and other large pieces of contaminated equipment, as well as other laboratory trash. Typically it will contain metal components, glassware, ceramics, plastics, paper, and wood. Normally, it will be mostly inorganic material, but the content can vary widely. This waste form may also include small quantities of liquids and sludges that have been solidified with either Portland cement, Envirostone, Aquaset, or Petroset, if they were included in a waste parcel from Content Code LL 116A/216A.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
LL 125A LL 225A	All contaminated material is contained in either a maximum of two plastic bags, or no plastic bags for sealed equipment contaminated only on the inside, and placed into a 55-gallon drum, an SWB, or a TDOP. The void spaces around the larger components are sometimes filled with plastic bags of other laboratory trash or with plastic foam packaging material. All bags of contaminated material are closed using the twist and tape method. No additional liner bags are used in the SWB or the TDOP.

ASSAY: LLNL assays drums in Building 332, using an SGS, or a combination of calorimetry and gamma spectrometry. Parcels may be assayed by gamma spectrometry. Some drums having a low level of activity are assayed with LLNL's High Sensitivity Neutron Instrument, located in Building 331. LLNL may use other instruments, such as active and passive neutron detectors, gamma spectrometers, or an active and passive computed tomography gamma scanner that meet WIPP requirements. Radionuclide content of SWBs and TDOPs is based on data from the Waste Parcel Cards and the Waste Disposal Requisition. These documents contain a description of the waste, including weight and/or activity of the radionuclides. Prior to shipment, each SWB and TDOP will be assayed by an approved method as defined in the CH-TRAMPAC.

FREE LIQUIDS: The waste is visually inspected for free liquids during packaging. Any liquid wastes are solidified as described in the LLNL waste stream "Solidified Liquid and Fine Particle Waste" (see Content Code LL 113A/213A). LLNL has certified that the waste contains less than 1% by volume of free liquids.

EXPLOSIVES/COMPRESSED GASES: LLNL has certified that the waste does not contain any explosives or compressed gases. LLNL procedures call for all aerosol cans to be punctured before placement in a drum, SWB, or TDOP.

PYROPHORICS: LLNL has certified that the waste does not contain any pyrophorics.

CORROSIVES: LLNL has certified that the waste does not contain any corrosive materials.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured or used without a lid. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: MD 111, MD 211 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: (MD 111A/211A) Solidified Aqueous Waste and (MD 111B/211B) Contaminated Soil

GENERATING SITE: Mound Laboratory (Mound)

WASTE DESCRIPTION: (MD 111A/211A) Aqueous effluent from decontamination and decommissioning activities in former Pu-238 processing areas is processed in WD Building. The sludge, which contains 20-25% solids, is mixed with cement. (MD 111B/211B) The waste consists of soil contaminated to TRU levels with Pu-238 from pipeline breaks and spills. The contaminated fluids are aqueous solutions with a maximum of trace levels of organics in the fluids (if any is present).

GENERATING SOURCE: (MD 111A/211A) The waste originates from SM Building, PP Building, and R Building at Mound. (MD 111B/211B) The waste originates from the WD hillside, pipeline removal at Mound.

WASTE FORM: (MD 111A/211A) The sludge is produced through a standard batch type precipitation process and a pH adjustment. The effluent is filtered, sampled and discharged. The resultant sludge is solidified with approximately two bags of cement. Solids are primarily ferric hydroxides. (MD 111B/211B) The waste is typically clayey soil that has been contaminated by a pipeline break or other type of spill. The soil is removed by hand digging or with a backhoe. It may include small rocks, but usually no large boulders.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
MD 111A MD 211A	The waste is placed in a 55-gallon drum with a 90-mil high density polyethylene liner. There are no other bags or added confinements. If drums are overpacked in SWBs, no closed liner bags are used in the SWB.
MD 111B MD 211B	The contaminated soil waste is packaged in SWBs that are utilized with no sealed liner when loading contaminated soil.

ASSAY: (MD 111A/211A) A sample of the sludge is taken from each batch, and the type and quantity of radionuclides present are determined using standard radiochemical techniques. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error). (MD 111B/211B) Several representative samples are removed from the box after loading and are evaluated utilizing Mound-developed instrumental assay. An average value is used for the entire box and used to calculate Pu-239 fissile gram equivalent and decay heat.

FREE LIQUIDS: (MD 111A/211A) WD sludge is solidified with cement in accordance with documented written procedures. This operation is periodically audited by QA personnel, as described in the QA plan. Cold samples of this waste form have been examined for the presence of free liquid in or on the concrete matrix, and none was found. These test results are on file at Mound. (MD 111B/211B) A study of water content of a variety of soils likely to be encountered at Mound was performed. The results of this study describe the amount of "Florco" absorbent required to absorb all free liquid created by packing compression. Procedures in Mound manuals document how the absorbent is to be added to the container.

EXPLOSIVES/COMPRESSED GASES: (MD 111A/211A) The sludge waste form has been analyzed and found to contain no explosive items or explosive compounds or material capable of forming explosive mixtures. Areas where TRU waste is generated typically contain no explosive wastes. Administrative controls are in place which preclude the introduction of explosives into TRU waste packages. Administrative controls exist that ban the introduction of cylinders of compressed gases into the waste containers. Aerosol cans are punctured before being discarded as waste. (MD 111B/211B) Criterion not applicable. Mound soils do not contain explosives or compressed gases.

PYROPHORICS: (MD 111A/211A) Analytical procedures have been performed on the sludge, and the results included in this document indicate the absence of pyrophorics in the waste stream. In addition, the solidification operation assures that any small quantities of pyrophorics that might be present are rendered safe by dispersion in the concrete matrix. (MD 111B/211B) Criterion not applicable. Pyrophoric materials and combinations of potentially pyrophoric materials do not exist in Mound soils. Underground piping that may have leaked originated from buildings that did not contain or dispose of pyrophoric materials in this piping.

CORROSIVES: (MD 111A/211A) No corrosive materials have been identified in the aqueous effluent sludge waste per 40 CFR 261 criteria. (MD 111B/211B) Contaminated soils at Mound are primarily the result of leaks in process or transfer lines. While the initial spill might possibly have contained materials that could be classified as hazardous wastes, these materials were changed as the liquid evaporated, leaving the plutonium residue behind such that the remaining material has been rendered nonhazardous. If there is any reason to suspect the presence of hazardous wastes in the TRU-contaminated soils, an analysis will be performed to determine if the waste fails any of the four EPA characteristic tests.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: MD 116, MD 216 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Combustible Waste

GENERATING SITE: Mound Laboratory (Mound)

WASTE DESCRIPTION: TRU combustible wastes consist of paper, plastics, rags, cardboard, and wood generated from glovebox operations and the decontamination and decommissioning program.

GENERATING SOURCES: The waste originates from the PP Building, R Building, and SM Building at Mound.

WASTE FORM: The paper is typically Kimwipes. Plastics consist of gloves, shoecovers, bags, and bubblesuits. Wood is usually plywood or 2 x 4. The 90-mil HDPE drum liner is also considered as part of the combustible loading.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
MD 116A MD 216A	The waste is packaged in 55-gallon drums with a 90-mil HDPE liner. Combustible waste is typically double bagged in 8-mil PVC. A 4-mil polyethylene bag is used to line the 90-mil HDPE drum liner. All bag closures are by the twist and tape method. If drums are overpacked in SWBs, no closed liner bags are used in the SWB.

ASSAY: After loading, each drum is surveyed using an SGS counter. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

FREE LIQUIDS: Absorbent is placed into the TRU waste containers for absorption of any minor liquid residue that may be present. The only potential source of free liquids in combustibles are damp rags or Kimwipes, and operations with these are controlled to ensure that no free liquids can develop. Administrative control to preclude the presence of free liquids in TRU waste containers is accomplished by compliance with procedures.

EXPLOSIVES/COMPRESSED GASES: Explosives are not normally handled in areas where TRU combustible waste is packaged. Administrative procedures are in place that control the introduction of such materials into TRU waste containers.

PYROPHORICS: Pyrophoric materials are not normally handled in areas where combustible TRU waste is generated. Pyrophoric materials and combinations of potentially pyrophoric materials are not allowed to be mixed with TRU combustible wastes. The radioactive materials present in the waste are nonpyrophoric. Administrative control to preclude presence of pyrophoric material from TRU waste containers is accomplished by compliance with Mound procedures.

CORROSIVES: Mound technical manuals document the administrative controls that prohibit the introduction of materials into TRU combustible waste packages which could be considered as RCRA hazardous wastes. In rare cases where RCRA hazardous and TRU wastes are commingled, the quantities will be reported in the data package, and the waste package will be properly marked and labeled. Any corrosive materials are rendered noncorrosive before packaging.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: MD 117, MD 217 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Non-combustible TRU Waste

GENERATING SITE: Mound Laboratory (Mound)

WASTE DESCRIPTION: Non-combustible waste consists of glass, metal, and masonry.

GENERATING SOURCE: The waste originates from the PP Building, R Building, and SM Building at Mound.

WASTE FORM: Non-combustible wastes are composed of glass, metal, and masonry, and are generated during routine glovebox operations and during decontamination and decommissioning activities. Glass consists of analytical glassware and occasional reagent bottles. Metal includes tools, laboratory apparatus, gloveboxes, fumehoods, duct work, electrical wire and conduit, piping, pumps, fittings, sheet metal, and other miscellaneous metallic objects. Masonry consists of bricks, concrete block, pieces of poured walls or floors, and plaster.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
MD 117A MD 217A	The waste is placed in both 55-gallon drums and SWBs. Drum Preparation: The drum is a 55-gallon drum with a 90-mil HDPE drum liner. Non-combustible waste is typically double bagged in 8-mil PVC. A 4-mil polyethylene bag is used to line the 90-mil HDPE drum liner. All bag closures are by the twist and tape method. Box Preparation: Larger metal items are wrapped in polyethylene for contamination control and placed in an SWB. The plastic sheeting is wrapped around the waste and is not taped or closed off like a bag. The box is equipped with at least two filters.

ASSAY: After loading, both drums and SWBs are assayed by an SGS counter. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

FREE LIQUIDS: All containers (e.g., tanks, bottles, cans, pumps, etc.) are opened and thoroughly drained of all liquids prior to packaging per procedures documented in Mound technical manuals. In addition, absorbent materials are placed into the TRU waste container for absorption of any minor liquid residue that may remain. Administrative control to preclude presence of other free liquids in addition to those mentioned above is accomplished by compliance with Mound procedures.

EXPLOSIVES/COMPRESSED GASES: All containers (e.g., tanks, cylinders, etc.) are vented to remove all compressed and/or explosive gases. Valve and closure mechanisms are removed to prevent repressurization or entrapment of gases. Areas where TRU waste is generated typically contain no explosive wastes. Administrative controls are in place that preclude the introduction of explosives into TRU waste packages. Administrative control to preclude presence of explosives and compressed gases from TRU waste containers is accomplished by compliance with procedures.

PYROPHORICS: Pyrophoric materials are typically not handled in areas where TRU waste is generated. Pyrophoric materials and combinations of potentially pyrophoric materials are not allowed to be mixed with

TRU noncombustible wastes. The radioactive materials present in the waste are nonpyrophoric. Administrative control to preclude presence of pyrophoric material from TRU waste containers is accomplished by compliance with Mound procedures.

CORROSIVES: Administrative controls are exercised to preclude the introduction of materials into TRU noncombustible waste packages that could possibly be classified as hazardous waste per the RCRA definition. Any corrosive materials are rendered noncorrosive before packaging.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type II.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: NT 111, NT 211 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Aqueous Waste

STORAGE SITE: Nevada Test Site (NTS)

GENERATING SITE: Lawrence Livermore National Laboratory (LLNL)

WASTE DESCRIPTION: The waste consists of solidified aqueous liquids.

GENERATING SOURCE: The waste originates from LLNL Buildings 419 and 332.

WASTE FORM: Portland cement is used to solidify water-based liquids. Only trace amounts of organics are present in the aqueous waste streams. Acids and caustics are neutralized to pH 8 to 12 before solidification.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
NT 111A NT 211A	The waste is placed in 55-gallon drums fitted with a 90-mil polyethylene liner. Liquids are solidified in individual 1-gallon metal paint cans that are then placed in 55-gallon drums. If drums are overpacked in SWBs, no closed liner bags are used in the SWB.

ASSAY: Depending on the point of origin, LLNL assays drums using an SGS counter, or a combination of calorimetry and gamma counting. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

FREE LIQUIDS: After the solidification agent is added, the waste is allowed to cure for 24 hours. The paint cans are tipped to verify the absence of free liquids prior to installing the lids.

EXPLOSIVES/COMPRESSED GASES: LLNL has certified that the waste does not contain any explosives or compressed gases. NTS waste acceptance criteria prohibit explosives and compressed gases from being packaged in TRU waste to be stored at NTS.

PYROPHORICS: LLNL has certified that the waste does not contain any pyrophorics. NTS waste acceptance criteria prohibit pyrophorics from being packaged in TRU waste to be stored at NTS.

CORROSIVES: LLNL has not identified any unneutralized corrosive materials in this waste.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: NT 115, NT 215 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Graphite Waste

STORAGE SITE: Nevada Test Site (NTS)

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: The waste consists of discarded graphite from plutonium casting and laboratory operations.

GENERATING SOURCES: The waste was generated from various plutonium areas at RFETS (primarily from Buildings 371, 374, 559, 707, 771, and 776).

WASTE FORM: The waste consists of broken or unbroken graphite molds and graphite furnace equipment, or graphite chunks and pieces from mold cleaning, scarfing, and declassification. Discarded laboratory equipment composed primarily of graphite is also included in this content code. Some of the waste may be immobilized by mixing with low temperature melting glass.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
NT 115AR NT 215AR	The waste is placed either directly into a 55-gallon drum, or double-bagged prior to loading into a 55-gallon drum. The drum may be lined with a rigid liner and up to two plastic liner bags. A fiberboard liner insert may be placed between the waste bags and the drum liners for puncture protection.
NT 115BR NT 215BR	The waste is placed directly into a 55-gallon drum that is fitted with a plastic liner bag and a rigid liner with no lid.

* All bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in SWBs, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example supercompacted waste or packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container.

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type II.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid contains a minimum of one filter, and the rigid liner lid is either filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: NT 116, NT 216 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Combustible Waste

STORAGE SITE: Nevada Test Site (NTS)

GENERATING SITE: Lawrence Livermore National Laboratory (LLNL) and Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: The waste consists of mixed glovebox bagout waste, non-line generated laboratory trash, some contaminated small equipment, and small quantities of solidified liquids, sludges, paper, rags, cloth, coveralls, plastic, rubber, wood, and other similar items.

GENERATING SOURCE: The waste originates from LLNL Buildings 332 and 251 or from various plutonium areas at RFETS (primarily Buildings 371, 374, 559, 707, 771, 774, 776, 777, and 779).

WASTE FORM: The waste consists mostly of untreated dry solids such as tissues, paper, assorted plastics, glassware, ceramics, and metals; and cloth and paper products from cleanup of gloveboxes and spills. Also, the waste could have any of the items listed in the Waste Description above. At LLNL, Portland cement is used to solidify water-based liquids; Envirostone is used to solidify small amounts of solvents and oil-based liquids. At RFETS, some of the waste may have been processed to remove excess aqueous solution and/or solvents. The composition varies considerably, but it is predominately organics (>90% by weight).

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
NT 116A NT 216A	The waste was usually placed in a double plastic bag with two horsetails (taped); then it is placed in a 55-gallon drum fitted with a 90-mil polyethylene liner. All bag closures are by the twist and tape method. If drums are overpacked in SWBs, no closed liner bags are used in the SWB.
NT 116AR* NT 216AR*	The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and up to two plastic liner bags.
NT 116BR* NT 216BR*	The waste is placed directly into a 55-gallon drum that is fitted with a plactic liner bag and a rigid liner with no lid.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in an SWB, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: (NT 116A/216A) Depending on point of origin, LLNL assays drums using an SGS counter or a combination of calorimetry and gamma counting. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error). (NT 116AR/216AR, NT 116BR/216BR) The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: (NT 116A/216A) Liquids are solidified according to procedure and are allowed to cure before final sealing of the drum. NTS waste acceptance criteria prohibit free liquids in excess of 1% by volume in TRU waste to be stored at NTS. (NT 116AR/216AR, NT 116BR/216BR) Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example supercompacted waste or packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container.

EXPLOSIVES/COMPRESSED GASES: (NT 116A/216A) LLNL has certified that the waste does not contain any explosives or compressed gases. LLNL procedures call for all aerosol cans to be punctured before placement in a TRU waste drum. NTS waste acceptance criteria prohibit explosives and compressed gases from being packaged in TRU waste to be stored at NTS. (NT 116AR/216AR, NT 116BR/216BR) Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container.

PYROPHORICS: (NT 116A/216A) LLNL has certified that the waste does not contain any pyrophorics. NTS waste acceptance criteria prohibit pyrophorics from being packaged in TRU waste to be stored at NTS. (NT 116AR/216AR, NT 116BR/216BR) No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: (NT 116A/216A) LLNL has not identified any corrosive materials in this waste. (NT 116AR/216AR, NT 116BR/216BR) The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner lid (if present) will be punctured. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: NT 117, NT 217 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Metal Waste

STORAGE SITE: Nevada Test Site (NTS)

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: The waste consists of discarded items or objects of metal (e.g., iron, copper, aluminum, stainless or other steel alloys, tungsten, depleted uranium, lead, and tantalum.)

GENERATING SOURCES: The waste originates from various plutonium areas at RFETS (primarily from Buildings 371, 374, 559, 707, 771, 774, 776, 777, and 779).

WASTE FORM: The waste form includes items such as gloveboxes, used shielding, tools/tooling, crucibles, machinery, equipment, scrap metal components, empty containers, and other metallic objects. The waste is not finely divided or particulate in form, and so does not possess a pyrophoric characteristic.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
NT 117AR NT 217AR	The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and up to two plastic liner bags. A fiberboard liner insert may be placed between the waste and the drum liner for puncture protection.
NT 117BR NT 217BR	The waste is placed directly into a 55-gallon drum that is fitted with a plastic liner bag and a rigid liner with no lid.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in an SWB, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example supercompacted waste or packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container.

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Finely divided radionuclide material that may be pyrophoric will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type II.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid contains a minimum of one filter, and the rigid liner lid is either filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: NT 119, NT 219 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Filter Waste

GENERATING SITE: Nevada Test Site (NTS)

WASTE DESCRIPTION: Filter waste includes HEPA filters including filter housings and frames.

GENERATING SOURCES: The waste originates from the NTS Waste Examination Facility (Building 5-32).

WASTE FORM: HEPA filters and prefilters of various sizes. The frames are primarily made of metal and can include some wood. The medium is fiberglass, Nomex, or cotton.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
NT 119A NT 219A	The 55-gallon drum is fitted with a 30-mil open-head (no lid), polyethylene liner. The waste is placed in a single plastic glovebox bag. All bag closures are by the twist-and-tape method.

ASSAY: All assay will be done by Carlsbad Field Office approved mobile service characterization vendors.

FREE LIQUIDS: All items are visually inspected during repackaging of original waste prior to placement in the payload container. Liquids are solidified and allowed to cure or are absorbed prior to placement into the payload container according to procedures. The placement of all waste into the payload container is video taped. Tapes are reviewed for compliance with repackaging and WIPP WAC compliance.

EXPLOSIVES/COMPRESSED GASES: The NTS inspects all waste for explosives and compressed gases and segregates any suspect items prior to placement in the payload container.

PYROPHORICS: The NTS inspects all waste for pyrophorics and segregates any suspect items prior to placement in the payload container.

CORROSIVES: All liquids are solidified or absorbed and rendered noncorrosive prior to placement in payload containers.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: NT 125, NT 225 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Combustible and Noncombustible Waste

STORAGE SITE: Nevada Test Site (NTS)

GENERATING SITE: NTS

WASTE DESCRIPTION: (NT 125A/225A) The waste consists of solid combustible and noncombustible mixed glovebox bagout waste and nonline-generated laboratory trash. This waste was derived from research activities performed in a laboratory environment. The waste includes soft plastics, rubber, cardboard, rags, paper, cloth, glass, some contaminated small equipment, and small quantities of solidified liquids and sludges. (NT 125B/225B, NT 125C/225C) The waste consists of solid combustible and noncombustible mixed glovebox bagout waste and nonline-generated laboratory trash. The waste was originally generated from research activities and has been repackaged at the NTS. The waste includes soft plastics, rubber, cardboard, rags, paper, cloth, glass, some contaminated small equipment, and small quantities of solidified liquids and sludges.

GENERATING SOURCE: The waste originates from several sites.

WASTE FORM: The waste consists mostly of untreated dry solids such as tissues, paper, assorted plastics, glassware, ceramics, and metals. Portland cement is used to solidify water-based liquids. Envirostone is used to solidify small amounts of solvents and oil-based liquids. Composition varies widely from drum to drum.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
NT 125A NT 225A	Prior to being bagged out of the glovebox, the waste was packaged in paper ice cream cartons, plastic containers (e.g., bottles), or metal cans, all less than four liters in volume. The waste was then typically removed from gloveboxes in up to two plastic glovebox bags. After removal from the glovebox, the plastic bags were placed in temporary storage cans lined with a plastic bag. When the storage can was full, the plastic bags were removed from the storage can and placed in a 55-gallon drum that may be lined with a plastic liner bag and may be fitted with a 90-mil rigid liner. All bag closures are by the twist-and-tape method. If drums are overpacked in an SWB, no closed liner bags are used in the SWB.
NT 125B NT 225B	The waste is removed from the original waste container. All layers of confinement are breached. Lids are removed/breached from all paper, plastic, or metal containers greater than 4 liters. The waste is then placed in a single plastic glovebox bagout liner bag and then placed in a 55-gallon drum fitted with an open-topped (no lid), polyethylene liner. All bag closures are by the twist-and-tape method. If drums are overpacked in an SWB, no closed liner bags are used in the SWB.
NT 125C NT 225C	Waste is placed in a 55-gallon drum and may be fitted with a rigid polyethylene liner with no lid. All layers of confinement are breached, including the drum liner bag if present. Lids are removed/breached from all paper, plastic, or metal containers greater than 4 liters. If drums are overpacked in an SWB, no closed liner bags are used in the SWB.

ASSAY: Assay data were provided from the generating source as part of the acceptable knowledge documentation, and all assay data are verified by Carlsbad Field Office-approved mobile service characterization vendors.

FREE LIQUIDS: (NT 125A/225A) Acceptable knowledge documentation provided from the generating source is used to demonstrate compliance with the restriction on free liquids. All waste drums were examined using the mobile nondestructive examination RTR system developed by LANL for the presence of liquids. All drums to be shipped to WIPP have been found to contain less than 1% free liquids by volume.

(NT 125B/225B, NT 125C/225C) Acceptable knowledge documentation provided from the generating source is used to help demonstrate compliance with the restriction on free liquids. All items are visually inspected during repackaging of original waste prior to placement in the payload container. Liquids are solidified and allowed to cure or are absorbed prior to placement into the payload container according to procedures. The placement of all waste into the payload container is video taped. Tapes are reviewed for compliance with repackaging and WIPP WAC compliance.

EXPLOSIVES/COMPRESSED GASES: (NT 125A/225A) Acceptable knowledge documentation provided from the generating source is used to ensure that the waste does not contain explosives or compressed gases. NTS waste acceptance criteria prohibit explosives from being packaged in TRU waste to be stored at NTS. All waste drums were examined using the mobile nondestructive examination RTR system developed by LANL for the presence of compressed gases. All drums to be shipped to WIPP have been found to contain no compressed gases, including unpunctured aerosol cans. (NT 125B/225B, NT 125C/225C) Acceptable knowledge documentation provided from the generating source is used to help ensure that the waste does not contain explosives or compressed gases. The NTS inspects all waste for prohibited items and segregates any suspect items prior to placement in the payload container.

PYROPHORICS: (NT 125A/225A) Acceptable knowledge documentation provided from the generating source is used to ensure that the waste does not contain pyrophorics. NTS waste acceptance criteria prohibit pyrophorics from being packaged in TRU waste to be stored at NTS. (NT 125B/225B, NT 125C/225C) Acceptable knowledge documentation provided from the generating source is used to ensure that the waste does not contain pyrophorics. The NTS inspects all waste for prohibited items and segregates any suspect items prior to placement in the payload container.

CORROSIVES: (NT 125A/225A) Acceptable knowledge documentation provided from the generating source is used to ensure that the waste does not contain corrosives. (NT 125B/225B, NT 125C/225C) Acceptable knowledge documentation provided from the generating source is used to help ensure that the waste does not contain corrosives. In addition, all liquids are solidified or absorbed and rendered noncorrosive prior to placement in payload containers.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: (NT 125A/225A) Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC. (NT 125B/225B, NT 125C/225C) Not applicable. Payload containers are fitted with a filter at the time of closure. Open-head drum liners (with no lid) are used.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: NT 131, NT 231 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solid Inorganic Waste (Greater Than Trace Quantities of Beryllium)

STORAGE SITE: Nevada Test Site (NTS)

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: The waste consists of discarded items or objects of metal (e.g., iron, copper, aluminum, beryllium chips, stainless or other steel alloys, tungsten, depleted uranium, lead, and tantalum) that contain beryllium at levels greater than 1 weight percent.

GENERATING SOURCES: The waste originates from various plutonium areas at RFETS (primarily from Buildings 371, 374, 559, 707, 771, 774, 776, 777, and 779).

WASTE FORM: The waste form includes items such as gloveboxes, used shielding, tools/tooling, crucibles, machinery, equipment, scrap metal components, empty containers, and other metallic objects. The waste is not finely divided or particulate in form, and so does not possess a pyrophoric characteristic.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
NT 131AR NT 231AR	The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and up to two plastic liner bags. A fiberboard liner insert may be placed between the waste and the drum liner for puncture protection.
NT 131BR NT 231BR	The waste is placed directly into a 55-gallon drum that is fitted with a plastic liner bag and a rigid liner with no lid.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in an SWB, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container.

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Finely divided radionuclide material that may be pyrophoric will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type II.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid contains a minimum of one filter, and the rigid liner lid is either filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: NT 133 , NT 233 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Combustible Waste (Greater Than Trace Quantities of Beryllium)

STORAGE SITE: Nevada Test Site (NTS)

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: The waste consists of discarded items or objects of metal (e.g., iron, copper, aluminum, beryllium chips, stainless or other steel alloys, tungsten, depleted uranium, lead, and tantalum) and solid organics (e.g., cellulose, plastic, and rubber) that contain beryllium at levels greater than 1 weight percent.

GENERATING SOURCES: The waste originates from various plutonium areas at RFETS (primarily from Buildings 371, 374, 559, 707, 771, 774, 776, 777, and 779).

WASTE FORM: The waste form includes items such as gloveboxes, used shielding, tools/tooling, crucibles, machinery, equipment, scrap metal components, empty containers, and other metallic objects. The waste is not finely divided or particulate in form, and so does not possess a pyrophoric characteristic. The waste form also includes items such as plastic - bags, gloves, bottles, plexiglass, shoe covers, and tubing; cellulose - fiberboard, plywood, fiber disk, cardboard, wipes, ice cream cartons, mop head, cotton gauze, and paper bags; and rubber - o-rings, latex gloves, glove box gloves, and stoppers.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
NT 133 AR NT 233 AR	The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and up to two plastic liner bags. A fiberboard liner insert may be placed between the waste and the drum liner for puncture protection.
NT 133 BR NT 233 BR	The waste is placed directly into a 55-gallon drum that is fitted with a plastic liner bag and a rigid liner with no lid.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in an SWB, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container.

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Finely divided radionuclide material that may be pyrophoric will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid contains a minimum of one filter, and the rigid liner lid is either filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: OR 125, OR 225 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Mixed Paper, Metal, and Glass

GENERATING SITE: Oak Ridge National Laboratory (ORNL)

WASTE DESCRIPTION: The waste consists of miscellaneous debris from laboratory, maintenance, decontamination, and decommissioning activities. The waste will be processed as part of the TRU/Alpha Low Level Waste Project.

GENERATING SOURCES: The waste was generated across the Oak Ridge site and at other DOE and DOE contractor facilities. The waste will be inspected and repackaged as part of the TRU/Alpha Low Level Waste Project.

WASTE FORM: The waste is debris waste as defined by 40 CFR 268.2(g).

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
OR 125A OR 225A	Waste is packaged directly in a 55-gallon (208-liter) metal drum or an SWB with no layers of confinement (no liner or inner bags).
OR 125B OR 225B	Waste is packaged in one inner bag and then placed in a 55-gallon (208-liter) metal drum or an SWB.
OR 125C OR 225C	Waste is packaged in one filtered liner bag (no inner bags) and then placed in a 55-gallon (208-liter) metal drum or an SWB.
OR 125D OR 225D	Waste is packaged in one inner bag and one filtered liner bag and then placed in a 55-gallon (208-liter) metal drum or an SWB.
OR 125E OR 225E	Waste is packaged in two inner bags and one filtered liner bag and then placed in a 55-gallon (208-liter) metal drum or an SWB.
OR 125F OR 225F	Waste is packaged in three inner bags and one filtered liner bag and then placed in a 55-gallon (208-liter) metal drum or an SWB.
OR 125G OR 225G	Waste is packaged in four inner bags and one filtered liner bag and then placed in a 55-gallon (208-liter) metal drum or an SWB.
OR 125H OR 225H	Waste is packaged in five inner bags and one filtered liner bag and then placed in a 55-gallon (208-liter) metal drum or an SWB.

* Confinement layers consisting of inner bags are closed only by a twist-and-tape or fold-and-tape method. The liner bags will be heat sealed and equipped with filters. All waste containers are inspected prior to shipment certification and are repackaged as necessary. If drums are overpacked in an SWB or a TDOP, no closed liner bags are used in the overpacking container. Rigid drum liners are not used in 55-gallon drums.

ASSAY: A gamma and PAN assay is performed on waste containers prior to shipment. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error), decay heat (plus error), and isotopic composition as required for generation of the necessary shipping documentation.

FREE LIQUIDS: The waste will be visually examined to ensure that the waste contains <1 volume percent free liquid in the external (payload) container and <1 inch in the bottom of any internal container.

EXPLOSIVES/COMPRESSED GASES: The waste will be visually examined for the presence of explosives, unpunctured aerosol cans, other unvented pressure vessels, or other prohibited items. Prohibited items found in the waste shall be removed and segregated. These materials shall be processed into a WIPP compliant waste form prior to shipment.

PYROPHORICS: The waste will be visually examined for the presence of pyrophorics. Pyrophorics found in the waste shall be removed and segregated from the waste and processed/treated into a WIPP compliant waste form prior to shipment.

CORROSIVES: The waste will be visually examined for the presence of corrosives. Corrosives found in the waste shall be removed and segregated from the waste and processed/treated into a WIPP compliant waste form prior to shipment.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers shall be vented as required by the CH-TRAMPAC at the time of packaging.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: RF 111, RF 211 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Aqueous Waste

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: Aqueous process waste streams are either solidified directly or processed to remove radioactive contamination. Processed waste is in the form of a metal hydroxide sludge. The wet sludge or the aqueous liquid waste is solidified by combining the waste with Portland cement. This waste may also include various particulate, solid inorganic, or other similar waste that may be solidified with a cement and water mixture, or cement may be added to the waste as an absorbent. This waste includes inorganic particulates, sludges, liquids from inorganics, etc. Oxide, oxide heel, peroxide, or hydroxide waste that may have been calcined and/or solidified may be included.

GENERATING SOURCES: The liquid aqueous waste originates from various radioactive (plutonium and uranium) process areas at RFETS. The liquid waste is solidified in Buildings 374 and/or 774. The inorganic particulates, sludges, liquids from inorganics, etc., originate from various RFETS plutonium building areas.

WASTE FORM: Solidified aqueous waste is produced by vacuum filtration of precipitated solids from an aqueous waste slurry. The filter medium is an inert diatomaceous earth medium on a rotating drum. Solids are trapped on the surface of the filter medium as the solution passes through. The surface of the filter medium with entrapped solids is skimmed off as wet sludge. The precipitated solids are chiefly metal hydroxides with a pH of 10 to 12. The final waste form consists of a solidified material produced by combining the liquid aqueous waste or the waste sludge with Portland cement and, in certain cases, with Ramcote insulation cement. Sludge and solidified aqueous wastes may be calcined to form an oxide waste form. Diatomaceous earth (diatomite) may also be added for liquid absorption. The inorganic particulates, sludges, liquid from inorganics, etc., may be mixed with grout, or cement may be added to the waste as absorbent. Oil-Dri may also be added to absorb any free liquid.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 111A RF 211A	DRUM PREPARATION: The solidified waste is either prepared in or directly placed into a 55-gallon drum that may be lined with a rigid liner and two plastic liner bags. BOX PREPARATION: This packaging configuration consists of one layer of confinement. The SWB may be equipped with one or two plastic liner bags. If two plastic liner bags are used, then one is not sealed closed. A liner (made of metal or wood) may be inserted between the waste and the inner plastic liner to support the plastic liner during loading. A fiberboard liner insert may be placed between the waste and the liner bag(s) for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the prepared SWB.
RF 111B RF 211B	BOX PREPARATION: The waste is transferred directly into a metal container (e.g. a drum or can) using a plastic sleeve attached externally to the metal container. After waste transfer is complete, the plastic sleeve is closed and a filtered metal lid may then be installed over the closed plastic sleeve and onto the metal container (i.e., the closed, plastic sleeve is situated between the waste material and the metal container lid). The metal containers are then placed into an SWB. A plastic liner bag may be present in the SWB, but if it is present, it is not closed.

Code	Description*
RF 111D RF 211D RF 111DF RF 211DF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a slip-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 111E RF 211E	The waste is placed directly into a metal can closed with a slip-top lid. The metal can may be double-bagged in vented/filtered plastic bags and may be placed in a larger metal can closed with a slip-top lid. The waste is then placed into a 55-gallon drum that may be lined with a rigid liner and a maximum of two vented/filtered drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 111H RF 211H	<u>DRUM PREPARATION</u>: Waste may be contained in one plastic bag. The waste is then placed into a drum that may be lined with a rigid liner and/or a plastic liner bag. <u>BOX PREPARATION</u>: The packaging configuration consists of a maximum of two layers of confinement. Waste may be contained in one plastic bag. The waste is then placed into an SWB that may be lined with one plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.
RF 111J RF 211J	The waste is placed in a metal can with a slip-top or filtered screw-top lid. The metal can is removed from the glovebox line and may be placed in up to two vented/filtered plastic bags. The waste may be placed in a larger metal can with a slip-top or filtered screw-top lid. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and one vented/filtered plastic drum liner bag. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 111K RF 211K	Waste is placed directly in a rigid plastic, cardboard, or metal container less than 4 liters in size. [Note: For newly packaged waste, the first layer of packaging is a metal container that will allow free release of hydrogen (e.g., a slip-lid metal container).] The rigid container is then double-bagged in two filtered inner plastic bag layers. Bagged waste may be placed in a filtered rigid plastic, cardboard, or metal container. The outermost rigid container may then be placed in a filtered inner plastic bag, followed by a filtered liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid drum liner.
RF 111M RF 211M	The waste may be contained in two plastic bags. The waste is then placed into a drum that may be lined with a rigid liner and/or up to two liner bags.
RF 111N RF 211N	The waste may be contained in two plastic bags. The waste is then placed into a drum that may be lined with a rigid liner and/or a plastic liner bag.
RF 111O RF 211O	The waste is packaged in a 55-gallon drum that may be lined with a rigid liner and up to two liner bags. All plastic liner bags have been slit with a minimum of one 1-inch diameter hole.
RF 111OA RF 211OA	The waste is packaged in a 55-gallon drum that may be lined with a rigid liner without a rigid liner lid and up to two liner bags. All plastic liner bags have been slit with a minimum of one 1-inch diameter hole.

Code	Description*
RF 111P RF 211P RF 111PF RF 211PF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a filtered screw-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

*All bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in SWBs, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: A sample of the sludge from each drum is taken to determine the amount and identity of the radionuclides (plutonium, americium, and uranium) in the waste. The waste sample is analyzed using a radiochemical assay. The results of the analysis are expressed in terms of grams of each radionuclide present for each gram of waste. Also, the waste may be assayed using a PAN counter or a segmented gamma scan counter, or other approved system. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: The TRU solidified waste is produced through a defined process per approved procedure. Independent visual examination of waste contents at the time of packaging, approved process controls, and/or RTR examination ensures that unacceptable levels of free liquids are not present in the final waste form.

EXPLOSIVES/COMPRESSED GASES: The waste is produced in a closed system which precludes the introduction of extraneous materials such as pressure vessels or explosives. No explosives, explosive mixtures or compressed gases have been identified in this waste. Explosives are prohibited by waste packaging procedures at RFETS.

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, the drum lid contains a minimum of one filter, and the rigid liner is either filtered or punctured. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: RF 112, RF 212 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Organics

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: Waste organic liquids are solidified/processed in various RFETS plutonium areas. The organic liquids may be mixed/combined with gypsum cement (Envirostone), calcium silicate, or other suitable solidification or adsorbing/absorbing material. The waste may also consist of inorganic particulate waste where wetting agents/dust suppressants were applied to minimize the spread of contamination and personnel exposure during waste packaging operations.

GENERATING SOURCE: The waste originates from Building 774 at RFETS or various RFETS plutonium processing/storage areas.

WASTE FORM: The organic liquids or particulates and solidification agents are mixed or combined together within a 55-gallon drum or in small, open top rigid plastic, cardboard, or metal containers. The small containers, or the waste materials removed from the small containers are then placed into a 55-gallon drum. An absorbent such as Nochar Acid Bond or Abzorbit, which may be mixed with a neutralizing agent, loose or on pads, may be placed on top of the waste or between the 55-gallon drum lid and the rigid liner or plastic bags.

The oil/solvent mixtures may contain machining oil, lathe coolant, carbon tetrachloride, 1,1,1-trichloroethane, and 1,1,2-trichloro-1,2,2-trifluoroethane. The organic laboratory waste may also contain chloroform or a mix of chloroform and xylene and other chemicals.

Alternately, the waste is either mixed with grout or cement is added to the waste as an absorbent. Oil-Dri may also be added to the waste as an absorbent without cementation. The cement mixture varies by procedure with the type of waste being cemented.

The waste may also have organic liquids (as constituents in the formulation of dust suppressants/ wetting agents) which were added to inorganic particulate waste to minimize the spread of contamination during waste packaging operations.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 112A RF 212A	The solidified waste is either prepared in or directly placed into a 55-gallon drum that may be lined with a rigid liner and two plastic liner bags.
RF 112B RF 212B	DRUM PREPARATION: The waste is placed directly into a metal can closed with a slip-top lid. The metal can may then be double-bagged in plastic bags. The waste is placed into a 55-gallon drum that may be lined with a rigid liner and a plastic drum liner bag.
RF 112D RF 212D RF 112DF RF 212DF	The waste is placed in a metal can with a slip-top lid. The metal can is removed from the glovebox line and may be placed in up to two vented/filtered plastic bags. The waste may be placed in a larger metal can with a slip-top or filtered screw-top lid. The waste is then placed into a pipe component. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The rigid liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

Code	Description*
RF 112J RF 212J	The waste is placed in a metal can with a slip-top lid. The metal can is removed from the glovebox line and may be placed in up to two vented/filtered plastic bags. The waste may be placed in a larger metal can with a slip-top or filtered screw-top lid. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and one vented/filtered plastic drum liner bag. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 112N RF 212N	DRUM PREPARATION: The waste is either loaded directly into a drum or placed in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and a plastic drum liner bag.
RF 112O RF 212O	The solidified waste is packaged in a 55-gallon drum that may be lined with a rigid liner and up to two liner bags. All plastic liner bags have been slit with a minimum of one 1-inch diameter hole. High diffusion filters (5X or 25X) may be used in the drum lid.
RF 112OA RF 212OA	The solidified waste is packaged in a 55-gallon drum that may be lined with a rigid liner without a rigid liner lid and up to two liner bags. All plastic liner bags have been slit with a minimum of one 1-inch diameter hole. High diffusion filters (5X or 25X) may be used in the drum lid.
RF 112P RF 212P	The solidified waste is packaged in a 55-gallon drum that may be lined with a rigid liner and up to two liner bags. All plastic liner bags have been slit with a minimum of one 0.3-inch diameter hole. High diffusion filters (5X or 25X) may be used in the drum lid.
RF 112PA RF 212PA	The solidified waste is packaged in a 55-gallon drum that may be lined with a rigid liner without a rigid liner lid and up to two liner bags. All plastic liner bags have been slit with a minimum of one 0.3-inch diameter hole. High diffusion filters (5X or 25X) may be used in the drum lid.
RF 112Q RF 212Q	The solidified waste is packaged in a 55-gallon drum that may be lined with a rigid liner and a maximum of one plastic liner bag. High diffusion filters (5X or 25X) may be used in the drum lid.
RF 112QA RF 212QA	The solidified waste is packaged in a 55-gallon drum that may be lined with a rigid liner without a rigid liner lid and a maximum of one plastic liner bag. High diffusion filters (5X or 25X) may be used in the drum lid.

*All bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in SWBs, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The laboratory solvents are containerized and assayed prior to shipment to Building 774. The results of the radiochemical assays for bottled waste liquid are totaled and assigned to the appropriate drum. The oil/solvent mixture is transferred to Building 774 via pipeline from waste tanks in other buildings. The contents of each tank are assayed radiochemically to determine the amount of radionuclides in the liquid. The liquids are transferred to Building 774 in batches of less than 200 grams Pu fissile gram equivalent. The assay results for the batch are equally divided among all of the drums of cemented waste produced from that batch. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

Alternately, individual cans/drums of waste may be assayed using SGS counters, calorimetry, or other approved assay system. Can assays are totaled to determine the amounts of radionuclides present per drum. The results are expressed in grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: The TRU solidified waste is produced through a defined process per approved procedure. Independent visual examination of waste contents at the time of packaging, approved process controls, and/or RTR examination ensures that unacceptable levels of free liquids are not present in the final waste form.

EXPLOSIVES/COMPRESSED GASES: No explosives, explosive mixtures or compressed gases have been identified in this waste. Explosives are prohibited by waste packaging procedures at RFETS.

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type IV.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, the drum lid contains a filter, and the rigid liner is either filtered or punctured. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: RF 113, RF 213 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Laboratory Waste

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: Aqueous laboratory wastes that are not compatible (i.e., strong acids or bases) with the primary aqueous treatment system are neutralized and solidified. The final waste form is obtained by mixing Portland and magnesia cements with the waste.

GENERATING SOURCE: The waste originates from Building 774 at RFETS.

WASTE FORM: The liquid waste is accumulated in bottles and, after chemical and radiochemical assay, is transferred to Building 774. The bottles are segregated into batches of 60-100 liters and less than 200 grams fissile material. The pH of the waste is adjusted to be slightly basic, and then the liquid is added to the premixed (Portland and magnesia) cement mixture in the drum.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 113A RF 213A	The solidified waste is either prepared in or directly placed into a 55-gallon drum that may be lined with a rigid liner and two plastic liner bags.
RF 113O RF 213O	The waste is packaged in a 55-gallon drum that may be lined with a rigid liner and up to two liner bags. All plastic liner bags have been slit with a minimum of one 1-inch diameter hole.
RF 113OA RF 213OA	The waste is packaged in a 55-gallon drum that may be lined with a rigid liner without a rigid liner lid and up to two liner bags. All plastic liner bags have been slit with a minimum of one 1-inch diameter hole.

*All bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in SWBs, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: As described under waste form, the laboratory waste is assayed radiochemically. The results of the assays are totaled and assigned to the appropriate drum. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: The TRU solidified waste is produced through a defined process per approved procedure. Independent visual examination of waste contents at the time of packaging, approved process controls, and/or RTR examination ensures that unacceptable levels of free liquids are not present in the final waste form.

EXPLOSIVES/COMPRESSED GASES: No explosives, explosive mixtures or compressed gases have been identified in this waste. Explosives are prohibited by waste packaging procedures at RFETS.

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type IV.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid contains a minimum of one filter, and the rigid liner is either filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: RF 114, RF 214 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Cemented Inorganic Process Solids

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: Various particulate and solid inorganic waste generated and containerized during plutonium operations that is either solidified with grout (cement and water mixture) or cement is added to the waste as an absorbent. The waste includes inorganic particulates, sludges, residual heels from aqueous inorganic waste processing, etc. The resultant waste is designated cemented inorganic process solids.

GENERATING SOURCES: The wastes were generated from various RFETS plutonium areas.

WASTE FORM: The waste is either mixed with grout (cement/water mixture) or cement is added to the waste as an absorbent. The grout mixture may vary with the type of waste being cemented.

WASTE PACKAGING: Details of the waste packaging for each code are specified in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 114A RF 214A	The solidified waste is placed directly into a single plastic bag. Waste may be placed into another layer of plastic. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and a plastic drum liner bag. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 114B RF 214B	The waste is placed in a metal can with a slip-top lid. The metal can is removed from the glovebox line and may be placed in up to two plastic bags. The waste may be placed in a larger metal can with a slip-top lid. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and a maximum of two plastic drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 114D RF 214D RF 114DF RF 214DF	The waste is placed in a metal can with a slip-top lid. The metal can is removed from the glovebox line and may be placed in up to two plastic bags. The waste may be placed in a larger metal can with a slip-top lid. The waste is then placed in a pipe component. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 114E RF 214E	The waste is placed in a metal can with a slip-top lid. The metal can is removed from the glovebox line and may be placed in up to two vented/filtered plastic bags. The waste may be placed in a larger metal can with a slip-top lid. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and a maximum of two vented/filtered plastic drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 114F RF 214F	The waste is placed directly into a single plastic bag. Waste may be placed into another layer of plastic. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and a maximum of two plastic drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection. All the rigid liner bags and inner confinement bags are vented/filtered or punctured.

Code	Description*
RF 114G RF 214G RF 114GF RF 214GF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a slip-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 114J RF 214J RF 114JF RF 214JF	The waste is placed directly into a metal can closed with a slip-top or filtered screw-top lid. The metal can is removed from the glovebox line and may be placed in up to two vented/filtered plastic bags. The waste may be placed in a larger metal can with a slip-top or filtered screw-top lid. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and a maximum of two vented/filtered plastic drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 114K RF 214K	The solidified waste is either prepared in or directly placed into a 55-gallon drum that may be lined with a rigid liner and two plastic bag liners.
RF 114L RF 214L	The solidified waste is either prepared in or directly placed into a 55-gallon drum that may be lined with a rigid liner and two vented/filtered plastic bag liners.
RF 114P RF 214P RF 114PF RF 214PF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a filtered screw-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

*All liner bag and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in SWBs, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: Individual cans/drums of waste may be assayed using SGS counters, calorimetry, or other approved assay system. Can assays are totaled to determine the amounts of radionuclides present per drum. The results are expressed in grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUID: The TRU solidified waste is produced through a defined process per approved procedure. Independent visual examination of waste contents at the time of packaging, approved process controls, and/or RTR examination ensures that unacceptable levels of free liquid are not present in the final waste form.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent visual examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers.

PYROPHORICS: Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophorics will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.3 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid and each pipe component lid contains a minimum of one filter, and the rigid liner is either filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: Maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: RF 115, RF 215 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Graphite Waste

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: The waste consists of discarded graphite from plutonium casting and laboratory operations.

GENERATING SOURCES: The waste was generated from various plutonium areas at RFETS (primarily from Buildings 371, 374, 559, 707, 771, and 776).

WASTE FORM: The waste consists of broken or unbroken graphite molds and graphite furnace equipment, or graphite chunks and pieces from mold cleaning, scarfing, and declassification. Discarded laboratory equipment composed primarily of graphite is also included in this content code. Some of the waste may be immobilized by mixing with low temperature melting glass.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 115A RF 215A	The waste is placed either directly into a 55-gallon drum, or double-bagged prior to loading into a 55-gallon drum. The drum may be lined with a rigid liner and up to two plastic liner bags. A fiberboard liner insert may be placed between the waste bags and the drum liners for puncture protection.
RF 115B RF 215B	The waste is placed directly into a metal can. The metal can may be double-bagged in plastic bags and removed from the glovebox line. The metal can may also be placed into a larger metal can. The waste is then placed into a 55-gallon drum that may be lined with a rigid liner and a maximum of two drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 115D RF 215D	The waste is placed directly into a metal can and then placed into a pipe component. The metal cans may be double-bagged in plastic bags and removed from the glovebox line. The bagged material may be placed into a larger metal can. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner and with celotex packaging material placed between the pipe component and the rigid liner. The rigid liner lid is then put in place followed by the filtered drum lid. The rigid liner will be filtered or punctured, in accordance with the CH-TRAMPAC. The lid is then secured to the drum with a bolted closure ring.
RF 115E RF 215E	The waste is removed from the glovebox line contained in up to two vented/filtered plastic bags. The bagged waste may be placed into a vented/filtered metal container and then placed into a 55-gallon drum that may be lined with a rigid liner and one vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.

Code	Description*
RF 115F RF 215F	The waste is placed inside a 55-gallon drum that may be equipped with a vented rigid liner and one or two filtered plastic liner bags. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are filtered with a minimum of one filter vent.
RF 115N RF 215N	<u>DRUM PREPARATION</u>: The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and one plastic liner bag. <u>BOX PREPARATION</u>: Waste may be contained in up to two plastic bags. The waste is then placed into an SWB that is lined with one plastic liner bag. The bag liner is sealed by taping along the folds.

* All bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in SWBs, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

<u>ASSAY</u>: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

<u>FREE LIQUIDS</u>: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example supercompacted waste or packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container (e.g, prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

<u>EXPLOSIVES/COMPRESSED GASES</u>: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

<u>PYROPHORICS</u>: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types II.1 and II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid and each pipe component lid contains a minimum of one filter, and the rigid liner is either filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: RF 116, RF 216 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Combustible Waste

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: The waste consists of paper, rags, cloth, coveralls, plastic, rubber, wood and other similar items.

GENERATING SOURCES: The waste was generated from various plutonium areas at RFETS (primarily from Buildings 371, 374, 559, 707, 771, 774, 776, 777, and 779).

WASTE FORM: The waste consists mainly of cloth and paper products from cleanup of gloveboxes and spills. It may also include other combustible items as mentioned in the waste description section. Some of the waste may have been processed to remove excess aqueous solution and/or solvents.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 116A RF 216A	DRUM PREPARATION: The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and up to two plastic liner bags. BOX PREPARATION: This packaging configuration consists of one layer of confinement. The SWB may be equipped with one or two plastic liner bags. If two plastic liner bags are used, then one is not sealed closed. A liner (made of metal or wood) may be inserted between the waste and the inner plastic liner to support the plastic liner during loading. A fiberboard liner insert may be placed between the waste and the liner bag(s) for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the prepared SWB.
RF 116C RF 216C	The waste is precompacted and placed into 35-gallon drums. The loaded 35-gallon drums are supercompacted into "pucks". The supercompacted waste has all confinement layers (plastic bags) breached. Up to three 35-gallon drum pucks are placed in a maximum of two confining layers of plastic inside a 55-gallon drum. Both layers of plastic are drum liner bags.
RF 116D RF 216D RF 116DF RF 216DF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a slip-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 116E RF 216E RF 116EF RF 216EF	DRUM PREPARATION: The waste is removed from the glovebox line contained in up to two vented/filtered plastic bags. The bagged waste may be placed into a vented/filtered metal container and then placed into a 55-gallon drum that may be lined with a rigid liner and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: This waste may be packaged as described above and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.

Code	Description*
RF 116F RF 216F	DRUM PREPARATION: This waste stream is packaged inside a 55-gallon drum that may be lined with a rigid liner and one or two vented/filtered plastic liner bags. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: This waste stream may be packaged inside an SWB equipped with a vented/filtered plastic liner bag. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the SWB, or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 116G RF 216G RF 116GF RF 216GF	DRUM PREPARATION: The waste is removed from the glovebox line contained in one vented/filtered plastic bag. The bagged waste may be placed into a vented/filtered metal container and then into a 55-gallon drum that may be lined with a rigid liner, and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: This waste may be packaged as described above and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 116H RF 216H	The packaging configuration consists of two layers of confinement. Waste may be contained in one plastic bag. The waste is then placed into an SWB that is lined with one plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the inner layer of confinement. The bag liner is sealed by taping along the folds.
RF 116I RF 216I	DRUM PREPARATION: The waste is removed from the glovebox contained in up to two vented/filtered plastic bags. The bagged waste may be placed into a metal can closed with a slip-top lid, and then into a 55-gallon drum that may be lined with a rigid liner, and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: The waste may be packaged as described above and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.
RF 116J RF 216J	Waste is placed directly in a rigid plastic, cardboard, or metal container less than 4 liters in size. [Note: For newly packaged waste, the first layer of packaging is a metal container that will allow free release of hydrogen (e.g., a slip-lid metal container).] The rigid container is then double bagged in two twist-and-taped inner plastic bag layers. Bagged waste is placed in an unsealed rigid plastic, cardboard, or metal container. The outermost rigid container is then placed in a twist-and-taped inner plastic bag, followed by a twist-and-taped liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid drum liner.
RF 116K RF 216K RF 116KF RF 216KF	Waste is placed directly in a rigid plastic, cardboard, or metal container less than 4 liters in size. [Note: For newly packaged waste, the first layer of packaging is a metal container that will allow free release of hydrogen (e.g., a slip-lid metal container).] The rigid container is then double bagged in two filtered inner plastic bag layers. Bagged waste is placed in a filtered rigid plastic, cardboard, or metal container. The outermost rigid container is then placed in a filtered inner plastic bag, followed by a filtered liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid drum liner.

Code	Description*
RF 116L RF 216L	Waste is placed directly in three twist-and-taped inner plastic bag layers. Bagged waste is placed in an unsealed rigid plastic, cardboard, or metal container. The rigid container is then placed in a twist-and-taped inner plastic bag, followed by a twist-and-taped liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid drum liner.
RF 116M RF 216M RF 116MF RF 216MF	Waste is placed directly in three filtered inner plastic bag layers. Bagged waste is placed in a filtered rigid plastic, cardboard, or metal container. The rigid container is then placed in a filtered inner plastic bag, followed by a filtered liner bag. Finally, waste is placed in a 55-gallon drum which may be lined with a rigid drum liner.
RF 116N RF 216N	<u>DRUM PREPARATION</u>: The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and one plastic liner bag. <u>BOX PREPARATION</u>: The packaging configuration consists of three layers of confinement. Waste may be contained in up to two plastic bags. The waste is then placed into an SWB that is lined with one plastic liner bag. The bag liner is sealed by taping along the folds. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.
RF 116P RF 216P RF 116PF RF 216PF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a filtered screw-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 116Q RF 216Q	The waste is packaged inside one or two plastic inner bags and then placed in a 55-gallon drum that may be lined with a rigid liner. Either the drum does not contain any liner bags, or all liner bags have been punctured upon repackaging.
RF 116R RF 216R RF 116RF RF 216RF	Waste is placed directly in a rigid plastic, cardboard, or metal container less than 4 liters in size. [Note: For newly packaged waste, the first layer of packaging is a metal container that will allow free release of hydrogen (e.g., a slip-lid metal container).] The rigid container is then double bagged in two twist-and-taped inner plastic bag layers. Bagged waste is placed in a filtered rigid plastic, cardboard, or metal container. The outermost rigid container is then placed in a twist-and-taped inner plastic bag, followed by a twist-and-taped liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid drum liner.
RF 116S RF 216S RF 116SF RF 216SF	Waste is placed directly in three twist-and-taped inner plastic bag layers. Bagged waste is placed in a filtered rigid plastic, cardboard, or metal container. The rigid container is then placed in a twist-and-taped inner plastic bag, followed by a twist-and-taped liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid drum liner.

Code	Description*
RF 116T RF 216T	The packaging configuration consists of two vented/filtered layers of confinement. Waste may be contained in one vented/filtered plastic bag. The waste is then placed into an SWB that is lined with one vented/filtered plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. The vented/filtered bag liner is sealed by taping along the folds. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in an SWB, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example supercompacted waste or packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid contains a minimum of one filter, and the rigid liner is vented/filtered or punctured, if present. Each SWB is fitted with at least two, and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: RF 117, RF 217 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Metal Waste

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: The waste consists of discarded items or objects of metal (e.g., iron, copper, aluminum, stainless or other steel alloys, tungsten, depleted uranium, lead, and tantalum.)

GENERATING SOURCES: The waste originates from various plutonium areas at RFETS (primarily from Buildings 371, 374, 559, 707, 771, 774, 776, 777, and 779).

WASTE FORM: The waste form includes items such as gloveboxes, used shielding, tools/tooling, crucibles, machinery, equipment, scrap metal components, empty containers, and other metallic objects. The waste is not finely divided or particulate in form, and so does not possess a pyrophoric characteristic. The items that are difficult to reduce to a size that would fit in a drum are placed in an SWB or TDOP.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 117A RF 217A	DRUM PREPARATION: The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and up to two plastic liner bags. A fiberboard liner insert may be placed between the waste and the drum liner for puncture protection. BOX PREPARATION: This packaging configuration consists of one layer of confinement. The SWB may be equipped with one or two plastic liner bags. If two plastic liner bags are used, then one is not sealed closed. A liner (made of metal or wood) may be inserted between the waste and the inner plastic liner to support the plastic liner during loading. A fiberboard liner insert may be placed between the waste and the liner bag(s) for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the prepared SWB. TDOP PREPARATION: The waste may be packaged in up to two plastic bags and then placed into a TDOP.
RF 117B RF 217B	The waste is placed directly into a metal can. The metal can may be double-bagged in plastic bags and removed from the glovebox line. The metal can may also be placed into a larger metal can. The waste is then placed into a 55-gallon drum that may be lined with a rigid liner and a maximum of two drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 117C RF 217C	The waste is loaded directly into 35-gallon drums. The loaded 35-gallon drums are supercompacted into "pucks". The supercompacted waste has all confinement layers (plastic bags) breached. Up to four 35-gallon pucks are placed into a 55-gallon drum. The waste is packaged with a maximum of two confining layers of plastic, both layers being drum liner bags.

Code	Description*
RF 117D RF 217D	The waste is placed directly into a metal can and then placed into a pipe component. The metal cans may be double-bagged in plastic bags and removed from the glovebox line. The bagged material may be placed into a larger metal can. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The rigid liner lid is then put in place followed by the filtered drum lid. The rigid liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 117E RF 217E	<u>DRUM PREPARATION:</u> The waste is removed from the glovebox line contained in up to two vented/filtered plastic bags. The bagged waste may be placed into a vented/filtered metal container and then placed into a 55-gallon drum that may be lined with a rigid liner and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. <u>BOX PREPARATION</u>: This waste may be packaged as described above and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 117F RF 217F	<u>DRUM PREPARATION</u>: This waste stream is packaged inside a 55-gallon drum that may be lined with a rigid liner and up to two vented/filtered plastic liner bags. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. <u>BOX PREPARATION</u>: This waste stream may also be packaged inside an SWB equipped with a vented/filtered plastic liner bag. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 117H RF 217H	The packaging configuration consists of two layers of confinement. Waste may be contained in one plastic bag. The waste is then placed into an SWB that is lined with one plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the inner layer of confinement. The bag liner is sealed by taping along the folds.
RF 117I RF 217I	<u>DRUM PREPARATION</u>: The waste is removed from the glovebox contained in up to two vented/ filtered plastic bags. The bagged waste may be placed into a metal can closed with a slip-top lid and then into a 55-gallon drum that may be lined with a rigid liner and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. <u>BOX PREPARATION</u>: The waste may be packaged in up to two vented/filtered plastic bags and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The package configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. <u>TDOP PREPARATION</u>: The waste may be packaged in up to two vented/filtered plastic bags and then placed into a TDOP. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.

Code	Description*
RF 117K RF 217K	BOX PREPARATION: The waste may be contained in up to three vented/filtered plastic bags and then placed into an SWB. The SWB may be lined with one vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.
RF 117N RF 217N	DRUM PREPARATION: The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and one plastic liner bag. BOX PREPARATION: The packaging configuration consists of three layers of confinement. Waste may be contained in up to two plastic bags. The waste is then placed into an SWB that is lined with one plastic liner bag. The bag liner is sealed by taping along the folds. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.
RF 117T RF 217T	The packaging configuration consists of two vented/filtered layers of confinement. Waste may be contained in one vented/filtered plastic bag. The waste is then placed into an SWB that is lined with one vented/filtered plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. The vented/filtered bag liner is sealed by taping along the folds. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in an SWB, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example supercompacted waste or packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans in to drums or pipe overpacks).

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Finely divided radionuclide material that may be pyrophoric will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types II.1 and II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid and each pipe component lid contains a minimum of one filter, and the rigid liner is either filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: RF 118, RF 218 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Glass Waste

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: The waste consists of glass and ceramic waste from recovery, maintenance and laboratory operations.

GENERATING SOURCES: The waste originates from various plutonium areas at RFETS (primarily from Buildings 371, 374, 559, 707, 771, 774, 776, 777, and 779).

WASTE FORM: The waste form includes items such as Raschig rings (borosilicate glass - neutron poison), ceramic crucibles, glovebox windows, laboratory glassware, process equipment and empty containers.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 118A RF 218A	DRUM PREPARATION: The glass is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. In addition, the waste may be collected in a metal can or polyethylene bottle which would then be removed from the line wrapped within the two bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and up to two plastic liner bags. The drums may have a fiberboard liner placed between the waste and the container liners for puncture protection. BOX PREPARATION: This packaging configuration consists of one layer of confinement. The SWB may be equipped with one or two plastic liner bags. If two plastic liner bags are used, then one is not sealed closed. A liner (made of metal or wood) may be inserted between the waste and the inner plastic liner to support the plastic liner during loading. A fiberboard liner insert may be placed between the waste and the liner bag(s) for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the prepared SWB.
RF 118B RF 218B	The waste is placed directly into a metal can. The metal can may be double-bagged and removed from the glovebox line. The metal can may also be placed into a larger metal can. The waste is then placed into a 55-gallon drum that may be lined with a rigid liner and a maximum of two drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 118C RF 218C	The waste is loaded directly into 35-gallon drums. The loaded 35-gallon drums are supercompacted into "pucks". The supercompacted waste has all confinement layers (plastic bags) breached. Up to four 35-gallon pucks are placed into a 55-gallon drum. The waste is packaged with a maximum of two confining layers of plastic, both layers being drum liner bags.

Code	Description*
RF 118D RF 218D	The waste is placed directly into a metal can and then placed into a pipe component. The metal cans may be double-bagged in plastic bags and removed from the glovebox line. The bagged material may be placed into a larger metal can. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that may be lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The rigid liner lid is then put in place followed by the filtered drum lid. The rigid liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 118E RF 218E	DRUM PREPARATION: The waste is removed from the glovebox line contained in up to two vented/filtered plastic bags. In addition, the waste may be collected in a metal can or polyethylene bottle (≤4 liters), which would then be removed from the line contained within the two vented/filtered plastic bags. The bagged waste may be placed into a vented/filtered metal container and then placed into a 55-gallon drum that may be lined with a rigid liner and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: This waste may be packaged as described above and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 118F RF 218F	DRUM PREPARATION: This waste stream is packaged inside a 55-gallon drum that may be lined with a rigid liner and up to two vented/filtered plastic liner bags. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: This waste stream may be packaged inside an SWB equipped with a vented/filtered plastic liner bag. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 118H RF 218H	The packaging configuration consists of two layers of confinement. Waste may be contained in one plastic bag. The waste is then placed into an SWB that is lined with one plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the inner layer of confinement. The bag liner is sealed by taping along the folds.
RF 118I RF 218I	DRUM PREPARATION: The waste is removed from the glovebox contained in up to two vented/filtered plastic bags. The bagged waste may be placed into a metal can closed with a slip-top lid and then into a 55-gallon drum that may be lined with a rigid liner and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: The waste may be packaged in up to two vented/filtered plastic bags and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The package configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.

Code	Description*
RF 118N RF 218N	DRUM PREPARATION: The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and one plastic liner bag. BOX PREPARATION: The packaging configuration consists of three layers of confinement. Waste may be contained in up to two plastic bags. The waste is then placed into an SWB that is lined with one plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. The bag liner is sealed by taping along the folds.
RF 118T RF 218T	The packaging configuration consists of two vented/filtered layers of confinement. Waste may be contained in one vented/filtered plastic bag. The waste is then placed into an SWB that is lined with one vented/filtered plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. The vented/filtered bag liner is sealed by taping along the folds. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in an SWB, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s) or, in some cases by approved acceptable knowledge data. Assay, when used, is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay/acceptable knowledge results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay/acceptable knowledge results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example supercompacted waste or packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types II.1 and II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid and each pipe component lid contains a minimum of one filter, and the rigid liner is either filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: RF 119, RF 219 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Filter Waste

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: Filter waste includes absolute dry box filters, HEPA filters, plenum prefilters, and Ful-Flo (for liquids) filters that were used to remove suspended solids in various liquid and air streams at RFETS.

GENERATING SOURCES: The waste originates from various RFETS plutonium areas.

WASTE FORM: HEPA filters and drybox filters are of various sizes. The frames are made of wood or metal, and the media are composed of a fiberglass-type or Nomex-type material. Ful-Flo is a product name. Ful-Flo filters consist of polypropylene plastic, and are one piece, molded, in-line cartridge filters that are used to remove particulates from liquid process streams. Other filters may also be included in this waste type and may be composed of wood or metal, and media composed of a fiberglass-type or Nomex-type material. Some types of filter waste are processed by the addition of cement to the waste, according to Waste Operations procedures.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 119A RF 219A	DRUM PREPARATION: The waste is placed directly into a single plastic bag. Waste may be placed into another layer of plastic. The filters may be placed in a “poly bottle” or “Clam Shell” (i.e., hard plastic container), which has been punctured upon repackaging and is then placed in a 55-gallon drum that may be lined with a rigid liner and a maximum of two plastic drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection. BOX PREPARATION: The waste may also be packaged into an SWB. Each bag of waste is opened/punctured prior to placement in the SWB. The SWB is lined with one plastic liner bag. All liner bags are sealed by taping along the folds.
RF 119BA RF 219BA RF 119BAF RF 219BAF	The waste is placed directly into a metal can closed with a slip-top lid. The metal can is then double-bagged in plastic bags. Bagged waste may be placed into a larger metal can with a slip-top or a filtered screw-top lid. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid liner and a drum liner bag.
RF 119C RF 219C	The waste is precompacted and placed into 35-gallon drums. The loaded 35-gallon drums are supercompacted into "pucks". The supercompacted waste has all confinement layers (plastic bags) breached. Up to three 35-gallon drum pucks are placed in a maximum of two confining layers of plastic inside a 55-gallon drum. Both layers of plastic are drum liner bags.
RF 119D RF 219D RF 119DF RF 219DF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a slip-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

Code	Description*
RF 119E RF 219E RF 119EF RF 219EF	DRUM PREPARATION: The waste is removed from the glovebox line and may be placed in up to two vented/filtered plastic bags. The waste may be placed in a metal can with a slip-top or vented/filtered lid. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and a vented/filtered plastic drum liner bag. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection. BOX PREPARATION: This waste may be packaged as described above and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 119F RF 219F	DRUM PREPARATION: The waste is packaged inside a 55-gallon drum that may be lined with a rigid liner and up to two vented/filtered plastic liners or O-Ring bags. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: This waste stream may be packaged inside an SWB equipped with a vented/filtered plastic liner bag. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the SWB, or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 119G RF 219G RF 119GF RF 219GF	DRUM PREPARATION: The waste is removed from the glovebox line contained in one vented/filtered plastic bag. The bagged waste may be placed into a vented/filtered metal container and then into a 55-gallon drum that may be lined with a rigid liner and one vented/filtered plastic liner bag. BOX PREPARATION: This waste may be packaged as described above and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 119H RF 219H	The packaging configuration consists of two layers of confinement. Waste may be contained in one plastic bag. The waste is then placed into an SWB that is lined with one plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the inner layer of confinement. The bag liner is sealed by taping along the folds.
RF 119I RF 219I	DRUM PREPARATION: The waste is removed from the glovebox line in up to two vented/filtered plastic bags. The waste may be placed in a metal can with a slip-top lid and then into a 55-gallon drum that may be lined with a rigid liner and one vented/filtered drum liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: The waste may be packaged in up to two vented/filtered plastic bags and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The package configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.

Code	Description*
RF 119J RF 219J	Waste is placed directly in a rigid plastic, cardboard, or metal container less than 4 liters in size. [Note: For newly packaged waste, the first layer of packaging is a metal container that will allow free release of hydrogen (e.g., a slip-lid metal container).] The rigid container is then double bagged in two twist-and-taped inner plastic bag layers. Bagged waste is placed in an unsealed rigid plastic, cardboard, or metal container. The outermost rigid container is then placed in a twist-and-taped inner plastic bag, followed by a twist-and-taped liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid liner.
RF 119K RF 219K RF 119KF RF 219KF	Waste is placed directly in a rigid plastic, cardboard, or metal container less than 4 liters in size. [Note: For newly packaged waste, the first layer of packaging is a metal container that will allow free release of hydrogen (e.g., a slip-lid metal container).] The rigid container may then be double bagged in two filtered inner plastic bag layers. Bagged waste may be placed in a filtered/vented rigid plastic, cardboard, or metal container. The outermost rigid container may then be placed in a filtered/vented inner plastic bag, followed by a filtered/vented liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid liner.
RF 119L RF 219L	Waste is placed directly in three twist-and-taped inner plastic bag layers. Bagged waste is placed in an unsealed rigid plastic, cardboard, or metal container. The rigid container is then placed in a twist-and-taped inner plastic bag, followed by a twist-and-taped liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid liner.
RF 119M RF 219M RF 119MF RF 219MF	Waste is placed directly in three filtered inner plastic bag layers. Bagged waste is placed in a filtered rigid plastic, cardboard, or metal container. The rigid container is then placed in a filtered inner plastic bag, followed by a filtered liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid liner.
RF 119N RF 219N	DRUM PREPARATION: The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and one plastic liner bag. BOX PREPARATION: The packaging configuration consists of three layers of confinement. Waste may be contained in up to two plastic bags. The waste is then placed into an SWB that is lined with one plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. The bag liner is sealed by taping along the folds.
RF 119P RF 219P RF 119PF RF 219PF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a filtered screw-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 119Q RF 219Q	The waste is packaged inside one or two plastic inner bags and then placed in a 55-gallon drum that may be lined with a rigid liner. Either the drum does not contain any liner bags, or all liner bags have been punctured upon repackaging.
RF 119R RF 219R RF 119RF RF 219RF	Waste is placed directly in a rigid plastic, cardboard, or metal container less than 4 liters in size. [Note: For newly packaged waste, the first layer of packaging is a metal container that will allow free release of hydrogen (e.g., a slip-lid metal container).] The rigid container is then double bagged in two twist-and-taped inner plastic bag layers. Bagged waste is placed in a filtered rigid plastic, cardboard, or metal container. The outermost rigid container is then placed in a twist-and-taped inner plastic bag, followed by a twist-and-taped liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid drum liner.

Code	Description*
RF 119S RF 219S RF 119SF RF 219SF	Waste is placed directly in three twist-and-taped inner plastic bag layers. Bagged waste is placed in a filtered rigid plastic, cardboard, or metal container. The rigid container is then placed in a twist-and-taped inner plastic bag, followed by a twist-and-taped liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid drum liner.
RF 119T RF 219T	The packaging configuration consists of two vented/filtered layers of confinement. Waste may be contained in one vented/filtered plastic bag. The waste is then placed into an SWB that is lined with one vented/filtered plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. The vented/filtered bag liner is sealed by taping along the folds. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 119W RF 219W	The waste is contained in up to three filtered/vented inner plastic bags that may be packaged into a filtered/vented drum liner bag inside a 55-gallon drum. The 55-gallon drum may be lined with a rigid liner.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in an SWB, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

<u>ASSAY</u>: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

<u>FREE LIQUIDS</u>: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example supercompacted waste or packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

<u>EXPLOSIVES/COMPRESSED GASES</u>: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

<u>PYROPHORICS</u>: Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid contains a minimum of one filter, and the rigid liner is filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: RF 121, RF 221 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Organic Solid Waste

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: The waste consists primarily of solid organic debris generated from various processes. The waste material includes Benelex and Plexiglas; blacktop, concrete, dirt and sand; composite debris composed of various combinations of solid organic and inorganic materials; resins or ion exchange resins; and miscellaneous organic solids (that may be either debris or non-debris in nature).

GENERATING SOURCES: The waste originates from various plutonium areas at RFETS, (primarily from Buildings 371, 374, 559, 707, 771, 774, 776, 777, and 779).

WASTE FORM: The waste consists of slabs of Benelex and Plexiglas neutron shielding and composite debris-type waste (primarily from D&D activities) that may vary in organic composition. This content code also encompasses blacktop, concrete, dirt and sand, resins or ion exchange resins, and other types of miscellaneous solid wastes that contain a significant amount of organic material. In some cases, the waste may be immobilized by mixing with low temperature melting glass.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 121A RF 221A	DRUM PREPARATION: The waste is removed from the glovebox contained in up to two layers of plastic. The bagged waste is then placed in a 55-gallon drum that may be lined with a rigid liner and up to two plastic liner bags. The drums may have a fiberboard liner placed between the waste and the container liners for puncture protection. The waste packaging may include up to two metal cans closed with slip-top lids. BOX PREPARATION: This packaging configuration consists of one layer of confinement. The SWB may be equipped with one or two plastic liner bags. If two plastic liner bags are used, then one is not sealed closed. A liner (made of metal or wood) may be inserted between the waste and the inner plastic liner to support the plastic liner during loading. A fiberboard liner insert may be placed between the waste and the liner bag(s) for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the prepared SWB. TDOP PREPARATION: The waste may be packaged in up to two plastic bags and then placed into a TDOP.
RF 121D RF 221D RF 121DF RF 221DF	The waste is placed directly into a metal can closed with a slip-top lid, and then placed into a pipe component. The metal cans may be double-bagged and removed from the glovebox line. The bagged material may be placed into a larger metal can closed with a slip-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that may be lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The rigid liner lid is then put in place followed by the filtered drum lid. The rigid liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

Code	Description*
RF 121DA RF 221DA RF 121DAF RF 221DAF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a slip-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 121E RF 221E	<u>DRUM PREPARATION:</u> The waste is removed from the glovebox line contained in up to two vented/filtered plastic bags. The bagged waste may be placed into a vented/filtered metal container and then placed into a 55-gallon drum that may be lined with a rigid liner and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. <u>BOX PREPARATION</u>: This waste may be packaged as described above and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 121F RF 221F	<u>DRUM PREPARATION</u>: This waste stream is packaged inside a 55-gallon drum that may be lined with a rigid liner and up to two vented/filtered plastic liner bags. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. <u>BOX PREPARATION</u>: This waste stream may be packaged inside an SWB equipped with a vented/filtered plastic liner bag. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 121H RF 221H	The packaging configuration consists of two layers of confinement. Waste may be contained in one plastic bag. The waste is then placed into an SWB that is lined with one plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the inner layer of confinement. The bag liner is sealed by taping along the folds.
RF 121J RF 221J	The waste is placed in a metal can with a slip-top or filtered screw-top lid. The metal can is removed from the glovebox line and may be placed in up to two vented/filtered plastic bags. The waste may be placed in a larger metal can with a slip-top or filtered screw-top lid. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and one vented/filtered plastic drum liner bag. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.

Code	Description*
RF 121I RF 221I	DRUM PREPARATION: The waste is removed from the glovebox contained in up to two vented/filtered plastic bags. The bagged waste may be placed into a metal can closed with a slip-top lid and then into a 55-gallon drum that may be lined with a rigid liner and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: The waste may be packaged in up to two vented/filtered plastic bags and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The package configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. TDOP PREPARATION: The waste may be packaged in up to two vented/filered plastic bags and then placed into a TDOP. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 121K RF 221K	BOX PREPARATION: The waste may be contained in up to three vented/filtered plastic bags and then placed into an SWB. The SWB may be lined with one vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.
RF 121N RF 221N	DRUM PREPARATION: The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and one plastic liner bag. BOX PREPARATION: The packaging configuration consists of three layers of confinement. Waste may be contained in up to two plastic bags. The waste is then placed into an SWB that is lined with one plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. The bag liner is sealed by taping along the folds.
RF 121T RF 221T	The packaging configuration consists of two vented/filtered layers of confinement. Waste may be contained in one vented/filtered plastic bag. The waste is then placed into an SWB that is lined with one vented/filtered plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. The vented/filtered bag liner is sealed by taping along the folds. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 121W RF 221W	The waste is contained in up to three filtered/vented inner plastic bags that may be packaged into a filtered/vented drum liner bag inside a 55-gallon drum. The 55-gallon drum may be lined with a rigid liner.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in SWBs, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example supercompacted waste or packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid and each pipe component lid contains a minimum of one filter, and the rigid liner is filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: RF 122, RF 222 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solid Inorganic Waste

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: This waste consists of a variety of noncompressible and noncombustible inorganic solids such as firebrick; clay absorbent; grit; slag; sand; and mixtures of sand, slag, and crucible. The content code also encompasses insulation, fire blankets and miscellaneous oxides.

GENERATING SOURCES: The waste was generated from various RFETS plutonium areas (primarily Buildings 371, 374, 559, 707, 771, 774, 776, 777, and 779).

WASTE FORM: The majority of the waste in this content code is waste generated during maintenance/stripout activities (i.e., replacement of firebrick refractory or insulation). The waste includes material such as firebrick; insulation; fire blankets; Oil-Dri (clay absorbent); miscellaneous oxides; grit; sand; slag; and sand, slag, and crucible mixtures that were generated from the recovery of plutonium for weapons production. In some cases, the waste may be immobilized by mixing with low temperature melting glass.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 122A RF 222A	DRUM PREPARATION: The waste is removed from the glovebox contained in up to two layers of plastic. The bagged waste is then placed in a 55-gallon drum which may be lined with a rigid liner and up to two plastic liner bags. The drums may have a fiberboard liner placed between the waste and the container liners for puncture protection. All bag closures are by the twist and tape method. BOX PREPARATION: This packaging configuration consists of one layer of confinement. The SWB may be equipped with one or two plastic liner bags. If two plastic liner bags are used, then one is not sealed closed. A liner (made of metal or wood) may be inserted between the waste and the inner plastic liner to support the plastic liner during loading. A fiberboard liner insert may be placed between the waste and the liner bag(s) for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the prepared SWB.
RF 122B RF 222B	The waste is placed directly into a metal can. The metal can may be double-bagged in plastic bags and may also be placed into a larger metal can. The waste is then placed into a 55-gallon drum which may be lined with a rigid liner and a maximum of two drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 122D RF 222D	The waste is placed directly into a metal can and then placed into a pipe component. The metal can may be double-bagged and may also be placed into a larger metal can. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

Code	Description*
RF 122E RF 222E	DRUM PREPARATION: The waste is removed from the glovebox line contained in up to two vented/filtered plastic bags. The bagged waste may be placed into a vented/filtered metal container and then placed into a 55-gallon drum that may be lined with a rigid liner and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: This waste may be packaged as described above and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 122F RF 222F	DRUM PREPARATION: This waste stream is packaged inside a 55-gallon drum that may be lined with a rigid liner and up to two vented/filtered plastic liner bags. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: This waste stream may be packaged inside an SWB equipped with a vented/filtered plastic liner bag. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 122H RF 222H	The packaging configuration consists of two layers of confinement. Waste may be contained in one plastic bag. The waste is then placed into an SWB that is lined with one plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the inner layer of confinement. The bag liner is sealed by taping along the folds.
RF 122I RF 222I	DRUM PREPARATION: The waste is removed from the glovebox contained in up to two vented/ filtered plastic bags. The bagged waste may be placed into a metal can closed with a slip-top lid and then into a 55-gallon drum that may be lined with a rigid liner and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: The waste may be packaged in up to two vented/filtered plastic bags and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The package configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.
RF 122N RF 222N	DRUM PREPARATION: The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and one plastic liner bag. BOX PREPARATION: The packaging configuration consists of three layers of confinement. Waste may be contained in up to two plastic bags. The waste is then placed into an SWB that is lined with one plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. The bag liner is sealed by taping along the folds.

Code	Description*
RF 122T RF 222T	The packaging configuration consists of two vented/filtered layers of confinement. Waste may be contained in one vented/filtered plastic bag. The waste is then placed into an SWB that is lined with one vented/filtered plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. The vented/filtered bag liner is sealed by taping along the folds. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in SWBs, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example supercompacted waste or packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types II.1 and II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid and pipe component lid contains a minimum of one filter, and the rigid liner is filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: RF 123, RF 223 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Leaded Rubber

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: The waste consists of leaded gloves and aprons.

GENERATING SOURCES: The waste was generated from various RFETS plutonium areas (primarily Buildings 371, 374, 559, 707, 771, 774, 776, 777, and 779).

WASTE FORM: The waste consists of discarded leaded gloves and aprons comprised of layers of Hypalon rubber and lead-oxide-impregnated neoprene. Leaded rubber that has been exposed to nitric acid is washed to remove any lead nitrate that may have formed.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 123A RF 223A	The waste is removed from the glovebox line wrapped in two bags and placed in a 55-gallon drum that may be lined with a rigid liner and up to two plastic liner bags.
RF 123E RF 223E	The waste is packaged inside a 55-gallon drum that may be lined with a rigid liner and up to two plastic liner bags. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that there are two layers of bags around the waste.
RF 123F RF 223F	DRUM PREPARATION: The waste is packaged inside a 55-gallon drum that may be lined with a rigid liner and up to two vented/filtered plastic liner bags. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: This waste may be packaged inside an SWB equipped with a vented/filtered plastic liner bag. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 123I RF 223I	The waste is removed from the glovebox contained in up to two vented/filtered plastic bags. The bagged waste may be placed into a metal can closed with a slip-top lid and then into a 55-gallon drum that may be lined with a rigid liner and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.

Code	Description*
RF 123N RF 223N	DRUM PREPARATION: The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and one plastic liner bag. BOX PREPARATION: Waste may be contained in up to two plastic bags. The waste is then placed into an SWB that is lined with one plastic liner bag. The bag liner is sealed by taping along the folds.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in SWBs, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (e.g., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example supercompacted waste or packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid contains a minimum of one filter, and the rigid liner is filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: RF 124, RF 224 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Pyrochemical Salt Waste

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: The waste consists of spent salt from molten salt extraction, electrorefining, direct oxide reduction, or other recovery and/or refining processes. (RF 124E/224E, RF 124F/224F, RF 124G/224G, RF 124H/224H) These salts may contain interstitial moisture or waters-of-hydration.

GENERATING SOURCES: The waste originates from various plutonium areas at RFETS (primarily Buildings 371, 776, and 779).

WASTE FORM: The salt is composed of various combinations of cesium, calcium, magnesium, potassium and sodium salts used in various pyrochemical operations at RFETS. (RF 124E/224E, RF 124F/224F, RF 124G/224G, RF 124H/224H) These salts may have absorbed environmental moisture during extended storage.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 124B RF 224B	The salt is placed in a metal can and either double-bagged out of the glovebox, or placed in a metal can and double-bagged out. The bagged metal can(s) may be placed in a larger metal can, and/or placed directly in a 55-gallon drum that may be lined with a rigid liner and up to two plastic liner bags. A fiberboard insert may be placed between the waste and the drum bags for puncture protection. The plastic bags used for bagging out the waste may be filtered.
RF 124D RF 224D	The salts are either placed directly in the pipe component or prepackaged in a metal can. If prepackaged, the metal can is either double-bagged out or placed into a larger metal can, and then double-bagged out. The bagged out metal can(s) may be placed in a larger metal can, and/or is placed in the pipe component. Once the material is emplaced, the pipe component lid, with filter, is then bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The rigid liner lid is then put in place followed by the filtered drum lid. The rigid liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring. The plastic bags used for bagging out the waste may be filtered.
RF 124E RF 224E	The salt is placed in a metal can closed with a slip-top lid and either double-bagged out of the glovebox in vented/filtered plastic bags or placed in a larger metal container closed with a slip-top lid and then double-bagged out. The bagged out metal container(s) may be placed in a larger vented/filtered metal container and/or placed directly in a 55-gallon drum that may be lined with a rigid liner and up to two vented/filtered plastic liner bags. A fiberboard insert may be placed between the waste and the drum bags for puncture protection. The plastic bags used for bagging out the waste are vented/filtered.

Code	Description*
RF 124F RF 224F RF 124FF RF 224FF	The salts are either placed directly in the pipe component or prepackaged in a metal can closed with a slip-top lid. If prepackaged, the metal can is either double-bagged out in vented/filtered plastic bags or placed into a larger metal can closed with a slip-top lid and then double-bagged out. The bagged out metal can(s) may be placed in a larger vented/filtered metal container and/or placed in the pipe component. Once the material is emplaced, the pipe component lid, with filter, is then bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The rigid liner lid is then put in place, followed by the filtered drum lid. The rigid liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring. The plastic bags used for bagging out the waste are vented/filtered.
RF 124G RF 224G RF 124GF RF 224GF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a slip-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 124H RF 224H RF 124HF RF 224HF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in plastic bags and may also be placed into a larger metal can closed with a slip-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in SWBs, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example supercompacted waste or packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the tables of allowable materials for Waste Material Types II.2 (RF 124B/224B and RF 124D/224D) and II.3 (RF 124E/224E, RF 124F/224F, RF 124G/224G, and RF 124H/224H) in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid and each pipe component lid contains a minimum of one filter, and the rigid liner is filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: RF 126, RF 226 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Organic Process Solids

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: Various particulate, solid organic, and anion and cation exchange resin waste that may be solidified with grout (Portland and/or magnesia cement and water mixture) or cement may be added to the waste as an absorbent. The waste includes organic particulates, sludges, ion exchange resins, etc.

GENERATING SOURCES: These wastes were generated from various RFETS plutonium areas.

WASTE FORM: The waste is either mixed with grout or cement is added to the waste as an absorbent. Oil-Dri may also be added to the waste as an absorbent without cementation. The cement mixture varies by procedure with the type of waste being cemented.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 126A RF 226A	The solidified waste is placed directly in up to two plastic bag layers, or the solidified waste is placed directly into a metal can with a slip-top lid and then in up to two plastic bag layers. The bagged waste may be placed in a larger metal can with a slip-top lid. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and a plastic drum liner bag. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 126D RF 226D RF 126DF RF 226DF	The waste is placed in a metal can with a slip-top lid. The metal can is removed from the glovebox line and may be placed in up to two plastic bags. The waste may be placed in a larger metal can with a slip-top lid. The waste is then placed into a pipe component. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The rigid liner lid is then put in place followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 126DA RF 226DA RF 126DAF RF 226DAF	The waste is placed in a metal can with a slip-top lid. The metal can is removed from the glovebox line and may be placed in up to two vented/filtered plastic bags. The waste may be placed in a larger metal can with a slip-top lid. The waste is then placed into a pipe component. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The rigid liner lid is then put in place followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 126E RF 226E	The waste is placed directly in up to two filtered plastic bag layers, or the waste is placed directly into a metal can with a slip-top lid and then in up to two filtered plastic bag layers. The bagged waste may be placed in a larger metal can with a slip-top lid. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and one filtered drum liner bag. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 126J RF 226J	The waste is placed in a metal can with a slip-top or filtered screw-top lid. The metal can is removed from the glovebox line and may be placed in up to two vented/filtered plastic bags. The waste may be placed in a larger metal can with a slip-top or filtered screw-top lid. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and one vented/filtered plastic drum liner bag. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 126K RF 226K	The solidified waste is prepared in a 55-gallon drum that may be lined with a rigid liner and two plastic liner bags.

Code	Description*
RF 126L RF 226L	The solidified waste is prepared in a 55-gallon drum that is lined with a rigid liner and two filtered plastic liner bags.
RF 126P RF 226P RF 126PF RF 226PF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a filtered screw-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in SWBs, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: Individual cans/drums of waste may be assayed using segmented gamma scan counters, calorimetry, or other approved assay system. Each bottle of resin may be assayed prior to cementation with an approved assay method. The assays are totaled to determine the amounts of radionuclides present per drum. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: The TRU solidified waste is produced through a defined process per approved procedure. Independent visual examination of waste contents at the time of packaging, approved process controls, and/or RTR examination ensures that unacceptable levels of free liquids are not present in the final waste form.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

PYROPHORICS: Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid and each pipe component lid contains a minimum of one filter, and the rigid liner is either filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: RF 127, RF 227 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Combined Solid Organics, Solid Inorganics and Solidified Inorganics

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: The waste consists of an inorganic aqueous liquid waste or sludge material collected in and from contaminated process piping, tanks, equipment, etc. The liquid/sludge waste material may be solidified with a polymer-based solidifying agent or other absorbent prior to packaging.

GENERATING SOURCES: The aqueous liquid/sludge waste originates from various radioactive (plutonium and uranium) process areas at RFETS.

WASTE FORM: The waste form may be produced by combining the inorganic aqueous liquid/sludge waste material with a polymer-based solidification agent (e.g., Nochar Acid Bond, WaterWorks Crystals, etc.) at an appropriate ratio to solidify the liquid in the waste material. The waste form may also consist of solidified aqueous liquid/sludge waste that is packaged in combination with solid organic waste material such as plastic bottles contaminated with the inorganic aqueous liquid/sludge material.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 127A RF 227A	DRUM PREPARATION: The solidified waste is either prepared in or directly placed into a 55-gallon drum that may be lined with a rigid liner and up to two plastic liner bags. BOX PREPARATION: This packaging configuration consists of one layer of confinement. The SWB may be equipped with one or two plastic liners bags. If two plastic liner bags are used, then one is not sealed closed. A liner (made of metal or wood) may be inserted between the waste and the inner plastic liner to support the plastic liner during loading. A fiberboard liner insert may be placed between the waste and the liner bag(s) for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the prepare SWB.
RF 127D RF 227D RF 127DF RF 227DF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a slip-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 127E RF 227E	The waste is placed directly into a metal can closed with a slip-top lid. The metal can may be double-bagged in vented/filtered plastic bags and may be placed in a larger metal can closed with a slip-top lid. The waste is then placed into a 55-gallon drum that may be lined with a rigid liner and a maximum of two vented/filtered drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.

Code	Description*
RF 127F RF 227F	DRUM PREPARATION: The solidified waste is either prepared in or directly placed into a 55-gallon drum that may be lined with a rigid liner and up to two vented/filtered plastic liner bags. The waste does not contain any inner bag layers. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: This packaging configuration consists of up to one layer of confinement. The SWB may be equipped with one filtered plastic liner bag. Another plastic liner bag may be present, but it is not closed. A liner (made of metal or wood) may be inserted between the waste and the inner plastic liner to support the plastic liner during loading. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.
RF 127H RF 227H	Waste may be contained in one plastic bag. The waste is then placed into a drum that may be lined with a rigid liner and/or a plastic liner bag.
RF 127J RF 227J	The waste is placed in a metal can with a slip-top or filtered screw-top lid. The metal can is removed from the glovebox line and may be placed in up to two vented/filtered plastic bags. The waste may be placed in a larger metal can with a slip-top or filtered screw-top lid. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and one vented/filtered plastic drum liner bag. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 127K RF 227K	Waste is placed directly in a rigid plastic, cardboard, or metal container less than 4 liters in size. [Note: For newly packaged waste, the first layer of packaging will not be a sealed container less than or equal to 4 liters in volume.] The rigid container is then double-bagged in two filtered inner plastic bag layers. Bagged waste may be placed in a filtered rigid plastic, cardboard, or metal container. The outermost rigid container may then be placed in a filtered inner plastic bag, followed by a filtered liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid drum liner.
RF 127L RF 227L	The waste may be contained in two plastic bags. The waste is then placed into a drum that may be lined with a rigid liner and/or a plastic liner bag.
RF 127N RF 227N	DRUM PREPARATION: The solidified waste is either prepared in or directly placed into a 55-gallon drum that may be lined with a rigid liner and one plastic liner bag. BOX PREPARATION: The packaging configuration consists of up to three layers of confinement. Waste may be placed in a vented rigid container and then contained in up to two plastic bags. The waste is then placed into an SWB that is lined with one plastic liner bag. The liner bag is sealed by taping along the folds. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.
RF 127P RF 227P RF 127PF RF 227PF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a filtered screw-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

*All bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in SWBs, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: A representative sample of the liquid/sludge to be solidified may be taken to determine the identity and concentration of the radionuclides (plutonium, americium, and uranium) present. Assay of the representative waste samples is accomplished using radiochemical analysis. The results of the analysis are expressed in terms of concentration (e.g., mass of each radionuclide present per mass of waste material). Also, the waste may be assayed using a PAN counter or a segmented gamma scan counter, or other approved assay system. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: The TRU solidified waste is produced through a defined process per approved procedure. Independent visual examination of waste contents at the time of packaging, approved process controls, and/or RTR examination ensures that unacceptable levels of free liquids are not present in the final waste form.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent visual examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented, pressurized containers.

PYROPHORICS: Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid and pipe component lid contains a minimum of one filter, and the rigid liner is either filtered or punctured. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: RF 130, RF 230 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solid Inorganic with Residual Organic Waste

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: This waste consists of inorganic items mixed with residual organic materials (paper, plastics, etc.) or moisture. Some of the materials may be immobilized by mixing with a low temperature melting glass.

GENERATING SOURCES: The waste was generated from various RFETS plutonium areas.

WASTE FORM: The waste form in this category is comprised of three subpopulations that are primarily inorganic materials containing an average of less than 10% by weight hydrogenous materials (organic based materials [paper, plastic, cellulose, etc.] or moisture). The first subpopulation is generated primarily from the incomplete incineration of combustible materials (ash, soot, etc.). The second subpopulation is normally produced as the residual from the aqueous processing of various materials (heel[s], processed filter media, etc.). The third subpopulation includes inorganic materials that may have absorbed ambient moisture after long-term storage, such as pyrochemical salts or solid fluoride wastes that have not undergone recent thermal treatments. In general, the waste is homogeneous with the radioactivity dispersed throughout the waste. Depending upon site concerns, some of the waste may be immobilized by mixing with low-temperature melting glass to reduce the recoverability of the material. However, due to the low melting point of the glass frit, some residual hydrogenous materials may remain.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 130A RF 230A	DRUM PREPARATION: The waste is placed directly into a single plastic bag. Waste may be placed into another layer of plastic. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and a maximum of two drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection. BOX PREPARATION: This packaging configuration consists of one layer of confinement. The SWB may be equipped with one or two plastic liner bags. If two plastic liner bags are used, then one is not sealed closed. A liner (made of metal or wood) may be inserted between the waste and the inner plastic liner to support the plastic liner during loading. A fiberboard liner insert may be placed between the waste and the liner bag(s) for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the prepared SWB. TDOP PREPARATION: The waste may be packaged in up to two plastic bags and then placed into a TDOP.
RF 130B RF 230B	The waste is placed directly into a metal can closed with a slip-top lid. The metal can may be double-bagged in plastic bags and may also be placed into a larger metal can closed with a slip-top lid. The waste is then placed into a 55-gallon drum that may be lined with a rigid liner and a maximum of two drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 130BA RF 230BA	The waste is placed directly into a metal can closed with a slip-top lid. The metal can is then double-bagged in two inner plastic bag layers. Bagged waste may be placed in a larger filtered or slip-top metal can. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid liner and a liner bag.

Code	Description*
RF 130D RF 230D RF 130DF RF 230DF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in plastic bags and may also be placed into a larger metal can closed with a slip-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 130E RF 230E	The waste is placed directly into a metal can closed with a slip-top lid. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a slip-top lid. The waste is then placed into a 55-gallon drum that may be lined with a rigid liner and a maximum of two vented/filtered drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 130F RF 230F	<u>DRUM PREPARATION</u>: The waste is placed directly into a single vented/filtered plastic bag. Waste may be placed into another vented/filtered layer of plastic. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and a maximum of two vented/filtered drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection. All the drum liner bags and inner confinement bags are vented/filtered or punctured. <u>BOX PREPARATION</u>: This waste stream may be packaged inside an SWB equipped with a vented/filtered plastic liner bag. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 130G RF 230G RF 130GF RF 230GF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a slip-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 130H RF 230H	The packaging configuration consists of two layers of confinement. Waste may be contained in one plastic bag. The waste is then placed into an SWB that is lined with one plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the inner layer of confinement. The bag liner is sealed by taping along the folds.
RF 130I RF 230I	<u>DRUM PREPARATION</u>: The waste is removed from the glovebox contained in up to two vented/ filtered plastic bags. The bagged waste may be placed into a metal can closed with a slip-top lid and then into a 55-gallon drum that may be lined with a rigid liner and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. <u>BOX PREPARATION</u>: The waste may be packaged in up to two vented/filtered plastic bags and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The package configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. <u>TDOP PREPARATION</u>: The waste may be packaged in up to two vented/filtered plastic bags and then placed into a TDOP. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.

Code	Description*
RF 130J RF 230J	The waste is placed in a metal can with a slip-top or filtered screw-top lid. The metal can is removed from the glovebox line and may be placed in up to two vented/filtered plastic bags. The waste may be placed in a larger metal can with a slip-top or filtered screw-top lid. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and one vented/filtered plastic drum liner bag. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 130K RF 230K	<u>DRUM PREPARATION</u>: The waste is placed directly in a rigid plastic, cardboard, or metal container less than 4 liters in size. [Note: For newly packaged waste, the first layer of packaging is a metal container that will allow free release of hydrogen (e.g., a slip-lid metal container).] The rigid container is then double-bagged in two inner plastic bag layers. Bagged waste may be placed in a filtered rigid plastic, cardboard, or metal container. The outermost rigid container may then be placed in an inner plastic bag, followed by a liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid liner. <u>BOX PREPARATION</u>: The waste may be contained in up to three vented/filtered plastic bags and then placed into an SWB. The SWB may be lined with one vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.
RF 130N RF 230N	The packaging configuration consists of three layers of confinement. Waste may be contained in up to two plastic bags. The waste is then placed into an SWB that is lined with one plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. The bag liner is sealed by taping along the folds.
RF 130P RF 230P RF 130PF RF 230PF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a filtered screw-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RF 130PA RF 230PA RF 130PAF RF 230PAF	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in plastic bags and may then be placed into a larger metal can closed with a filtered screw-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner lid is filtered or punctured. The drum lid is then secured to the drum with a bolted closure ring.
RF 130Q RF 230Q	Waste is placed directly in a rigid plastic, cardboard, or metal container less than 4 liters in size. [Note: For newly packaged waste, the first layer of packaging is a metal container that will allow free release of hydrogen (e.g., a slip-lid metal container).] The rigid container is then double bagged in two twist-and-taped inner plastic bag layers. Bagged waste is placed in an unsealed rigid plastic, cardboard, or metal container. The outermost rigid container is then placed in a twist-and-taped inner plastic bag, followed by a twist-and-taped liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid drum liner.
RF 130R RF 230R RF 130RF RF 230RF	Waste is placed directly in a rigid plastic, cardboard, or metal container less than 4 liters in size. [Note: For newly packaged waste, the first layer of packaging is a metal container that will allow free release of hydrogen (e.g., a slip-lid metal container).] The rigid container is then double bagged in two filtered inner plastic bag layers. Bagged waste is placed in a filtered rigid plastic, cardboard, or metal container. The outermost rigid container is then placed in a filtered inner plastic bag, followed by a filtered liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid drum liner.

Code	Description*
RF 130S RF 230S RF 130SF RF 230SF	Waste is placed directly in three twist-and-taped inner plastic bag layers. Bagged waste is placed in a filtered rigid plastic, cardboard, or metal container. The rigid container is then placed in a twist-and-taped inner plastic bag, followed by a twist-and-taped liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid drum liner.
RF 130T RF 230T	The packaging configuration consists of two vented/filtered layers of confinement. Waste may be contained in one vented/filtered plastic bag. The waste is then placed into an SWB that is lined with one vented/filtered plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. The vented/filtered bag liner is sealed by taping along the folds. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 130U RF 230U	Waste is placed directly in three twist-and-taped inner plastic bag layers. Bagged waste is placed in an unsealed rigid plastic, cardboard, or metal container. The rigid container is then placed in a twist-and-taped inner plastic bag, followed by a twist-and-taped liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid drum liner.
RF 130V RF 230V RF 130VF RF 230VF	Waste is placed directly in three filtered inner plastic bag layers. Bagged waste is placed in a filtered rigid plastic, cardboard, or metal container. The rigid container is then placed in a filtered inner plastic bag, followed by a filtered liner bag. Finally, waste is placed in a 55-gallon drum which may be lined with a rigid drum liner.
RF 130W RF 230W	The waste is contained in up to three filtered/vented inner plastic bags that may be packaged into a filtered/vented drum liner bag inside a 55-gallon drum. The 55-gallon drum may be lined with a rigid liner.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in SWBs, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example supercompacted waste or packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types III.2 and III.3 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid and each pipe component lid contains a minimum of one filter, and the rigid liner is filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: RF 131, RF 231 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solid Inorganic Waste (Greater Than Trace Quantities of Beryllium)

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: The waste consists of discarded items or objects of metal (e.g., iron, copper, aluminum, beryllium chips, stainless or other steel alloys, tungsten, depleted uranium, lead, and tantalum) that contain beryllium at levels greater than 1 weight percent.

GENERATING SOURCES: The waste originates from various plutonium areas at RFETS (primarily from Buildings 371, 374, 559, 707, 771, 774, 776, 777, and 779).

WASTE FORM: The waste form includes items such as gloveboxes, used shielding, tools/tooling, crucibles, machinery, equipment, scrap metal components, empty containers, and other metallic objects. The waste is not finely divided or particulate in form, and so does not possess a pyrophoric characteristic. The items that are difficult to reduce to a size that would fit in a drum are placed in an SWB or TDOP.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 131A RF 231A	DRUM PREPARATION: The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and up to two plastic liner bags. A fiberboard liner insert may be placed between the waste and the drum liner for puncture protection. BOX PREPARATION: This packaging configuration consists of one layer of confinement. The SWB may be equipped with one or two plastic liner bags. If two plastic liner bags are used, then one is not sealed closed. A liner (made of metal or wood) may be inserted between the waste and the inner plastic liner to support the plastic liner during loading. A fiberboard liner insert may be placed between the waste and the liner bag(s) for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the prepared SWB.
RF 131B RF 231B	The waste is placed directly into a metal can. The metal can may be double-bagged in plastic bags and removed from the glovebox line. The metal can may also be placed into a larger metal can. The waste is then placed into a 55-gallon drum that may be lined with a rigid liner and a maximum of two drum liner bags. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 131D RF 231D	The waste is placed directly into a metal can and then placed into a pipe component. The metal cans may be double-bagged in plastic bags and removed from the glovebox line. The bagged material may be placed into a larger metal can. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The rigid liner lid is then put in place followed by the filtered drum lid. The rigid liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

Code	Description*
RF 131E RF 231E	DRUM PREPARATION: The waste is removed from the glovebox line contained in up to two vented/filtered plastic bags. The bagged waste may be placed into a vented/filtered metal container and then placed into a 55-gallon drum that may be lined with a rigid liner and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: This waste may be packaged as described above and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 131F RF 231F	DRUM PREPARATION: This waste stream is packaged inside a 55-gallon drum that may be lined with a rigid liner and up to two vented/filtered plastic liner bags. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: This waste stream may also be packaged inside an SWB equipped with a vented/filtered plastic liner bag. The waste does not contain any inner layers of confinement (i.e., waste items are either not double-bagged prior to emplacement in the drum or these bags have been punctured upon repackaging). The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.
RF 131H RF 231H	The packaging configuration consists of two layers of confinement. Waste may be contained in one plastic bag. The waste is then placed into an SWB that is lined with one plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. Waste items may be wrapped in unsealed plastic prior to placement in the inner layer of confinement. The bag liner is sealed by taping along the folds.
RF 131I RF 231I	DRUM PREPARATION: The waste is removed from the glovebox contained in up to two vented/ filtered plastic bags. The bagged waste may be placed into a metal can closed with a slip-top lid and then into a 55-gallon drum that may be lined with a rigid liner and a vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. BOX PREPARATION: The waste may be packaged in up to two vented/filtered plastic bags and then placed in an SWB. The SWB is lined with one vented/filtered plastic liner bag. The package configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.
RF 131K RF 231K	BOX PREPARATION: The waste may be contained in up to three vented/filtered plastic bags and then placed into an SWB. The SWB may be lined with one vented/filtered plastic liner bag. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.
RF 131N RF 231N	DRUM PREPARATION: The waste is either loaded directly into a drum or removed from the glovebox line contained in up to two plastic bags. The bagged waste is then placed into a 55-gallon drum that may be lined with a rigid liner and one plastic liner bag. BOX PREPARATION: The packaging configuration consists of three layers of confinement. Waste may be contained in up to two plastic bags. The waste is then placed into an SWB that is lined with one plastic liner bag. The bag liner is sealed by taping along the folds. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection.

Code	Description*
RF 131T RF 231T	The packaging configuration consists of two vented/filtered layers of confinement. Waste may be contained in one vented/filtered plastic bag. The waste is then placed into an SWB that is lined with one vented/filtered plastic liner bag. A fiberboard liner insert may be placed between the waste and the liner bag for puncture protection. The vented/filtered bag liner is sealed by taping along the folds. The packaging configuration is such that all layers of bags around the waste are vented with a minimum of one filter vent.

* All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in an SWB, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag, or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. The waste packaging procedure also instructs that absorbents (i.e., Oil-Dri) be packed with moist or damp waste to absorb any liquids that may desorb after the package is closed. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example supercompacted waste or packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to supercompaction or prior to packaging of cans into drums or pipe overpacks).

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Finely divided radionuclide material that may be pyrophoric will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types II.1 and II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid and each pipe component lid contains a minimum of one filter, and the rigid liner is either filtered or punctured, if present. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: RF 132, RF 232 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Aqueous Waste/Sludge Waste (Greater Than One Weight Percent Beryllium)

GENERATING SITE: Rocky Flats Environmental Technology Site (RFETS)

WASTE DESCRIPTION: Aqueous process waste streams are either solidified directly or processed to remove radioactive contamination. Processed waste is in the form of a metal hydroxide sludge. The wet sludge or the aqueous liquid waste is solidified by combining the waste with Portland cement. This waste may also include various particulate, solid inorganic, or other similar waste that may be solidified with a cement and water mixture, or cement may be added to the waste as an absorbent. This waste includes inorganic particulates, sludges, liquids from inorganics, etc. Oxide, oxide heel, peroxide, or hydroxide waste that may have been calcined and/or solidified may be included. The waste may contain beryllium at levels greater than one weight percent.

GENERATING SOURCES: The liquid aqueous waste originates from various radioactive (plutonium and uranium) process areas at RFETS.

WASTE FORM: Solidified aqueous waste is produced by vacuum filtration of precipitated solids from an aqueous waste slurry. The filter medium is an inert diatomaceous earth medium on a rotating drum. Solids are trapped on the surface of the filter medium as the solution passes through. The surface of the filter medium with entrapped solids is skimmed off as wet sludge. The precipitated solids are chiefly metal hydroxides with a pH of 10 to 12. The final waste form consists of a solidified material produced by combining the liquid aqueous waste or the waste sludge with Portland cement and, in certain cases, with Ramcote insulation cement. Sludge and solidified aqueous waste may be calcined to form an oxide waste form. Diatomaceous earth (diatomite) may also be added for liquid absorption. The inorganic particulates, sludges, liquid from inorganics, etc., may be mixed with grout, or cement may be added to the waste as absorbent. Oil-Dri may also be added to absorb any free liquid.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RF 132A RF 232A	The solidified waste is packaged into a 55-gallon drum that may be lined with a rigid liner and two plastic liner bags.
RF 132D RF 232D	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in vented/filtered plastic bags and may also be placed into a larger metal can closed with a slip-top lid. Once the material is emplaced, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The rigid liner lid is then put in place followed by the filtered drum lid. The rigid liner will be punctured. The lid is then secured to the drum with a bolted closure ring.

Code	Description*
RF 132J RF 232J	The waste is placed in a metal can with a slip-top or filtered screw-top lid. The metal can is removed from the glovebox line and may be placed in up to two vented/filtered plastic bags. The waste may be placed in a larger metal can with a slip-top or filtered screw-top lid. The waste is then placed in a 55-gallon drum that may be lined with a rigid liner and one vented/filtered plastic drum liner bag. A fiberboard liner insert may be placed between the waste and the drum bags for puncture protection.
RF 132K RF 232K	Waste is placed directly in a rigid plastic, cardboard, or metal container less than 4 liters in size. [Note: For newly packaged waste, the first layer of packaging is a metal container that will allow free release of hydrogen (e.g., a slip-lid metal container).] The rigid container is then double-bagged in two filtered inner plastic bag layers. Bagged waste may be placed in a filtered rigid plastic, cardboard, or metal container. The outermost rigid container may then be placed in a filtered inner plastic bag, followed by a filtered liner bag. Finally, waste is placed in a 55-gallon drum that may be lined with a rigid drum liner.
RF 132O RF 232O	The waste is packaged in a 55-gallon drum that may be lined with a rigid liner and up to two liner bags. All plastic liner bags have been slit with a minimum of one 1-inch diameter hole.
RF 132OA RF 232OA	The waste is packaged in a 55-gallon drum that may be lined with a rigid liner without a rigid liner lid and up to two liner bags. All plastic liner bags have been slit with a minimum of one 1-inch diameter hole.
RF 132P RF 232P	The solidified waste is packaged in a 55-gallon drum that may be lined with a rigid liner and a maximum of two plastic liner bags. All plastic liner bags have been punctured with a minimum of one 0.3-inch diameter hole.
RF 132Q RF 232Q	The solidified waste is packaged in a 55-gallon drum that may be lined with a rigid liner and a maximum of one plastic liner bag.
RF 132QA RF 232QA	The solidified waste is packaged in a 55-gallon drum that may be lined with a rigid liner without a rigid liner lid and a maximum of one plastic liner bag.

*All liner bags and bag closures are in accordance with the CH-TRAMPAC. If drums are overpacked in an SWB, no closed liner bags are used in the SWB. For waste packaged in drums, celotex packaging material and fiberboard may be placed between the rigid liner and the liner bag or between the waste (including any metal can or container) and drum bags for puncture protection or for any other site requirement or need. In some cases, a slip-top lid shielding can may be used for ALARA purposes only, with no impact on hydrogen gas release resistance.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. The waste is produced through a defined process per approved procedure. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to packaging of cans into drums or pipe overpacks).

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures at RFETS. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. In most cases, for example, bulk loaded drums of solidified waste are produced in a closed system which precludes the introduction of extraneous materials such as pressure vessels or explosives. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to packaging of cans into drums or pipe overpacks).

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Finely divided radionuclide material that may be pyrophoric will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, the drum lid and each pipe component lid contains a minimum of one filter, and the rigid liner is punctured, if present. Each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: RH 111, RH 211 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solid Inorganic Waste

GENERATING SITE: Richland Hanford

WASTE DESCRIPTION: (RH 111A/211A) The waste consists of pulverized SS&C pieces.

(RH 111B/211B and RH 111D/211D) The waste consists of sludge from the 105 F Fuel Storage Basin filled with pieces of material from fuel storage basin operations.

(RH 111E/211E through RH 111N/211N) The waste consists of sludge from the K-Basins. The sludge is mixed with a grout material (cement) and bentonite clay.

GENERATING SOURCES: (RH 111A/211A) The Plutonium Finishing Plant (PFP) generates SS&C pieces from operations in the Remote Mechanical C Line. The plutonium powder is reduced by adding calcium metal and iodine crystals and then firing the charge in a crucible.

(RH 111B/211B and RH 111D/211D) Sludge waste from the 105 F Fuel Storage Basin is generated from decontamination and decommissioning of wastes during remediation.

(RH 111E/211E through RH 111N/211N) The waste was generated from K-Basins, including the basin floor canister, North Load-Out Pit, and the Weasel Pit.

WASTE FORM: (RH 111A/211A) The as-generated SS&C residue consists of pulverized pieces in metal cans. The residue may also contain small amounts of calcium metal, calcium oxide, plutonium, and plutonium oxide. The mixture may also contain small amounts of glass and brush bristles from the packaging and glove box cleanup operations.

(RH 111B/211B and RH 111D/211D) The sludge waste consists of homogeneous solid inorganic materials with unbound absorbed ambient moisture. This waste was stored in pools and contains particulate matter, sand, and pieces from fuel storage basin operations.

(RH 111E/211E through RH 111N/211N) This waste consists of sand back flushed from the K-Basins water treatment system and sand filter. Also included are corrosion products, wind blown constituents (sand, insects, bits of tumbleweeds, etc.), ion exchange resin, oxidized fuel, and concrete grit. The sludge will be blended with grout and clay to create an immobilized mixture.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
RH 111A RH 211A	Waste is placed in a slip lid metal can that is then bagged out in up to two filtered inner plastic bags. Bagged out waste is then placed in a pipe component. Once the material is in place, the pipe component lid, with filter, is bolted on. The pipe component is contained in a 55-gallon drum, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

Code	Description
RH 111B RH 211B	Waste is placed directly into a 55-gallon drum with no layers of confinement.
RH 111D RH 211D	Waste is placed in an SWB with one plastic liner bag.
RH 111E RH 211E	The sludge will be pumped into a 55-gallon drum that contains a rigid plastic liner. It will then be blended with grout and clay to immobilize the mixture. The drum liner lid is not used. The drum lid will be fitted with an approved filter and secured to the drum with a bolted closure ring.
RH 111F RH 211F	The sludge and blended grout mixture will be pumped into a 55-gallon drum that contains a 10-mil plastic liner bag. The liner bag will be filtered, horse-tailed taped for closure, and the drum lid will be fitted with an approved filter and secured to the drum with a bolted closure ring.
RH 111G RH 211G	The sludge and blended grout mixture will be pumped into a 55-gallon drum that contains a steel drum liner (no lid). The drum lid will be fitted with an approved filter and secured to the drum with a bolted closure ring.
RH 111H RH 211H	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in filtered plastic bags and may also be placed into a larger metal can closed with a slip-top lid. Once the material is emplaced, the pipe component lid, with a 3.7×10^{-6} mol/s/mol fraction hydrogen diffusivity filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be punctured with a minimum 0.3-inch diameter hole. The lid is then secured to the drum with a bolted closure ring.
RH 111J RH 211J	The waste is placed directly into a metal can closed with a slip-top lid and then placed into a pipe component. The metal can may be double-bagged in filtered plastic bags and may also be placed into a larger metal can closed with a slip-top lid. Once the material is emplaced, the pipe component lid, with a 18.5×10^{-6} mol/s/mol fraction hydrogen diffusivity filter, is bolted on. The pipe component is contained in a 55-gallon drum that is lined with a rigid liner, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place, followed by the filtered drum lid. The drum liner will be punctured with a minimum 0.3-inch diameter hole. The lid is then secured to the drum with a bolted closure ring.
RH 111K RH 211K	The sludge will be pumped into a 55-gallon drum that contains a rigid plastic liner. It will then be blended with grout and clay to immobilize the mixture. The drum liner lid is not used. The lidless drum is placed into an SWB. The SWB is sealed according to manufacturer's instructions.
RH 111L RH 211L	The sludge and blended grout mixture will be pumped into a 55-gallon drum that contains a 10-mil plastic liner bag. The liner bag will be filtered, horse-tailed taped for closure. The lidless drum is placed into an SWB. The SWB is sealed according to manufacturer's instructions.
RH 111M RH 211M	The sludge and blended grout mixture will be pumped into a 55-gallon drum that contains a steel drum liner (no lid). The lidless drum is placed into an SWB. The SWB is sealed according to manufacturer's instructions.

Code	Description
RH 111N RH 211N	The sludge will be pumped into a coated 55-gallon drum with no rigid liner. It will then be blended with grout and clay to immobilize the mixture. The iron-based metal mixing blade and shaft will be left in the drum. Additional clay will be placed on top of the sludge-concrete mixture to absorb any condensate that may form. Bags of inert material (e.g., sand, Perlite) may be placed atop the immobilized mixture as a void space filler. The drum lid will be fitted with an approved filter and secured to the drum with a bolted closure ring.

ASSAY: (RH 111A/211A) An independent assay using the Segmented Gamma Scan Assay System (SGSAS) is performed at PFP on all waste containers certified at Hanford for shipment. The SGSAS is designed to accurately quantify gamma-emitting nuclides and is configured to assay plutonium waste as a part of the characterization requirements. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

(RH 111B/211B and RH 111D/211D) The assay data for each of the containers will be derived from ISOCS, URSA, and approved calculations determined by dividing the radionuclide inventory by the fill volume of the container to be homogenized.

(RH 111E/211E through RH 111N/211N) The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Liquid waste, except for residual amounts in well-drained containers, is prohibited in the drums. The total volume of residual liquid in a payload container shall be less than 1 volume percent of the payload container. Waste packaging procedures ensure that free liquids are less than 1 volume percent of the payload container.

(RH 111A/211A) The containers will be visually examined at the time of packaging to ensure that no free liquids are present.

(RH 111E/211E through RH 111N/211N) Free liquids are absorbed in the packaging process.

EXPLOSIVES/COMPRESSED GASES: Explosives and compressed gases in the payload containers are prohibited by waste packaging procedures. If present, pressurized cans shall be punctured and emptied prior to packaging.

(RH 111A/211A) The residue material is a granular material that has been processed through a hammer mill; therefore, no containers of compressed gas are present.

(RH 111E/211E through RH 111N/211N) The waste is produced in a closed system that precludes the introduction of extraneous materials such as pressure vessels or explosives. No explosives, explosive mixtures, or compressed gases have been identified in this waste.

PYROPHORICS: Nonradioactive pyrophoric TRU waste is prohibited from storage at Hanford TRU waste storage facilities. RTR or VE technique is performed, as applicable, on all containers certified for shipment to identify possible pyrophoric materials. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: No corrosive materials are included in this waste stream. RTR or VE technique is performed, as applicable, on all containers certified for shipment to identify possible corrosive materials..

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: All waste packaging will undergo RTR or VE techniques, as applicable, to ensure that waste content and packaging meet the required acceptance criteria. In accordance with the CH-TRAMPAC, each drum, except dunnage drums, is vented with a filter, and the rigid drum liner, if present, is punctured or filtered or not present. Containers are weighed individually to ensure compliance with weight limits.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: RH 112, RH 212 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Organics

GENERATING SITE: Richland Hanford

WASTE DESCRIPTION: The waste consists of absorbed organics from plutonium processing, recovery processing, and analytical/chemical technology laboratories.

GENERATING SOURCES: The Plutonium Finishing Plant (PFP) generates liquid organics from operations in the Plutonium Reclamation Facility, Plutonium Conversion - Remote Mechanical C Line, and Analytical/ Chemical Laboratories.

WASTE FORM: The PFP generates sludges and liquid organics that cannot be readily absorbed back into the process system. These liquid organics are in an unusable form. The material may contain any or all of the following in a compatible configuration: carbon tetrachloride, tributyl phosphate, xylene, iron, nickel, chromium, normal paraffin hydrocarbons, trimethylbenzene, and trioctyl phosphine oxide. This organic liquid mixture is processed via approved procedures before being discarded as waste.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
RH 112A RH 212A	The liquid organics are absorbed in an inert material sufficient to absorb twice the amount of liquid. The absorbed organic is placed into a 1-gallon plastic or vinyl-coated glass jar. Each 1-gallon jar is double bagged in plastic bags. The drums used for the absorbed organics are 55-gallon drums that may be lined with an optional rigid polyethylene liner. A maximum of sixteen 1-gallon plastic or vinyl-coated glass jars is placed in the drum. Absorbent material may be added to the plastic liner surrounding the 1-gallon jars. All bag closures are by the twist and tape method.
RH 112B RH 212B	The liquid organics are absorbed in an inert material sufficient to absorb twice the amount of liquid. The absorbed organic is placed into a 1-gallon plastic or vinyl-coated glass jar. Each 1-gallon jar is double bagged in filtered plastic bags. The drums used for the absorbed organics are 55-gallon drums that may be lined with an optional rigid polyethylene liner. A maximum of sixteen 1-gallon plastic or vinyl-coated glass jars is placed in the drum. Absorbent material may be added to the plastic liner surrounding the 1-gallon jars.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times error) and decay heat (plus error).

FREE LIQUIDS: The liquid organics are packaged in such a manner that free liquids do not present a problem. All CH-TRU waste drums generated at PFP are examined on an RTR unit. This verifies that free liquids are not present.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited at PFP. The only compressed gas container at PFP that has a potential for entering the waste is an aerosol can. These containers are not allowed in gloveboxes. Aerosol cans are segregated and placed in containers that will not be shipped to WIPP.

PYROPHORICS: Pyrophoric materials do not have a potential for being placed into the waste.

CORROSIVES: Corrosives are excluded from this content code by process controls.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type IV.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: The 100% overview with an assay and RTR assures that the waste and packaging meet the required acceptance criteria. In special cases of high density material, the RTR can be waived provided an independent visual inspection of the waste is performed prior to the final closure of the container. In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters. The drums are weighed individually and documented. This insures compliance to weight limits. The TRU waste at PFP is generated in areas where fission products have been eliminated through a chemical process.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: RH 114, RH 214 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Inorganic Process Solids and Solidified SS&C Residues

GENERATING SITE: Richland Hanford

WASTE DESCRIPTION: (RH 114A/214A, RH 114B/214B) The waste consists of particulate sludges from plutonium processing, recovery processing, and analytical/chemical technology laboratories. (RH 114C/214C) The waste consists of pulverized sand, slag, and crucible (SS&C) pieces. (RH 114D/214D) The waste consists of cans of the above waste forms that were overfilled or that failed and were subsequently overpacked, or of various components of the processing equipment contaminated with the cemented particulate sludge.

GENERATING SOURCES: (RH 114A/214A, RH 114B/214B, RH 114D/214D) The Plutonium Finishing Plant (PFP) generates particulate sludges from operations and cleanup of process areas in the Plutonium Reclamation Facility, Plutonium Conversion - Remote Mechanical C Line, and Analytical/Chemical Laboratory. (RH 114C/214C, RH 114D/214D) The PFP generates SS&C pieces from operations in the Remote Mechanical C Line. The plutonium powder is reduced by adding calcium metal and iodine crystals and then firing the charge in a crucible.

WASTE FORM: (RH 114A/214A, RH 114B/214B, RH 114D/214D) The PFP generates particulate sludges that cannot be readily absorbed back into the process system. These sludges are scraped/taken out of hoods or trays in an unusable form. The material may contain any or all of the following in a compatible configuration: plutonium oxide, plutonium oxalate, nitric acid, and traces of metal ions (e.g., iron, nickel, and chromium). This mud-like material is processed via approved procedures before being discarded as waste. (RH 114C/214C, RH 114D/214D) The as-generated SS&C residue consists of pulverized SS&C pieces sealed in untinned cans. The residue may also contain small amounts of calcium metal, calcium oxide, plutonium, and plutonium oxide. The residue mixture is reacted by mixing with water and then combining with Portland cement. The mixture may also contain small amounts of glass and brush bristles from the packaging and glovebox cleanup operations. (RH 114D/214D) The cans from RH 114B/214B and/or RH 114C/214C may overflow or fail during curing. Waste may also consist of mixing and associated equipment contaminated with the dried cemented particulate sludge.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RH 114A RH 214A	The waste drums for the particulate sludges are UN1A2 55-gallon drums lined with a polyethylene plastic liner bag (minimum 4-mil). The drum may also be lined with an optional rigid liner. Absorbent may be added to the bottom of the drum liner. The PFP neutralizes the sludge with Portland cement. The sludge is mixed with cement in unsealed 0.5-liter plastic jars. The waste is bagged out into a standard inner bagout bag and then placed in a plastic inner protective bag before it is placed in the drum. Bag closures are by the twist-and-tape method.

Code	Description*
RH 114B RH 214B	The waste drums for the particulate sludges are UN1A2 55-gallon drums lined with a filtered polyethylene plastic liner bag (minimum 4-mil). The drum may also be lined with an optional rigid liner. Absorbent may be added to the bottom of the drum liner. The cementation may be in a process container, and the mixture transferred to unsealed metal cans. The mixture is allowed to solidify before it is placed into the waste drum. The waste is bagged out into a filtered inner bagout bag and then placed in a filtered inner protective bag before it is placed in the drum. Filtered bags may be heat sealed.
RH 114C RH 214C	A measured amount of SS&C is mixed with water in a mixer reactor to react residual calcium metal. The slurry is combined with Portland cement. The cemented slurry is placed in a slip-lid can (nominally 7 inches high by 5.5 inches in diameter) and allowed to harden. The closed metal can is placed in a filtered inner bagout bag and then placed in a filtered inner protective bag before it is placed into a UN1A2 55-gallon drum, which may be lined with an optional rigid liner. Filtered bags may be heat sealed.
RH 114D RH 214D	The overfilled or failed cans and various components of the cementation process equipment (such as the mixer and associated equipment) may be placed in a vented or unsealed can/bucket. The waste is then bagged out in a filtered inner bagout bag and then placed in a filtered inner protective bag before it is placed in a drum, which may be lined with an optional rigid liner. Filtered bags may be heat sealed.

* If drums are overpacked in an SWB, no closed liner bags are used in the SWB.

<u>ASSAY</u>: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times error) and decay heat (plus error).

<u>FREE LIQUIDS</u>: (RH 114A/214A, RH 114B/214B, RH 114D/214D) The particulate sludges are packaged in such a manner that free liquids do not present a problem. All CH-TRU waste drums generated at the PFP are examined on a RTR unit. This verifies that free liquids are not present. (RH 114C/214C, RH 114D/214D) The combining of the SS&C mixture with Portland cement sorbs all of the free liquid (water). The cured cement residue mixture in the cans is visually inspected for free liquids before the can is closed.

<u>EXPLOSIVES/COMPRESSED GASES</u>: (RH 114A/214A, RH 114B/214B, RH 114D/214D) Explosives are prohibited at the PFP. The only compressed gas container at the PFP that has a potential for entering the waste is an aerosol can. These containers are not allowed in gloveboxes. Aerosol cans are segregated and placed in containers that will not be shipped to WIPP. (RH 114C/214C, RH 114D/214D) The residue material is a granular material that has been processed through a hammer mill; therefore, no containers of compressed gas are present.

<u>PYROPHORICS</u>: (RH 114A/214A, RH 114B/214B, RH 114D/214D) Acid-soaked rags (<1 weight percent of the waste) are rinsed in a solution of sodium hydroxide. The rags are allowed to dry before being placed into the waste. Plutonium metal at the facility is controlled by criticality limits. This precludes the possibility of significant amounts of metal being placed into the waste. Laboratory materials that are pyrophoric are limited in the quantity allowed in the facility. These materials are used in non-radioactive areas and are discarded as non-radioactive waste. All waste meets the restrictions on pyrophoric materials

in the CH-TRAMPAC. (RH 114C/214C, RH 114D/214D) Plutonium metal in the residues is stabilized in Portland cement, and the plutonium concentration meets the restrictions on pyrophoric materials in the CH-TRAMPAC.

CORROSIVES: There are no corrosives in this content code.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.3 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: (RH 114A/214A, RH 114B/214B, RH 114D/214D) The 100% overview with an assay and RTR assures that the waste and packaging meet the required acceptance criteria. In special cases of high density material, the RTR can be waived provided an independent visual inspection of the waste is performed prior to the final closure of the container. (RH 114C/214C, RH 114D/214D) A 100% visual inspection of the material is performed and recorded at the time of the packaging.

In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter and the rigid drum liner is punctured (if present). Each SWB is fitted with at least two and up to four filters. The drums are weighed individually and documented. This ensures compliance to weight limits. The TRU waste at the PFP is generated in areas where fission products have been eliminated through a chemical process.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: RH 117, RH 217 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Metal Waste

GENERATING SITE: Richland Hanford

WASTE DESCRIPTION: The waste consists of Mark IV/V Product Receiver (PR) cans, Emergency PR cans, standard PR cans, and other inorganic items including plutonium alloy scrap.

GENERATING SOURCES: The Plutonium-Uranium Reduction Extraction Facility generated liquid plutonium nitrate solutions. These solutions are stored at the Plutonium Finishing Plant (PFP) in PR cans pending processing.

WASTE FORM: (RH 117A/217A, RH 117B/217B, RH 117G/217G, RH 117H/217H) Stainless steel cans that originally contained concentrated Pu-nitrate solution which was slurped/vacuumed out and processed for plutonium recovery. The cans have less than 1% by weight of trace elements and meet the RCRA definition of empty. Inorganic items such as scissors and metal baskets may be included with or in the steel cans.

(RH 117E/217E and RH 117F/217F) Plutonium alloy scrap and residue items are stored in the PFP vault. These items consist of scrap generated from BNL operations in the 300 Area, and Pu-Al plates and/or plutonium oxide recovered from fuel plates.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
RH 117A RH 217A	The unsealed Mark IV/V PR cans and the Emergency PR cans (10 liter [L] cans) are housed in a 55-gallon drum. The 55-gallon drum does not contain a rigid liner.
RH 117B RH 217B	The unsealed Mark IV/V PR cans and the Emergency PR cans (10L cans) are housed in a 55-gallon drum.
RH 117E RH 217E	Waste is placed in a slip lid metal can and then placed in up to four filtered inner bags. Bagged material is then placed in a 55-gallon drum.
RH 117F RH 217F	Waste is placed in a slip lid metal can and then placed in up to four filtered inner bags. Bagged waste is then placed in a pipe component. The pipe component is contained in a 55-gallon drum, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RH 117G RH 217G	PR containers consist of an inner PR can held in position in a rack inside of an outer PR jacket. The inner PR can consists of a stainless steel can with an unsealed poly lid. The outer PR jacket is a steel container with an unsealed lid. Up to two PR containers with wood bracing are placed in a vented liner bag inside a standard waste box (SWB).
RH 117H RH 217H	PR containers consist of an inner PR can held in position in a rack inside of an outer PR jacket. The inner PR can consists of a stainless steel can with an unsealed poly lid. The outer PR jacket is a steel container with an unsealed lid. Up to two PR containers with wood bracing are placed in a liner bag inside an SWB.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to packaging of cans into pipe overpacks).

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to packaging of cans into pipe overpacks).

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type II.1 or II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid and each pipe component lid contains a minimum of one filter, and the rigid liner is filtered or punctured, if present. Each SWB is fitted with the correct number of approved filters to meet the minimum requirements of the CH-TRAMPAC.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: RH 122, RH 222 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solid Inorganic Waste

GENERATING SITE: Richland Hanford

WASTE DESCRIPTION: This waste consists of a variety of noncombustible inorganic solids such as a mixture of high-fired sintered powder and pellets; grit; slag; sand; and mixtures of sand, slag, and crucible.

GENERATING SOURCES: The waste was generated at the Plutonium Finishing Plant (PFP).

WASTE FORM: The items in this waste stream were generated as a result of PFP and other nuclear defense program operations. Most of the inventory was received for plutonium recovery from operations conducted at the Hanford 300 Area or other DOE sites. Oxides are generally expected to be in the form of a dry loose powder or compressed into pellets, and have been thermally treated and undergone thermal decomposition. Pellets will generally be of the same shape and size and are not expected to be random in form or composition. The mixtures of sand, slag, and crucible were generated from the recovery of plutonium for weapons production.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
RH 122A RH 222A	Waste is placed in a slip lid metal can and then placed in up to two filtered inner bags. Bagged waste is then placed in a pipe component. The pipe component is contained in a 55-gallon drum with Celotex packaging material placed between the pipe component and the rigid liner. The drum liner is then put in place, followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to packaging of cans into pipe overpacks).

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example packaging waste into cans, verification that explosives/compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to packaging of cans into pipe overpacks).

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type II.1 or II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid and each pipe component lid contains a minimum of one filter, and the rigid liner is filtered or punctured.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: RH 123, RH 223 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Leaded Rubber

GENERATING SITE: Richland Hanford

WASTE DESCRIPTION: The waste consists of support equipment, support supplies, and failed equipment containing lead used for glovebox operations.

GENERATING SOURCES: The Plutonium Finishing Plant (PFP) generates waste from operations in the Plutonium Reclamation Facility, Plutonium Conversion - Remote Mechanical C Line, and Product Handling. Plutonium-Uranium Extraction facility (PUREX) generates waste from the plutonium conversion operations and process solution sampling operations.

WASTE FORM: The waste consists of one or more of the following: leaded glass, lead-lined hood gloves, lead blankets, and miscellaneous equipment containing lead, plastic, rubber, cloth, and/or asbestos.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
RH 123A RH 223A	Waste is packaged in up to two layers of plastic for contamination control. Items that have sharp edges or pointed appendages are padded to maintain package integrity. Heavy items may be packaged in one additional layer of plastic or a thicker plastic bag. Heavy items are blocked to prevent shifting in the drum during transportation or handling. The waste drums are galvanized 55-gallon drums lined with a polyethylene plastic liner bag (minimum 4-mil). The drums may be lined with an optional rigid liner. Approximately 3 liters of diatomaceous earth or universal absorbent may be added to the bottom of the drum liner, and/or absorbent may be added to each individual package of waste that has a potential of containing liquids. All bag closures are by the twist and tape method. If drums are overpacked in SWBs, no closed liner bags are used in the SWB.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times error) and decay heat (plus error).

FREE LIQUIDS: Absorbent may be placed in the bottom of the waste drum and/or in each waste package where the potential of free liquids exists. Any item that may contain free liquid is drained. All CH-TRU waste drums generated at the PFP and PUREX are examined on an RTR unit. This verifies that free liquids are not present.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited at the PFP and the PUREX Plant. The only compressed gas container at the plants that has a potential for entering the waste is an aerosol can. These containers are not allowed in gloveboxes. Aerosol cans are segregated and placed in containers that will not be shipped to WIPP.

PYROPHORICS: The potential for pyrophorics in this waste package does not exist.

CORROSIVES: Based on process knowledge, no corrosives are in this content code.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: The 100% overview with an assay and the RTR assures that the waste and packaging meet the required acceptance criteria. In special cases of high density material, the RTR can be waived provided an independent visual inspection of the waste is performed prior to the final closure of the container. In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters. The drums are weighed individually and documented. This ensures compliance to weight limits. The TRU waste at the PFP and PUREX is generated in areas where fission products have been eliminated through a chemical process.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: RH 125, RH 225 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Miscellaneous Debris (Paper, Metal, Glass, Plastic, Cloth)

GENERATING SITE: Richland Hanford

WASTE DESCRIPTION: The waste consists of miscellaneous debris from operational, processing, maintenance, laboratory, and decontamination, and decommissioning activities. This waste may be newly generated or retrievably stored. Plutonium (Pu) alloy scrap mixed with residual organic materials may be included in the waste.

GENERATING SOURCES: The Hanford Site generates TRU waste from various operational, processing, maintenance, laboratory, decontamination, and decommissioning activities throughout the site (e.g., the Plutonium Reclamation Facility, the Plutonium Conversion - Remote Mechanical C Line, the Plutonium Uranium Extraction Facility, laboratory facilities, tank waste storage facilities, environmental remediation activities, and fuels fabrication facilities). The Pu alloy waste was generated from various Hanford plutonium areas including the Plutonium Finishing Plant (PFP) vault. Hanford has also received and currently stores TRU waste of similar form from other DOE complex sites.

WASTE FORM: (RH 125A/225A through RH 125AC/225AC, RH 125AL/225AL through RH 125AN/225AN, RH 125AP/225AP through RH 125BB/225BB) The waste consists of any or all of the following items: surgical gloves, plastic bags and sheets, paper products, cloth, tape, rubber, leather, wood, glass, failed process equipment (various metals, Teflon, various gasket materials, wiring, plastic, etc.), leaded glass, lead-lined hood gloves, lead blankets, light bulbs, fluorescent lamps, flashlight batteries, piping, conduit, wiring, glass and metal portions of gloveboxes, pumps, motors, standard laboratory equipment, air filters, small amounts of soil or rocks, various absorbents, and other miscellaneous debris. The waste may also include empty 10 liter plastic bottles with punctured lids. An absorbent medium will be packaged with the bottles to ensure there are no free liquids.

(RH 125AD/225AD through RH 125AK/225AK) Plutonium alloy scrap and residue items are stored in the PFP vault. Of these items, 75% are scrap generated from BNL operations in the 300 Area, and 15% are Pu-Al plates and/or plutonium oxide recovered from fuel plates. The remaining few items consisting of saw chips, oiled turnings, rods/extrusion pieces, sweeps, and Pu-Zr scrap are from a different source. A plutonium carbide mount may be included in the waste. The description of the small carbide piece indicates that it may be in a plastic metallurgic mount.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
RH 125A RH 225A	Waste is packaged directly in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).
RH 125B RH 225B	Waste is packaged in one inner bag and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).
RH 125C RH 225C	Waste is packaged in one liner bag and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).

Code	Description*
RH 125D RH 225D	Waste is packaged in two inner bags and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).
RH 125E RH 225E	Waste is packaged in one inner bag and one liner bag and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).
RH 125F RH 225F	Waste is packaged in two inner bags and one liner bag and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).
RH 125G RH 225G	Waste is packaged in three inner bags and one liner bag and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).
RH 125H RH 225H	Waste is packaged in four inner bags and one liner bag and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).
RH 125I RH 225I	Waste is packaged in five inner bags and one liner bag and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).
RH 125J RH 225J	Waste is packaged directly in a 55-gallon (208-liter) metal drum. If the 55-gallon drum has a double lid, the inner lid is fitted with a filter having a hydrogen diffusivity greater than or equal to 3.7×10^{-6} mol/s/mol fraction.
RH 125K RH 225K	Waste is packaged in one liner bag and then placed in a 55-gallon (208-liter) metal drum. If the 55-gallon drum has a double lid, the inner lid is fitted with a filter having a hydrogen diffusivity greater than or equal to 3.7×10^{-6} mol/s/mol fraction.
RH 125L RH 225L	Waste is packaged in one inner bag and then placed in a 55-gallon (208-liter) metal drum. If the 55-gallon drum has a double lid, the inner lid is fitted with a filter having a hydrogen diffusivity greater than or equal to 3.7×10^{-6} mol/s/mol fraction.
RH 125M RH 225M	Waste is packaged in one inner bag and one liner bag and then placed in a 55-gallon (208-liter) metal drum. If the 55-gallon drum has a double lid, the inner lid is fitted with a filter having a hydrogen diffusivity greater than or equal to 3.7×10^{-6} mol/s/mol fraction.
RH 125N RH 225N	Waste is packaged in two inner bags and then placed in a 55-gallon (208-liter) metal drum. If the 55-gallon drum has a double lid, the inner lid is fitted with a filter having a hydrogen diffusivity greater than or equal to 3.7×10^{-6} mol/s/mol fraction.
RH 125P RH 225P	Waste is packaged in two inner bags and one liner bag and then placed in a 55-gallon (208-liter) metal drum. If the 55-gallon drum has a double lid, the inner lid is fitted with a filter having a hydrogen diffusivity greater than or equal to 3.7×10^{-6} mol/s/mol fraction.
RH 125Q RH 225Q	Waste is packaged in three inner bags and then placed in a 55-gallon (208-liter) metal drum. If the 55-gallon drum has a double lid, the inner lid is fitted with a filter having a hydrogen diffusivity greater than or equal to 3.7×10^{-6} mol/s/mol fraction.
RH 125R RH 225R	Waste is packaged in three inner bags and one liner bag and then placed in a 55-gallon (208-liter) metal drum. If the 55-gallon drum has a double lid, the inner lid is fitted with a filter having a hydrogen diffusivity greater than or equal to 3.7×10^{-6} mol/s/mol fraction.
RH 125S RH 225S	Waste is packaged in three inner bags and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).

Code	Description*
RH 125T RH 225T	Waste is packaged in four inner bags and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).
RH 125U RH 225U	Waste is packaged in five inner bags and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).
RH 125V RH 225V	Waste is packaged in six inner bags and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).
RH 125W RH 225W	Waste is packaged in three inner bags and then placed in a 55-gallon (208-liter) metal drum. If the 55-gallon drum has a double lid, the inner lid is fitted with a filter having a hydrogen diffusivity greater than or equal to 3.7 x 10^{-6} mol/s/mol fraction.
RH 125X RH 225X	Waste is packaged in four inner bags and then placed in a 55-gallon (208-liter) metal drum. If the 55-gallon drum has a double lid, the inner lid is fitted with a filter having a hydrogen diffusivity greater than or equal to 3.7 x 10^{-6} mol/s/mol fraction.
RH 125Y RH 225Y	Waste is packaged in five inner bags and then placed in a 55-gallon (208-liter) metal drum. If the 55-gallon drum has a double lid, the inner lid is fitted with a filter having a hydrogen diffusivity greater than or equal to 3.7 x 10^{-6} mol/s/mol fraction.
RH 125Z RH 225Z	Waste is packaged in six inner bags and then placed in a 55-gallon (208-liter) metal drum. If the 55-gallon drum has a double lid, the inner lid is fitted with a filter having a hydrogen diffusivity greater than or equal to 3.7 x 10^{-6} mol/s/mol fraction.
RH 125AA RH 225AA	Waste is packaged in two filtered inner bags and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).
RH 125AB RH 225AB	Waste is packaged in three filtered inner bags and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).
RH 125AC RH 225AC	Waste is packaged in four filtered inner bags and then placed in a 55-gallon (208-liter) metal drum or an SWB. If the 55-gallon drum has a double lid, the inner lid is unfiltered (i.e., has an open filter port).
RH 125AD RH 225AD	Waste is packaged in a slip lid metal can and then placed in a 55-gallon drum.
RH 125AE RH 225AE	Waste is packaged in a slip lid metal can and then placed in up to two filtered inner bags. Bagged material is then placed in a 55-gallon drum.
RH 125AF RH 225AF	Waste is packaged in a slip lid metal can and then placed in up to three filtered inner bags. Bagged material is then placed in a 55-gallon drum.
RH 125AG RH 225AG	Waste is packaged in a slip lid metal can and then placed in up to four filtered inner bags. Bagged material is then placed in a 55-gallon drum.
RH 125AH RH 225AH	Waste is packaged in a slip lid metal can, which is then placed in a pipe component. The pipe component is contained in a 55-gallon, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

Code	Description*
RH 125AI RH 225AI	Waste is packaged in a slip lid metal can and then placed in up to two filtered inner bags. Bagged waste is then placed in a pipe component. The pipe component is contained in a 55-gallon drum, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RH 125AJ RH 225AJ	Waste is packaged in a slip lid metal can and then placed in up to three filtered inner bags. Bagged waste is then placed in a pipe component. The pipe component is contained in a 55-gallon drum, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RH 125AK RH 225AK	Waste is packaged in a slip lid metal can and then placed in up to four filtered inner bags. Bagged waste is then placed in a pipe component. The pipe component is contained in a 55-gallon drum, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RH 125AL RH 225AL	Waste is packaged in a heat-sealed bag, then into four inner bags and one liner bag. The waste is then placed in a 55-gallon (208 liter) metal drum. The 55-gallon drum does not use a rigid drum liner. Double-lid drums are not included in this configuration.
RH 125AM RH 225AM	Waste is packaged in a heat-sealed bag, then into four inner bags and a rigid liner. The rigid liner is vented. The waste is then packaged in a 55-gallon (208 liter) metal drum with a filter having a minimum hydrogen diffusivity of 3.7×10^{-6} mol/s/mol fraction. Double-lid drums are not included in this configuration.
RH 125AN RH 225AN	Waste is packaged in two filtered inner bags and one filtered liner bag, and then placed in a 55-gallon (208 liter) metal drum or an SWB. No rigid liner is used in the drum.
RH 125AP RH 225AP	Waste is packaged in three filtered inner bags and one filtered liner bag, and then placed in a 55-gallon (208 liter) metal drum or an SWB. No rigid liner is used in the drum.
RH 125AQ RH 225AQ	Waste is packaged in one filtered liner bag, and then placed in a 55-gallon (208 liter) metal drum or an SWB. No rigid liner is used in the drum.
RH 125AR RH 225AR	Waste is packaged in one twist-and-tape inner bag placed inside an open metal can, and then placed in two twist-and-tape drum liner bags and placed in a 55-gallon (208 liter) metal drum. No rigid liner is used in the drum.
RH 125AS RH 225AS	Waste is packaged in one filtered inner bag placed inside an open metal can, and then placed in two filtered drum liner bags and placed in a 55-gallon (208) liter metal drum. No rigid liner is used in the drum.
RH 125AT RH 225AT	Waste is packaged in two inner bags and one liner bag and then placed in a 55-gallon (208 liter) metal drum. The 55-gallon drum does not use a rigid drum liner. The 55-gallon drum is then placed in an 85-gallon drum. The 55-gallon drum either has the lid removed or the drum is breached (e.g., from corrosion) to such an extent that the drum is not a layer of confinement. Double-lid drums are not included in this configuration.
RH 125AU RH 225AU	Waste is packaged in three inner bags and one liner bag and then placed in a 55-gallon (208 liter) metal drum. The 55-gallon drum does not use a rigid drum liner. The 55-gallon drum is then placed in an 85-gallon drum. The 55-gallon drum either has the lid removed or the drum is breached (e.g., from corrosion) to such an extent that the drum is not a layer of confinement. Double-lid drums are not included in this configuration.
RH 125AV RH 225AV	Waste is packaged in four inner bags and one liner bag and then placed in a 55-gallon (208 liter) metal drum. The 55-gallon drum does not use a rigid drum liner. The 55-gallon drum is then placed in an 85-gallon drum. The 55-gallon drum either has the lid removed or the drum is breached (e.g., from corrosion) to such an extent that the drum is not a layer of confinement. Double-lid drums are not included in this configuration.

Code	Description*
RH 125AW RH 225AW	Waste is packaged in five inner bags and one liner bag and then placed in a 55-gallon (208 liter) metal drum. The 55-gallon drum does not use a rigid drum liner. The 55-gallon drum is then placed in an 85-gallon drum. The 55-gallon drum either has the lid removed or the drum is breached (e.g., from corrosion) to such an extent that the drum is not a layer of confinement. Double-lid drums are not included in this configuration.
RH 125AX RH 225AX	Waste is packaged in a heat-sealed bag, then into three inner bags and one liner bag and then placed in a 55-gallon (208 liter) metal drum. The 55-gallon drum does not use a rigid drum liner. The 55-gallon drum is then placed in an 85-gallon drum. The 55-gallon drum either has the lid removed or the drum is breached (e.g., from corrosion) to such an extent that the drum is not a layer of confinement. Double-lid drums are not included in this configuration.
RH 125AY RH 225AY	Waste is packaged in a heat-sealed bag, then into four inner bags and one liner bag and then placed in a 55-gallon (208 liter) metal drum. The 55-gallon drum does not use a rigid drum liner. The 55-gallon drum is then placed in an 85-gallon drum. The 55-gallon drum either has the lid removed or the drum is breached (e.g., from corrosion) to such an extent that the drum is not a layer of confinement. Double-lid drums are not included in this configuration.
RH 125AZ RH 225AZ	Waste is placed in a 55-gallon (208 liter) metal drum. The 55-gallon drum does not use a rigid drum liner. The 55-gallon drum is then placed in an 85-gallon drum. The 55-gallon drum either has the lid removed or the drum is breached (e.g., from corrosion) to such an extent that the drum is not a layer of confinement. Double-lid drums are not included in this configuration.
RH 125BA RH 225BA	Waste is packaged in one liner bag and then placed in a 55-gallon (208 liter) metal drum. The 55-gallon drum does not use a rigid drum liner. The 55-gallon drum is then placed in an 85-gallon drum. The 55-gallon drum either has the lid removed or the drum is breached (e.g., from corrosion) to such an extent that the drum is not a layer of confinement. Double-lid drums are not included in this configuration.
RH 125BB RH 225BB	Waste is packaged in one inner bag and one liner bag and then placed in a 55-gallon (208 liter) metal drum. The 55-gallon drum does not use a rigid drum liner. The 55-gallon drum is then placed in an 85-gallon drum. The 55-gallon drum either has the lid removed or the drum is breached (e.g., from corrosion) to such an extent that the drum is not a layer of confinement. Double-lid drums are not included in this configuration.

*Confinement layers within the containers are closed only by a twist-and-tape or fold-and-tape method except for Packaging Configurations RH 125AL/225AL, RH 125AM/225AM, RH 125AX/225AX, and RH 125AY/225AY, which each include one unvented heat-sealed bag. The drums may contain rigid drum liners. Double-lid drums may contain a rigid drum liner without a lid. Some drums, including those repackaged in the Waste Receiving and Processing Facility, may have an HDPE disk in the bottom of the drum and a double lid. All waste containers are inspected prior to shipment certification and are repackaged as necessary. If drums are overpacked in an SWB or a TDOP, no closed liner bags are used in the overpacking container.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times error) and decay heat (plus error).

FREE LIQUIDS: Waste is packaged to contain less than 1% free liquids. All CH-TRU waste certified at Hanford Site for shipment is examined by RTR or VE techniques, as applicable, to verify that free liquids are not present in excess of WIPP acceptance criteria.

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited from use or storage at Hanford Site TRU waste storage facilities. RTR or VE techniques are performed, as applicable, on all waste containers certified for shipment to verify the absence of aerosol cans, other pressure vessels, and other prohibited items. Aerosol cans and/or other pressure vessels are segregated and are processed into a WIPP compliant waste form prior to certification and shipment.

PYROPHORICS: Nonradionuclide pyrophoric TRU waste is prohibited from storage at Hanford Site TRU waste storage facilities. RTR or VE techniques are performed, as applicable, on all containers certified for shipment to identify possible pyrophoric materials. Quantities of radioactive pyrophoric material greater than 1% by weight of any waste container are prohibited. Quantities of radioactive pyrophoric materials less than 1% must be generally dispersed in the waste.

CORROSIVES: All CH-TRU waste in this waste stream is certified to contain no corrosives. Corrosives are prohibited by waste packaging procedures. RTR or VE techniques are performed, as applicable, on all containers certified for shipment to verify the absence of corrosive materials (e.g., corrosive batteries). Corrosives are segregated and processed into a WIPP compliant waste form prior to certification and shipment.

CHEMICAL COMPATIBILITY: All CH-TRU waste in this waste stream is certified to contain no incompatible chemical constituents. A chemical compatibility study was done on this content code to verify the waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The CH-TRAMPAC restricts the chemicals found in this content code to the table of allowable materials for Waste Material Type III.1. RTR or VE techniques are performed, as applicable, on all containers certified for shipment to verify the absence of incompatible materials. Any incompatible materials identified in more than trace quantities (>1% by weight) are segregated and processed into a WIPP compliant waste form prior to certification and shipment.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code stored in an unvented condition (i.e., no filter and unpunctured liner) will be vented and aspirated using an option described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: All waste containers will undergo RTR or VE techniques, as applicable, to ensure that waste, as packaged, meets the WIPP Waste Acceptance Criteria and the CH-TRAMPAC requirements for shipment and ultimate disposal. In accordance with the CH-TRAMPAC, each drum, except dunnage drums, is vented with an approved filter, and the rigid drum liner, if present, is punctured or filtered. Each SWB and TDOP will meet the minimum hydrogen diffusivity as stated in the CH-TRAMPAC. Containers are weighed individually to ensure compliance with weight limits.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The CH-TRAMPAC specifies the maximum allowable wattages for analytical and test category waste.

CONTENT CODE: RH 130, RH 230 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solid Inorganic with Residual Organic Waste

GENERATING SITE: Richland Hanford

WASTE DESCRIPTION: This waste consists of inorganic items including plutonium alloy scrap (Group II) mixed with residual organic materials (oils, solvents, sweeps, sludges, etc.), Hanford ash, PFP ash, and RFETS ash.

GENERATING SOURCES: The waste was generated from various Richland Hanford plutonium areas, including the Plutonium Finishing Plant (PFP) vault, and RFETS plutonium generating areas.

WASTE FORM: The waste form in this category is comprised of inorganic materials, Pu alloy scrap (Group II), containing greater than 10% Pu and mixed with less than 10% by weight organic materials (oils, solvents, sweeps, etc.). The Hanford, PFP, and RFETS ash consists primarily of products from the incomplete incineration of combustible materials (ash, soot, etc.) and contains less than 10% by weight organic material. The waste is homogeneous with the radioactivity dispersed throughout the waste.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
RH 130A RH 230A	Waste is packaged in a slip lid metal can. The can is then placed in a 55-gallon drum.
RH 130B RH 230B	Waste is packaged in a slip lid metal can and then placed in up to two filtered inner bags. Bagged material is then placed in a 55-gallon drum.
RH 130C RH 230C	Waste is packaged in a slip lid metal can and then placed in up to three filtered inner bags. Bagged material is then placed in a 55-gallon drum.
RH 130D RH 230D	Waste is packaged in a slip lid metal can and then placed in up to four filtered inner bags. Bagged material is then placed in a 55-gallon drum.
RH 130E RH 230E	Waste is packaged in a slip lid metal can, which is then placed in a pipe component. The pipe component is contained in a 55-gallon drum, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RH 130F RH 230F	Waste is packaged in a slip lid metal can and then placed in up to two filtered inner bags. Bagged waste is then placed in a pipe component. The pipe component is contained in a 55-gallon drum, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

Code	Description
RH 130G RH 230G	Waste is packaged in a slip lid metal can and then placed in up to three filtered inner bags. Bagged waste is then placed in a pipe component. The pipe component is contained in a 55-gallon drum, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.
RH 130H RH 230H	Waste is packaged in a slip lid metal can and then placed in up to four filtered inner bags. Bagged waste is then placed in a pipe component. The pipe component is contained in a 55-gallon drum, with celotex packaging material placed between the pipe component and the rigid liner. The drum liner lid is then put in place followed by the filtered drum lid. The drum liner will be filtered or punctured. The lid is then secured to the drum with a bolted closure ring.

ASSAY: The quantity of radioactive material in payload containers is determined by approved and authorized assay method(s). Assay is either performed directly on the payload container or on all of the smaller waste packages (e.g., cans) composing the payload container. If the payload container is not directly assayed, then the assay values (and errors) for the payload container are calculated from the associated assay results for all of the smaller packages composing the payload container. The results are expressed as grams of radionuclides per individual payload container. Assay results are used to calculate Pu-239 fissile gram equivalent (plus 2 times the error) and decay heat (plus error).

FREE LIQUIDS: Free liquids are prohibited by waste packaging procedures. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of unacceptable free liquid. In certain cases, for example packaging waste into cans, verification that unacceptable free liquid is not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to packaging of cans into pipe overpacks).

EXPLOSIVES/COMPRESSED GASES: Explosives are prohibited by waste packaging procedures. The waste packaging procedures require that any airtight containers larger than 4 liters and all pressure vessels be vented. Independent examination of waste contents at the time of packaging and/or RTR is used to verify the absence of any airtight containers larger than 4 liters and unvented pressurized containers. In certain cases, for example packaging waste into cans, verification that explosives/ compressed gases are not present may be performed prior to actual waste packaging into the final payload container (e.g., prior to packaging of cans into pipe overpacks). The plutonium-carbide piece shall be stirred to benignly oxidize to plutonium oxide or shall be overpacked with an inert material to protect the small carbide from abrasion and jostling during packaging and shipment.

PYROPHORICS: No non-radionuclide pyrophorics have been identified in this content code. Non-radionuclide pyrophorics are prohibited by waste packaging procedures and have been rendered nonreactive prior to placement in the payload container, if necessary. Radionuclide pyrophoric material will be limited to less than 1% by weight of the waste payload in each payload container.

CORROSIVES: The waste either does not contain corrosive material, or all corrosive materials are neutralized or removed from the waste prior to or during waste packaging operations.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types III.2 and III.3 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid and each pipe component lid contains a minimum of one filter, and the rigid liner is filtered or punctured, if present.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: SL 111, SL 211 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Adsorbed/Solidified Tritium Contaminated Liquid Waste

GENERATING SITE: Sandia National Laboratories/California (SNL/CA)

WASTE DESCRIPTION: Solidified aqueous waste from the solidification of tritium-contaminated water in Super-Fine or Florco clay material.

GENERATING SOURCE: The waste originated from the Tritium Research Laboratory at SNL/CA.

WASTE FORM: This content code consists of solidified tritium-contaminated water. An absorbent clay was used to absorb and solidify the tritium-contaminated water.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
SL 111 SL 211	The waste, consisting of solidified tritium-contaminated water, has been loaded into one of two types of high-quality, stainless steel, primary containers. Each of the stainless steel containers will be loaded into a DOT Type A, 7A, 17H, 55-gallon drum. The inner stainless steel containers will be packed and stabilized in the drum using additional clay and plywood disks.

ASSAY: Samples of the tritium contaminated water were analyzed to determine the quantity of tritium to be placed in each inner container. The assay results were expressed in terms of curies of tritium. Assay results were used to determine total grams of tritium and decay heat for each container. Since tritium is not a fissile material, there is no Pu-239 fissile gram equivalent limit.

FREE LIQUIDS: The stainless steel containers were initially filled with absorbent clay (Florco or Super-Fine). The tritium contaminated water is placed in the container and mixed with the absorbent clay. This process results in the absence of any free liquids. The containers are then sealed.

EXPLOSIVES/COMPRESSED GASES: The waste was produced and loaded into the containers in a manner which precluded the introduction or production of explosive or compressed gases. In addition, neither the ingredients nor the finished solidified clay are explosive. When sealed, the internal pressure of the primary container will be 1 atmosphere psia, or less. Very small amounts of hydrogen gas may be generated, but prior to shipment, sampling will be performed on selected primary containers for internal pressure and hydrogen concentration to verify that the packaging limits on pressure and hydrogen concentration are not exceeded during the 60-day shipping period.

PYROPHORICS: No pyrophoric materials have been identified in this waste form. Pyrophorics were prohibited by waste packaging procedures.

CORROSIVES: No unneutralized corrosive materials have been identified in this waste.

CHEMICAL COMPATIBILITY: All waste is chemically compatible to and between the containers, and with the inner containment vessel and O-ring seals. A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter vent, and the rigid liner (if present) is punctured, filtered, or used without a lid.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: SQ 111, SQ 211 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Aqueous or Homogeneous Inorganic Solid Waste

GENERATING SITE: Various

WASTE DESCRIPTION: This waste consists of one or more of the following:

- Immobilized/solidified aqueous effluent from plutonium processing
- Immobilized/solidified particulate or sludge-type waste generated during plutonium recovery operations or waste water processing
- Solutions of acidic liquids that have been neutralized and then solidified with an aqueous-based inorganic material
- Soils contaminated by aqueous solutions of plutonium.

GENERATING SOURCES: These wastes were generated from various operations at the sites.

WASTE FORM: The waste includes sludge, grit, fire brick fines, process residue, process leached solids, ash, filter cakes, salts, metal oxides, soils, etc., immobilized/solidified with Aquaset, Petroset, or cement, or absorbed or adsorbed in vermiculite or diatomaceous earth.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
SQ 111A SQ 211A	The waste is placed directly into a 55-gallon drum or an SWB with no layers of confinement.
SQ 111B SQ 211B	The waste is packaged directly into one plastic bag and is then placed into a 55-gallon drum or an SWB.
SQ 111C SQ 211C	The waste is packaged directly into two plastic bags and is then placed into a 55-gallon drum or an SWB.
SQ 111D SQ 211D	The waste is packaged directly into three plastic bags and is then placed into a 55-gallon drum or an SWB.

* If drums are overpacked in an SWB, a TDOP, or an 85-gallon drum, no closed liner bags are used inside the SWB, the TDOP, or the 85-gallon drum. All bag closures are in accordance with the CH-TRAMPAC.

ASSAY: Assay for all payload containers shall be performed in accordance with the CH-TRAMPAC. The isotopic composition of the waste is determined from measurements taken on the product material during the processing at the site. The processing organizations transmit the isotopic composition information to the site waste certification organization. Therefore, the isotopic composition of the waste need not be determined by direct analysis or measurement of the waste unless process information is not available.

FREE LIQUIDS: Liquid waste is prohibited in the payload containers (drums or SWBs) except for residual amounts in well-drained containers. The total volume of residual liquid in a payload container shall be less than 1 volume percent of the payload container. Waste packaging procedures ensure that free liquids are less than 1 volume percent of the payload container.

EXPLOSIVES/COMPRESSED GASES: Explosives and compressed gases in the payload containers are prohibited by waste packaging procedures.

PYROPHORICS: Nonradioactive pyrophorics in the payload containers are prohibited by waste packaging procedures. Waste packaging procedures shall ensure that all pyrophoric radioactive materials are present only in small residual amounts (less than 1 weight percent) in payload containers.

CORROSIVES: Corrosives are prohibited in the payload containers. Acids and bases that are potentially corrosive shall be neutralized and rendered noncorrosive prior to being a part of the waste. The physical form of the waste and the waste generating procedures ensure that the waste is in a nonreactive form.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on these content codes, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter vent, and the rigid liner (if present) is punctured. Each SWB is fitted with a minimum of two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: SQ 112, SQ 212 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solidified Organic Waste

GENERATING SITE: Various

WASTE DESCRIPTION: This waste consists of solidified organic TRU waste.

GENERATING SOURCES: These wastes were generated from various operations at the sites.

WASTE FORM: The solidified organic waste consists of absorbed oils, solvents, paint, or other organic liquids.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
SQ 112A SQ 212A	The waste is placed directly into a 55-gallon drum or an SWB with no layers of confinement.
SQ 112B SQ 212B	The waste is packaged directly into one plastic bag and is then placed into a 55-gallon drum or an SWB.
SQ 112C SQ 212C	The waste is packaged directly into two plastic bags and is then placed into a 55-gallon drum or an SWB.
SQ 112D SQ 212D	The waste is packaged directly into three plastic bags and is then placed into a 55-gallon drum or an SWB.

* If drums are overpacked in an SWB, a TDOP, or an 85-gallon drum, no closed liner bags are used inside the SWB, the TDOP, or the 85-gallon drum. All bag closures are in accordance with the CH-TRAMPAC.

ASSAY: Assay for all payload containers shall be performed in accordance with the CH-TRAMPAC. The isotopic composition of the waste is determined from measurements taken on the product material during the processing at the site. The processing organizations transmit the isotopic composition information to the site waste certification organization. Therefore, the isotopic composition of the waste need not be determined by direct analysis or measurement of the waste unless process information is not available.

FREE LIQUIDS: Liquid waste is prohibited in the payload containers (drums or SWBs) except for residual amounts in well-drained containers. The total volume of residual liquid in a payload container shall be less than 1 volume percent of the payload container. Waste packaging procedures ensure that free liquids are less than 1 volume percent of the payload container.

EXPLOSIVES/COMPRESSED GASES: Explosives and compressed gases in the payload containers are prohibited by waste packaging procedures.

PYROPHORICS: Nonradioactive pyrophorics in the payload containers are prohibited by waste packaging procedures. Waste packaging procedures shall ensure that all pyrophoric radioactive materials are present only in small residual amounts (less than 1 weight percent) in payload containers.

CORROSIVES: Corrosives are prohibited in the payload containers. Acids and bases that are potentially corrosive shall be neutralized and rendered noncorrosive prior to being a part of the waste. The physical form of the waste and the waste generating procedures ensure that the waste is in a nonreactive form.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on these content codes, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type IV.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter vent, and the rigid liner (if present) is punctured. Each SWB is fitted with a minimum of two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: SQ 114, SQ 214 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Cemented Inorganic Process Solids

GENERATING SITE: Various

WASTE DESCRIPTION: This waste consists of particulate and sludge-type wastes that are solidified with Portland cement. The resultant waste is designated inorganic cemented process solids.

GENERATING SOURCES: These wastes were generated from various operations at the sites.

WASTE FORM: The waste includes incinerator ash and sludge, filter cakes, salts, metal oxides, fines, soot, sand, slag, and crucible heels, immobilized into a solid monolith with a Portland cement mixture. The cement mixture used varies by procedure with the type of waste being cemented.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
SQ 114A SQ 214A	The waste is placed directly into a 55-gallon drum or an SWB with no layers of confinement.
SQ 114B SQ 214B	The waste is packaged directly into one plastic bag and is then placed into a 55-gallon drum.
SQ 114C SQ 214C	The waste is packaged directly into two plastic bags and is then placed into a 55-gallon drum or an SWB.
SQ 114D SQ 214D	The waste is packaged directly into three plastic bags and is then placed into a 55-gallon drum.

* If drums are overpacked in an SWB, a TDOP, or an 85-gallon drum, no closed liner bags are used inside the SWB, the TDOP, or the 85-gallon drum. All bag closures are in accordance with the CH-TRAMPAC.

ASSAY: Assay for all payload containers shall be performed in accordance with the CH-TRAMPAC. The isotopic composition of the waste is determined from measurements taken on the product material during the processing at the site. The processing organizations transmit the isotopic composition information to the site waste certification organization. Therefore, the isotopic composition of the waste need not be determined by direct analysis or measurement of the waste unless process information is not available.

FREE LIQUIDS: Liquid waste is prohibited in the payload containers (drums or SWBs) except for residual amounts in well-drained containers. The total volume of residual liquid in a payload container shall be less than 1 volume percent of the payload container. Waste packaging procedures ensure that free liquids are less than 1 volume percent of the payload container.

EXPLOSIVES/COMPRESSED GASES: Explosives and compressed gases in the payload containers are prohibited by waste packaging procedures.

PYROPHORICS: Nonradioactive pyrophorics in the payload containers are prohibited by waste packaging procedures. Waste packaging procedures shall ensure that all pyrophoric radioactive materials are present only in small residual amounts (less than 1 weight percent) in payload containers.

CORROSIVES: Corrosives are prohibited in the payload containers. Acids and bases that are potentially corrosive shall be neutralized and rendered noncorrosive prior to being a part of the waste. The physical form of the waste and the waste generating procedures ensure that the waste is in a nonreactive form.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on these content codes, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type I.3 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter vent, and the rigid liner (if present) is punctured. Each SWB is fitted with a minimum of two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: SQ 120, SQ 220 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Isotopic Source Waste

GENERATING SITE: Various

WASTE DESCRIPTION: The waste consists of sealed sources.

GENERATING SOURCE: These wastes are generated from various operations at the sites.

WASTE FORM: The waste consists of solid, inorganic source material and sources sealed in metal jackets. Sources may include well logging sources used for oil exploration, neutron sources for university research, heat sources, cardiac pacemaker components (source capsules, batteries, and pacemakers), gamma gauges, gauge sources (moisture density gauges, level gauges, bone density gauges), calibration sources (smoke detectors and instrument calibration), and X-ray fluorescence sources for scientific and research applications. Source constituents may include americium-241, plutonium-238, plutonium-239, cesium-137, and beryllium.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table.

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
SQ 120A SQ 220A	The isotopic source is sealed in a metal jacket and/or placed in a metal can. The metal jacket/can may be placed in a maximum of four plastic bags, one of which is a liner bag, and is placed in a 55-gallon drum that may be lined with a rigid liner. The same packaging configuration may be used for a direct load SWB or a direct load TDOP.

*If drums are overpacked in an SWB, a TDOP, or an 85-gallon drum, no closed liner bags are used inside the SWB, the TDOP, or the 85-gallon drum. If waste is placed directly into a TDOP, any liner bag is an SWB liner. All bag closures are in accordance with the CH-TRAMPAC.

ASSAY: The waste consists of manufactured, sealed isotopic sources. Radiological data are typically well documented by the manufacturer for these sources. Therefore, the isotopic composition of the waste need not be determined by direct analysis or measurement of the waste unless documentation is not available. If necessary, assay for all payload containers shall be performed in accordance with the CH-TRAMPAC.

FREE LIQUIDS: There are no free liquids in this waste.

EXPLOSIVES/COMPRESSED GASES: There are no explosives and/or compressed gases in this waste.

PYROPHORICS: There are no pyrophorics in this waste.

CORROSIVES: There are no corrosives in this waste.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter vent, and the rigid liner (if present) is punctured. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine filters. Site personnel shall ensure that packaged isotopic source wastes comply with the external radiation dose rate limits for the payload container and the packaging, as stated in the CH-TRAMPAC.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: SQ 121, SQ 221 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solid Organic Waste

GENERATING SITE: Various

WASTE DESCRIPTION: This waste consists of a variety of combustible and noncombustible organic items.

GENERATING SOURCES: These wastes were generated from various operations at the sites.

WASTE FORM: The waste may include combustible items such as cloth and paper products (e.g., from the cleanup of spills), rags, coveralls and booties, plastic, cardboard, rubber, wood, surgeons gloves, and Kimwipes. The waste may also include filter waste, (e.g., dry box filters, HEPA filters, and filter cartridges); noncombustible Benelex and plexiglas neutron shielding, blacktop, concrete, dirt, and sand; leaded gloves and aprons comprised of Hypalon rubber and lead oxide impregnated neoprene; and small amounts of metal waste. This waste may also include particulate and sludge-type organic process solids immobilized/solidified with Portland cement, vermiculite, Aquaset, or Petroset. The waste may also include items from decontamination and decommissioning activities (tools, supplies, equipment, etc.) and stabilized plutonium ash.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
SQ 121A SQ 221A	The waste is placed directly into a 55-gallon drum, an SWB, or a TDOP with no layers of confinement.
SQ 121AA SQ 221AA	The waste is placed directly into a metal can with the filter removed from the bung hole. The metal can is contained in a 55-gallon drum that is lined with a rigid liner. The rigid liner lid is removed.
SQ 121AB SQ 221AB	The waste is contained in one-gallon paint cans. The one-gallon paint cans are placed directly into a 55-gallon drum with no confinement layers and no rigid liner.
SQ 121AC SQ 221AC	The waste is contained in one-gallon paint cans. The one-gallon paint cans are placed in one heat-sealed filtered liner bag, which is then placed into a 55-gallon drum with no rigid liner.
SQ 121B SQ 221B	The waste is packaged directly into one plastic bag and is then placed into a 55-gallon drum, an SWB, or a TDOP.
SQ 121C SQ 221C	The waste is packaged directly into two plastic bags and is then placed into a 55-gallon drum, an SWB, or a TDOP.
SQ 121D SQ 221D	The waste is packaged directly into three plastic bags and is then placed into a 55-gallon drum, an SWB, or a TDOP.
SQ 121DA SQ 221DA	The waste is packaged directly into two plastic inner bags and one plastic liner bag. The waste is then placed into a 55-gallon drum with no rigid liner.
SQ 121E SQ 221E	The waste is packaged directly into three plastic inner bags and is then placed into a 55-gallon drum with no rigid liner. No closed plastic liner bags are used inside the 55-gallon drum.

Code	Description*
SQ 121F SQ 221F	The waste is packaged in three drum liner bags with twist-and-tape closures. Bagged waste is directly loaded into an SWB with two filters each having a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/sec/mole fraction.
SQ 121FA SQ 221FA	The waste is packaged in three drum liner bags with twist-and-tape closures. Bagged waste is directly loaded into an SWB with four filters each having a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/sec/mole fraction.
SQ 121G SQ 221G	The waste is packaged in one heat-sealed bag meeting the specifications of Appendix 6.13 of the CH-TRU Payload Appendices. The heat-sealed bag is packaged within two inner bags with twist-and-tape closures. Bagged waste is directly loaded into an SWB with two filters each having a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/sec/mole fraction.
SQ 121GA SQ 221GA	The waste is packaged in one heat-sealed bag meeting the specifications of Appendix 6.13 of the CH-TRU Payload Appendices. The heat-sealed bag is packaged within two inner bags with twist-and-tape closures. Bagged waste is directly loaded into an SWB with four filters each having a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/sec/mole fraction.
SQ 121H SQ 221H	The waste is packaged in one heat-sealed bag meeting the specifications of Appendix 6.13 of the CH-TRU Payload Appendices. The heat-sealed bag is packaged within two inner bags with twist-and-tape closures. Bagged waste is directly loaded into a 55-gallon drum that is either punctured or fitted with a filter with a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/sec/mole fraction. The drum has no rigid liner. Four 55-gallon drums are directly loaded into an SWB with two filters each having a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/sec/mole fraction.
SQ 121HA SQ 221HA	The waste is packaged in one heat-sealed bag meeting the specifications of Appendix 6.13 of the CH-TRU Payload Appendices. The heat-sealed bag is packaged within two inner bags with twist-and-tape closures. Bagged waste is directly loaded into a 55-gallon drum that is either punctured or fitted with a filter with a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/sec/mole fraction. The drum has no rigid liner. Four 55-gallon drums are directly loaded into an SWB with four filters each having a minimum hydrogen diffusivity value of 3.7×10^{-6} mol/sec/mole fraction.

* If drums are overpacked in an SWB, a TDOP, or an 85-gallon drum, no closed liner bags are used inside the SWB, the TDOP, or the 85-gallon drum. If waste is placed directly in a TDOP, any liner bag is an SWB liner. All bag closures are in accordance with the CH-TRAMPAC.

ASSAY: Assay for all payload containers shall be performed in accordance with the CH-TRAMPAC. The isotopic composition of the waste is determined from measurements taken on the product material during the processing at the site. The processing organizations transmit the isotopic composition information to the site waste certification organization. Therefore, the isotopic composition of the waste need not be determined by direct analysis or measurement of the waste unless process information is not available.

FREE LIQUIDS: Liquid waste is prohibited in the payload containers (drums, SWBs, or TDOPs) except for residual amounts in well-drained containers. The total volume of residual liquid in a payload container shall be less than 1 volume percent of the payload container. Waste packaging procedures ensure that free liquids are less than 1 volume percent of the payload container.

EXPLOSIVES/COMPRESSED GASES: Explosives and compressed gases in the payload containers are prohibited by waste packaging procedures.

PYROPHORICS: Nonradioactive pyrophorics in the payload containers are prohibited by waste packaging procedures. Waste packaging procedures shall ensure that all pyrophoric radioactive materials are present only in small residual amounts (less than 1 weight percent) in payload containers.

CORROSIVES: Corrosives are prohibited in the payload containers. Acids and bases that are potentially corrosive shall be neutralized and rendered noncorrosive prior to being a part of the waste. The physical form of the waste and the waste generating procedures ensure that the waste is in a nonreactive form.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter vent, and the rigid liner (if present) is punctured. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

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CONTENT CODE: SQ 122, SQ 222 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Inorganic Solid Waste

GENERATING SITE: Various

WASTE DESCRIPTION: This waste consists of a variety of noncombustible inorganic items.

GENERATING SOURCES: These wastes were generated from various operations at the sites.

WASTE FORM: The waste includes items such as Raschig rings, Leco crucibles, ceramic crucibles, glass, graphite molds and crucibles, graphite-furnace equipment, glovebox windows, laboratory glassware, shielding tools, machinery, hand tools, non-SS metals, and construction materials (cinder blocks, concrete, insulation, sand, and firebrick).

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
SQ 122A SQ 222A	The waste is packaged directly into metal cans and then placed into a 55-gallon drum, an SWB, or a TDOP.
SQ 122B SQ 222B	The waste is packaged directly into one plastic bag and is then placed into a 55-gallon drum, an SWB, or a TDOP.
SQ 122C SQ 222C	The waste is packaged directly into two plastic bags and is then placed into a 55-gallon drum, an SWB, or a TDOP.
SQ 122D SQ 222D	The waste is packaged directly into three plastic bags and is then placed into a 55-gallon drum, an SWB, or a TDOP.
SQ 122E SQ 222E	The waste is placed directly into a 55-gallon drum, an SWB, or a TDOP with no layers of confinement

* If drums are overpacked in an SWB, a TDOP, or an 85-gallon drum, no closed liner bags are used inside the SWB, the TDOP, or the 85-gallon drum. If waste is placed directly in a TDOP, any liner bag is an SWB liner. All bag closures are in accordance with the CH-TRAMPAC.

ASSAY: Assay for all payload containers shall be performed in accordance with the CH-TRAMPAC. The isotopic composition of the waste is determined from measurements taken on the product material during the processing at the site. The processing organizations transmit the isotopic composition information to the site waste certification organization. Therefore, the isotopic composition of the waste need not be determined by direct analysis or measurement of the waste unless process information is not available.

FREE LIQUIDS: Liquid waste is prohibited in the payload containers (drums, SWBs, or TDOPs) except for residual amounts in well-drained containers. The total volume of residual liquid in a payload container shall be less than 1 volume percent of the payload container. Waste packaging procedures ensure that free liquids are less than 1 volume percent of the payload container.

EXPLOSIVES/COMPRESSED GASES: Explosives and compressed gases in the payload containers are prohibited by waste packaging procedures.

PYROPHORICS: Nonradioactive pyrophorics in the payload containers are prohibited by waste packaging procedures. Waste packaging procedures shall ensure that all pyrophoric radioactive materials are present only in a small residual amount (less than 1 weight percent) in payload containers.

CORROSIVES: Corrosives are prohibited in the payload containers. Acids and bases that are potentially corrosive shall be neutralized and rendered noncorrosive prior to being a part of the waste. The physical form of the waste and the waste generating procedures ensure that the waste is in a nonreactive form.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types II.1 and II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter, and the rigid liner (if present) will be punctured. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: SQ 125, SQ 225 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Solid Organic and Inorganic Waste

GENERATING SITE: Various

WASTE DESCRIPTION: This waste consists of debris including paper, plastic, metal, and glass.

GENERATING SOURCES: These wastes were generated from various operations at the sites.

WASTE FORM: The debris waste consists of miscellaneous organic and inorganic waste materials including, but not limited to, pipes, capped pipes containing metal waste, paint chips, and lead bricks.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
SQ 125A SQ 225A	The waste is placed directly into a 55-gallon drum, an SWB, a pipe component, or a TDOP with no layers of confinement.
SQ 125B SQ 225B	The waste is packaged directly into one plastic bag and is then placed into a 55-gallon drum, an SWB, or a TDOP.
SQ 125C SQ 225C	The waste is packaged directly into two plastic bags and is then placed into a 55-gallon drum, an SWB, a pipe component, or a TDOP.
SQ 125D SQ 225D	The waste is packaged directly into three plastic bags and is then placed into a 55-gallon drum, an SWB, or a TDOP.

*If drums are overpacked in an SWB, a TDOP, or an 85-gallon drum, no closed liner bags are used inside the SWB, the TDOP, or the 85-gallon drum. If waste is placed directly in a TDOP, any liner bag is an SWB liner. All bag closures are in accordance with the CH-TRAMPAC. In drums, an HDPE liner may be used.

ASSAY: Assay for all payload containers shall be performed in accordance with the CH-TRAMPAC. The isotopic composition of the waste is determined from measurements taken on the product material during the processing at the site. The processing organizations transmit the isotopic composition information to the site waste certification organization. Therefore, the isotopic composition of the waste need not be determined by direct analysis or measurement of the waste unless process information is not available.

FREE LIQUIDS: Liquid waste is prohibited in the payload containers (drums, SWBs, or TDOPs) except for residual amounts in well-drained containers. The total volume of residual liquid in a payload container shall be less than 1 volume percent of the payload container. Waste packaging procedures ensure that free liquids are less than 1 volume percent of the payload container.

EXPLOSIVES/COMPRESSED GASES: Explosives and compressed gases in the payload containers are prohibited by waste packaging procedures.

PYROPHORICS: Nonradioactive pyrophorics in the payload containers are prohibited by waste packaging procedures. Waste packaging procedures shall ensure that all pyrophoric radioactive materials are present only in small residual amounts (less than 1 weight percent) in payload containers.

CORROSIVES: Corrosives are prohibited in the payload containers. Acids and bases that are potentially corrosive shall be neutralized and rendered noncorrosive prior to being a part of the waste. The physical form of the waste and the waste generating procedures ensure that the waste is in a nonreactive form.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on these content codes, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum and pipe component is fitted with a minimum of one filter vent, and the rigid liner (if present) is punctured. Each SWB is fitted with a minimum of two and up to four filters. Each TDOP is fitted with at least nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: SQ 126, SQ 226 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: Cemented/Solidified Organic Process Waste

GENERATING SITE: Various

WASTE DESCRIPTION: This waste consists of cemented/solidified organic sludges and sludge-like materials, and steel and concrete components.

GENERATING SOURCES: These wastes were generated from various operations at the sites.

WASTE FORM: (SQ 126A/226A, SQ 126B/226B, SQ 126C/226C, SQ 126D/226D) The solidifying agent (e.g., Portland cement, Aquaset, or Petroset) is added to the material and allowed to solidify. All particulate and sludge-like wastes are solidified to the point where there is no visible evidence of liquids. The resultant waste is designated cemented or solidified process solids. Examples of the waste constituents can be found in the tables of allowable materials in the CH-TRAMPAC. (SQ 126E/226E, SQ 126F/226F) The waste includes, but is not limited to, sludge containing metal fines from cutting and grinding operations, steel and concrete debris, sand, dirt, and concrete dust/particulate.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
SQ 126A SQ 226A	The waste is placed/processed in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in an inner bag or container, the inner bag or container is not closed and is therefore not considered a layer of confinement and provides no resistance to the release of hydrogen gas.
SQ 126B SQ 226B	The waste is placed/processed in a 55-gallon drum, an SWB, or a TDOP, which is lined with a plastic bag.
SQ 126C SQ 226C	The waste is packaged directly into two plastic bags and is then placed into a 55-gallon drum, an SWB, or a TDOP.
SQ 126D SQ 226D	The waste is packaged directly into three plastic bags and is then placed into a 55-gallon drum, an SWB, or a TDOP.
SQ 126E SQ 226E	The waste is placed directly into a pipe component with no layers of confinement or is placed in one or more metal or plastic layers and then placed in a pipe component. If the waste is first placed in metal or plastic layers, the layers allow for free gas release (e.g., containers are not sealed, are punctured, or are less than four liters in volume; bags are not closed, are punctured, or have deteriorated over time) and, therefore, there are no layers of confinement.
SQ 126F SQ 226F	The waste is packaged directly into two plastic bags and is then placed into a pipe component or is placed in one or more metal or plastic layers and then placed in a pipe component. If the bagged out waste is first placed in metal or plastic layers, the layers allow free gas release (e.g., containers are not sealed, are punctured, or are less than four liters in volume; bags are not closed, or are punctured) and, therefore, there are only two layers of confinement.

*If drums are overpacked in an SWB, a TDOP, or an 85-gallon drum, no closed liner bags are used inside the SWB, the TDOP, or the 85-gallon drum. If waste is placed directly in a TDOP, any liner bag is an SWB liner. All bag closures are in accordance with the CH-TRAMPAC. In drums, an HDPE liner may be used.

ASSAY: Assay for all payload containers shall be performed in accordance with the CH-TRAMPAC. The isotopic composition of the waste is determined from measurements taken on the product material during the processing at the site. The processing organizations transmit the isotopic composition information to the site waste certification organization. Therefore, the isotopic composition of the waste need not be determined by direct analysis or measurement of the waste unless process information is not available.

FREE LIQUIDS: Liquid waste is prohibited in the payload containers (drums, SWBs, or TDOPs) except for residual amounts in well-drained containers. The total volume of residual liquid in a payload container shall be less than 1 volume percent of the payload container. Waste packaging procedures ensure that free liquids are less than 1 volume percent of the payload container.

EXPLOSIVES/COMPRESSED GASES: Explosives and compressed gases in the payload containers are prohibited by waste packaging procedures.

PYROPHORICS: Nonradioactive pyrophorics in the payload containers are prohibited by waste packaging procedures. Waste packaging procedures shall ensure that all pyrophoric radioactive materials are present only in small residual amounts (less than 1 weight percent) in payload containers.

CORROSIVES: Corrosives are prohibited in the payload containers. Acids and bases that are potentially corrosive shall be neutralized and rendered noncorrosive prior to being a part of the waste. The physical form of the waste and the waste generating procedures ensure that the waste is in a nonreactive form.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on these content codes, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum is fitted with a minimum of one filter vent, and the rigid liner (if present) is punctured. Each SWB is fitted with a minimum of two and up to four filters. Each TDOP is fitted with at least nine filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: SR 117, SR 217 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Metal Pipe Waste

GENERATING SITE Savannah River Site (SRS)

WASTE DESCRIPTION: The waste consists of segments of pipe containing TRU material from separations processes.

GENERATING SOURCES: The waste originates from the Separations Equipment Development (SED) facility, Building 773-A, at SRS.

WASTE FORM: The pipe segments were integral parts of the facility hardware and contain plutonium adsorbed onto a medium of alumina. The waste is completely inorganic.

WASTE PACKAGING: Details of the packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description
SR 117A SR 217A	A closure plate fitted with an O-ring gasket is bolted over each flanged opening where the pipe segment was previously attached to other apparatus. The gasket material deforms under bolting load to occupy irregularities between mating surfaces, sealing particulates inside the pipe segment. The detached pipe segment may be enveloped by up to three folded but otherwise unsealed PVC bags for protection of handling personnel. The final assemblage is placed directly into an SWB. The SWB is outfitted with appropriate shoring to locate the pipe segment securely in the center of the SWB and prevent movement within the SWB during transport. Only one SWB containing waste will be shipped in each packaging.

ASSAY: The pipe segments are assayed by non-destructive procedures to determine the Pu-239 or fissile gram equivalent content. Gamma pulse height analysis and passive neutron methods are used to assay the TRU content of each pipe segment. Assay results are used to calculate Pu-239 fissile gram equivalent (plus two times the error) and decay heat (plus error).

FREE LIQUIDS: The pipe segments are radiographed for evidence of internal liquids prior to removal from associated apparatus for assay. If liquid is found in a pipe segment either by radiograph or by visual inspection during removal for assay, SRS procedures require halting work immediately. The TRU waste will be packaged and shipped free of liquids.

EXPLOSIVES/COMPRESSED GASES: Explosive materials are neither contained in nor a part of the pipe segments. SRS procedures prohibit entry of any foreign material into controlled areas where TRU material is present. In addition, the apparatus to which the pipe segments are connected tested negatively for the presence of hydrogen. The TRU waste will be packaged and shipped free of explosive materials.

PYROPHORICS: Pyrophoric materials are neither contained in nor a part of the pipe segments. SRS procedures prohibit entry of any foreign material into controlled areas where TRU material is present. The TRU waste will be packaged and shipped free of pyrophoric materials.

CORROSIVES: Corrosive materials are neither contained in nor a part of the pipe segments. No corrosive materials were involved in the process which produced the TRU waste, or in the process of its assay or in removal for disposal. The TRU waste will be packaged and shipped free of corrosive materials.

CHEMICAL COMPATIBILITY: A formal Technical Data Summary for SED Facilities identifies chemicals used in every aspect of facility operation and states that there are no chemical incompatibilities. A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each SWB is fitted with at least two and up to four filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: SR 122, SR 222 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Noncombustible Waste

GENERATING SITE: Savannah River Site (SRS)

WASTE DESCRIPTION: Noncombustible waste is produced from onsite laboratory and production facilities. It consists of contaminated equipment and miscellaneous incidental wastes.

GENERATING SOURCE: The waste originates from the plutonium production facilities (221-HB Line and 221-FB Line) and Laboratories (772-F, 773-A and 235-F) at SRS.

WASTE FORM: This content code consists of noncombustible waste such as small tools, glassware, metal cans, etc.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
SR 122A SR 222A	The waste is packaged in two plastic inner bags and one plastic liner bag and is then placed in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner.
SR 122B SR 222B	The waste is packaged in three plastic inner bags and one plastic liner bag and is then placed in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner.
SR 122C SR 222C	The waste is packaged in four plastic inner bags and one plastic liner bag and is then placed in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner.
SR 122D SR 222D	The waste is placed directly in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner. No other layers of confinement are used.
SR 122E SR 222E	The waste is packaged in one plastic liner bag and is then placed in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner.
SR 122F SR 222F	The waste is packaged in one plastic inner bag and one plastic liner bag and is then placed in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner.
SR 122G SR 222G	The waste is packaged in five plastic inner bags and one plastic liner bag and is then placed in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner.
SR 122H SR 222H	The waste is packaged in a metal can as the innermost layer of confinement and is then placed in a 55-gallon drum, an SWB, or a TDOP. If waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner.

* If drums are overpacked in an SWB or a TDOP, no closed liner bags are used inside the SWB or TDOP. If waste is placed directly in a TDOP, any liner bag is an SWB liner. All bag closures are in accordance with the CH-TRAMPAC.

ASSAY: Assay for all payload containers shall be performed in accordance with the CH-TRAMPAC. The isotopic composition of the waste need not be determined by direct analysis or measurement of the waste unless process information is not available.

FREE LIQUIDS: Liquid waste is prohibited in the payload containers except for residual amounts in well-drained containers. The total volume of residual liquid in a payload container shall be less than 1 volume percent of the payload container. Waste packaging or waste certification procedures ensure that free liquids are less than 1 volume percent of the payload container.

EXPLOSIVES/COMPRESSED GASES: Explosives and compressed gases in the payload containers are prohibited by waste packaging or waste certification procedures.

PYROPHORICS: Nonradioactive pyrophorics in the payload containers are prohibited by waste packaging procedures. Waste packaging procedures shall ensure that all pyrophoric radioactive materials are presently only in small residual amounts (less than 1 weight percent) in payload containers.

CORROSIVES: Corrosives are prohibited in the payload containers. Acids and bases that are potentially corrosive shall be neutralized and rendered noncorrosive prior to being a part of the waste. The physical form of the waste and the waste generating procedures ensure that the waste is in a nonreactive form.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Types II.1 and II.2 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid contains a minimum of one filter, and the rigid liner is punctured or filtered, if present. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine and up to ten filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

CONTENT CODE: SR 125, SR 225 (See Waste Packaging Description Table)

CONTENT DESCRIPTION: TRU Combustible Waste

GENERATING SITE: Savannah River Site (SRS)

WASTE DESCRIPTION: Combustible waste is produced from onsite laboratory and production facilities. It consists of contaminated equipment and miscellaneous incidental wastes.

GENERATING SOURCE: The waste originates from the plutonium production facilities (221-HB Line and 221-FB Line) and Laboratories (772-F, 773-A and 235-F) at SRS.

WASTE FORM: SRS combustible waste consists of dry, solid waste materials such as plastics, wood, cloth, paper, and other incidental wastes. This content code may contain some noncombustible such as small tools, metal cans, glassware, etc.

WASTE PACKAGING: Details of the waste packaging for each code are presented in the following table:

WASTE PACKAGING DESCRIPTION TABLE

Code	Description*
SR 125A SR 225A	The waste is packaged in four plastic inner bags and one plastic liner bag and is then placed in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner.
SR 125B SR 225B	The waste is placed directly in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner. No other layers of confinement are used.
SR 125C SR 225C	The waste is packaged in one plastic liner bag and is then placed in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner.
SR 125D SR 225D	The waste is packaged in one plastic inner bag and one plastic liner bag and is then placed in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner.
SR 125E SR 225E	The waste is packaged in two plastic inner bags and one plastic liner bag and is then placed in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner.
SR 125F SR 225F	The waste is packaged in three plastic inner bags and one plastic liner bag and is then placed in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner.
SR 125G SR 225G	The waste is packaged in five plastic inner bags and one plastic liner bag and is then placed in a 55-gallon drum, an SWB, or a TDOP. If the waste is placed in a 55-gallon drum, the drum may be fitted with a rigid drum liner.

*If drums are overpacked in an SWB or a TDOP, no closed liner bags are used inside the SWB or TDOP. If waste is placed directly in a TDOP, any liner bag is an SWB liner. All bag closures are in accordance with the CH-TRAMPAC.

ASSAY: Assay for all payload containers shall be performed in accordance with the CH-TRAMPAC. The isotopic composition of the waste need not be determined by direct analysis or measurement of the waste unless process information is not available.

FREE LIQUIDS: Liquid waste is prohibited in the payload containers except for residual amounts in well-drained containers. The total volume of residual liquid in a payload container shall be less than 1 volume percent of the payload container. Waste packaging or waste certification procedures ensure that free liquids are less than 1 volume percent of the payload container.

EXPLOSIVES/COMPRESSED GASES: Explosives and compressed gases in the payload containers are prohibited by waste packaging or waste certification procedures.

PYROPHORICS: Nonradioactive pyrophorics in the payload containers are prohibited by waste packaging procedures. Waste packaging procedures shall ensure that all pyrophoric radioactive materials are presently only in small residual amounts (less than 1 weight percent) in payload containers.

CORROSIVES: Corrosives are prohibited in the payload containers. Acids and bases that are potentially corrosive shall be neutralized and rendered noncorrosive prior to being a part of the waste. The physical form of the waste and the waste generating procedures ensure that the waste is in a nonreactive form.

CHEMICAL COMPATIBILITY: A chemical compatibility study has been performed on this content code, and all waste is chemically compatible for materials in greater than trace (>1% weight) quantities. The chemicals found in this content code are restricted to the table of allowable materials for Waste Material Type III.1 in the CH-TRAMPAC.

PAYLOAD CONTAINER VENTING AND ASPIRATION: Payload containers in this content code that have been stored in an unvented condition (i.e., no filter and unpunctured liner) will be aspirated using one of the three options described in the CH-TRAMPAC.

ADDITIONAL CRITERIA: In accordance with the CH-TRAMPAC, each drum lid contains a minimum of one filter, and the rigid liner is punctured or filtered, if present. Each SWB is fitted with at least two and up to four filters. Each TDOP is fitted with at least nine and up to ten filters.

SHIPPING CATEGORY: See Table 2, Summary of Approved Content Codes and Corresponding Shipping Categories.

MAXIMUM ALLOWABLE WATTAGE: The maximum allowable wattages for analytical and test category waste are specified in the CH-TRAMPAC.

Appendix A

List of Chemicals and Materials in CH-TRU Waste Content Codes

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TABLE OF CONTENTS

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INTRODUCTION

This appendix provides site-specific chemical lists for waste to be transported in the Transuranic Package Transporter-II (TRUPACT-II) or the HalfPACT packagings. Waste generated and stored at U.S. Department of Energy and small quantity sites to be transported in the TRUPACT-II or HalfPACT must be defined in a content code included in the currently approved version of the CH-TRU Waste Content Codes (CH-TRUCON) document, and each content code must have an associated approved chemical list in this appendix. The chemical lists contained in this appendix are restricted to the allowable chemical lists for each waste material type found in Section 4.0 of the CH-TRU Waste Authorized Methods for Payload Control (CH-TRAMPAC). Compliance with the lists of allowable materials in Tables 4.3-1 through 4.3-8 of the CH-TRAMPAC has been demonstrated for each chemical list corresponding to each content code. Chemicals/materials that are not included on the list of allowable materials for a given waste material type are limited to a total combined quantity of less than 5 weight percent as specified in the CH-TRAMPAC.

The chemicals/materials listed for each content code are described as “dominant,” “minor,” or “trace.” The chemical list designations are as follows:

D Dominant Component (>10% by weight)
M Minor Component (1-10% by weight)
T Trace Component (<1% by weight)
T1 Trace Component (<0.1% by weight)
T2 Trace Component (low ppm range)
T3 Trace Component (<1 ppm range).

All proposed changes to this appendix shall be evaluated and approved by the CH-TRU Payload Engineer according to the process described in Section 1.5 of the CH-TRAMPAC. A proposed change to the chemical list for any content code shall be evaluated by the CH-TRU Payload Engineer for compliance with the lists of allowable materials in Tables 4.3-1 through 4.3-8 of the CH-TRAMPAC and all other transportation parameters (i.e., chemical compatibility and gas generation), as described in the CH-TRAMPAC.

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Argonne National Laboratory - East
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AE 111/211

SOLIDIFIED AQUEOUS WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING (Constituents reacted prior to loading in payload containers.)	D
GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers.)	D
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	M
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	M
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	M
GROUP 107:	WATER REACTIVE SUBSTANCES (Constituents reacted prior to loading in payload containers.)	M
OTHER INORGANICS		D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Aquaset/Petroset	D
	Cement	D
	Envirostone	D
	Vermiculite	D

Refer to Introduction for a description of the designations used in this chemical list.

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Argonne National Laboratory - East
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AE 116/216

TRU COMBUSTIBLE WASTE

GROUP 19:	KETONES	
	Acetone	T1
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Cadmium	M
	Chromium	T
	Copper	M
	Iron	M
	Lead	M
	Stainless Steel	M
	Tantalum	T
	Titanium	T
	Zirconium	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T
	Barium chloride	T
	Beryllium	T
	Cadmium	M
	Chromium	T
	Copper	M
	Lead	M
	Mercury	T
	Titanium	T
	Zirconium	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Bakelite	T
	Carbon (Spent, Activated)	T
	Cellulose	D
	Grease	M
	Oil	M
	Paper	D
	Polyethylene	D
	Polypropylene	M
	Polystyrene	M
	Polyurethane	M
	Polyvinyl chloride	M
	Resins (Cation and Anion)	M
	Rubber gloves	D
	Rubber gloves (Leaded)	T
	Synthetic rubber	M
	Wood	M

Argonne National Laboratory - East
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AE 116/216
(Continued)

TRU COMBUSTIBLE WASTE

OTHER INORGANICS	
Glass, labware	D
Grit	T
Insulation	T
Lithium salts	D
Salts	D
Sand	T
Slag	T
Sodium salts	D
Soil	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Cement	T
Concrete	M
Emulsifiers (Sodium lauryl sulfate)	M
Envirostone	M
Oil-Dri	M
Sludge	M
Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

Argonne National Laboratory - East
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AE 129/229

COMBINED SOLIDIFIED ORGANICS

GROUP 3:	ACIDS, ORGANIC (Constituents reacted prior to loading in payload containers.)	D
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Polyethylene glycol	D
GROUP 16:	HYDROCARBONS, AROMATIC	
	Trimethylbenzene	D
	Xylene	D
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	D
	1,1,2-Trichloro-1,2,2-trifluoroethane	D
	Carbon tetrachloride	D
	Chloroform	D
	Methylene chloride	D
	Trichloroethylene	D
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	N-Paraffin hydrocarbons (NPH)	D
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	D
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Oil (Absorbed)	D
	Polyethylene (Packaging material)	D
	Polyethylene glycol	D
	Polyvinyl chloride (Packaging material)	D
OTHER INORGANICS		
	Calcium silicate	D
	Potassium sulfate	D
OTHER SOLIDIFICATION MATERIALS/ABSORBENT		
	Aqueous solutions and mixtures (Fixed in matrix)	D
	Concrete	D
	Envirostone	D
	Magnesia Cement (Hydrated)	D
	Portland Cement	D
	Sludge	D

Refer to Introduction for a description of the designations used in this chemical list.

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Argonne National Laboratory - West
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AW 111/211

TRU SOLIDIFIED AQUEOUS OR HOMOGENEOUS INORGANIC SOLIDS

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Boric acid	T
	Hydrobromic acid	T
	Hydrochloric acid	T
	Hydrofluoric acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	M
	Sulfuric acid	T
	Sulfamic acid	T
GROUP 3:	ACIDS, ORGANIC (ALL ISOMERS)	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butyl alcohol	T1
	Decanol	T1
	Ethanol	T1
	Hexanol	T1
	Isobutanol	T1
	Isopropanol	T1
	Methanol	T1
	Octanol	T1
	Propanol	T1
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T
	Calcium carbonate	T
	Potassium hydroxide	M
	Sodium carbonate	T
	Sodium hydroxide	M
GROUP 14:	ETHERS	
	Di-butylcyclohexano-18-crown-6 ether	T1
GROUP 19:	KETONES	
	Acetone	T1
	Diethyl ketone	T1
	Diisobutyl ketone	T1
	Methyl ethyl ketone	T1

Argonne National Laboratory - West
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AW 111/211
(Continued)

TRU SOLIDIFIED AQUEOUS OR HOMOGENEOUS INORGANIC SOLIDS

GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T
	Calcium	T
	Cesium	T
	Lithium	T
	Magnesium	T
	Potassium	T
	Rubidium	T
	Sodium	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Antimony	T2
	Cadmium	M
	Chromium	T2
	Lead	M
	Metal cans (Tin)	M
	Selenium	T2
	Zinc	T2
	Zirconium	M
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T2
	Arsenic	T2
	Barium	T
	Beryllium	T2
	Cadmium	M
	Chromium	T2
	Calcium	T
	Lead	M
	Nickel	M
	Potassium permanganate	T2
	Selenium	T2
	Silver	T2
	Strontium	T
	Zinc	T2
	Zirconium	M
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES, AND PHOSPHODITHIOATES	
	CMPO (Organophosphate)	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Polyethylene (Packaging material)	
	Polyvinyl chloride (Packaging material)	M
	Tape (Packaging material)	M
		M

Argonne National Laboratory - West
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AW 111/211
(Continued)

TRU SOLIDIFIED AQUEOUS OR HOMOGENEOUS INORGANIC SOLIDS

GROUP 104:	OXIDIZING AGENTS, STRONG	
	Sodium nitrate	T
GROUP 105:	REDUCING AGENTS, STRONG	
	Calcium	T
	Hydroxyl amine	T
	Sodium	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T
	Calcium	T
	Hydrobromic acid	T
	Lithium	T
	Potassium	T
	Sodium	T
	Sulfuric acid	T
OTHER INORGANICS		
	Aluminum nitrate	T
	Grit	T
	Lithium-metaborate fluxes	T2
	Reduced metal alloys (Thermal treatment product)	M
	Refractory (Oxides of Al, Si, Cr, Mg)	M
	Slag (Oxides of Si, Al, Fe, Ca, Na, K, Mg)	M
	Zeolites (Aluminum silicates)	T
OTHER SOLIFICATION MATERIAL/ABSORBENTS		
	Aquaset/Petroset	D
	Diatomaceous Earth	D
	Oil-Dri	M
	Portland Cement (Hydrated)	D

Refer to Introduction for a description of the designations used in this chemical list.

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Argonne National Laboratory - West
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AW 121/221

TRU ORGANIC SOLID WASTE

GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butyl alcohol	T1
	Decanol	T1
	Ethanol	T1
	Hexanol	T1
	Isobutanol	T1
	Isopropanol	T1
	Methanol	T1
	Octanol	T1
	Propanol	T1
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium carbonate	T
GROUP 14:	ETHERS	
	Di-butylcyclohexano-18-crown-6 ether	T1
GROUP 19:	KETONES	
	Acetone	T1
	Diethyl ketone	T1
	Diisobutyl ketone	T1
	Methyl ethyl ketone	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T
	Batteries (Lithium-based)	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Transuranic elements	T
	Zirconium	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Antimony	T2
	Cadmium	M
	Chromium	T2
	Copper	M
	Filter housings (Metal)	D
	Iron	D
	Lead	D
	Metal cans (Tin)	M

Argonne National Laboratory - West
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AW 121/221
(Continued)

TRU ORGANIC SOLID WASTE

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC. (Continued)	
	Nichrome heating elements	T
	Nickel Wire	T
	Selenium	T2
	Silver pH electrodes	T
	Tantalum	T
	Titanium	T
	Zinc	T2
	Zirconium	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T
	Arsenic	T2
	Barium	T2
	Beryllium	T2
	Cadmium	T2
	Chromium	T
	Copper	M
	Lead	M
	Nickel	T2
	Potassium permanganate	M
	Selenium	T2
	Silver	T
	Titanium	T
	Zinc	T2
	Zirconium	T2
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES, AND PHOSPHODITHIOATES	
	CMPO (Organophosphate)	T3
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulose	T
	Neoprene	D
	Oil	T
	Paint chips (Solidified in Portland Cement)	M
	Paper	D
	Polyester	T
	Polyethylene	D
	Polypropylene	M
	Polystyrene	M
	Polyurethane	M
	Polyvinyl chloride	D
	Resins (Cation and Anion)	M
	Rubber gloves (Leaded)	M
	Synthetic rubber	M
	Wood	M

Argonne National Laboratory - West
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AW 121/221
(Continued)

TRU ORGANIC SOLID WASTE

GROUP 104:	OXIDIZING AGENTS, STRONG	
	Potassium permanganate	T2
	Sodium nitrate	T
GROUP 105:	REDUCING AGENTS, STRONG	
	Hydroxyl amine	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	Barium	T
OTHER ORGANICS		
	Filter media	
	Hydraulic fluid	M
	Lexan (Glovebox windows)	M
	Polycarbonate	D
	Tape (Packaging material)	D
	Tetrafluoroethylene (Teflon ®)	M
OTHER INORGANICS		
	Aluminum nitrate	T
	Ceramic heating insulators	M
	Diamond saw blades	T
	Fiberglass (HEPA Filter media)	M
	Glass labware	M
	Grit	T
	Lithium-metaborate fluxes	T
	Reduced metal alloys (Thermal treatment product)	M
	Refractory (Oxides of Al, Si, Cr, Mg)	M
	Slag (Oxides of Si, Al, Fe, Ca, Na, K, Mg)	M
	Zeolites (Aluminum silicates)	T

Refer to Introduction for a description of the designations used in this chemical list.

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Argonne National Laboratory - West
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AW 122/222

TRU INORGANIC SOLID WASTE

GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium carbonate	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T
	Hydrofluoric acid	T
	Potassium fluoride	T
	Sodium fluoride	T
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T
	Batteries (Lithium-based)	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Antimony	T2
	Cadmium	M
	Chromium	T2
	Copper	M
	Filter housings (Metal)	D
	Iron	D
	Lead	M
	Metal cans (Tin)	M
	Nichrome heating elements	T
	Nickel wire	T
	Silver pH electrodes	T
	Tantalum	T
	Titanium	T
	Zirconium	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T2
	Arsenic	T2
	Barium	T
	Beryllium	T2
	Cadmium	M
	Chromium	T2
	Copper	M
	Lead	M
	Nickel	T

Argonne National Laboratory - West
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AW 122/222
(Continued)

TRU INORGANIC SOLID WASTE

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC (Continued)	
	Potassium permanganate	T2
	Selenium	T2
	Silver	T2
	Titanium	T
	Zinc	T2
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES, AND PHOSPHODITHIOATES	
	CMPO (Organophosphate)	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Polyethylene (Packaging material)	M
	Polyvinyl chloride (Packaging material)	M
	Tape (Packaging material)	M
GROUP 104:	OXIDIZING AGENTS, STRONG	
	Potassium permanganate	T2
	Sodium nitrate	T
GROUP 105:	REDUCING AGENTS, STRONG	
	Hydroxyl amine	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	Barium	T
OTHER INORGANICS		
	Aluminum nitrate	T
	Ceramic heating insulators	M
	Diamond saw blades	T
	Fiberglass (HEPA Filter media)	M
	Glass labware	M
	Grit	T
	Lithium-metaborate fluxes	T2
	Reduced metal alloys (Thermal treatment product)	D
	Refractory (Oxides of Al, Si, Cr, Mg)	D
	Slag (Oxides of Si, Al, Fe, Ca, Na, K, Mg)	D
	Zeolites (Aluminum silicates)	T

Refer to Introduction for a description of the designations used in this chemical list.

Argonne National Laboratory - West
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AW 125/225

TRU COMBUSTIBLE AND NONCOMBUSTIBLE WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Boric acid	T
	Hydrobromic acid	T
	Hydrochloric acid	T
	Hydrofluoric acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	M
	Sulfuric acid (<70%)	T
	Sulfamic acid	T
GROUP 3:	ACIDS, ORGANIC (ALL ISOMERS)	
	(Constituents reacted prior to loading in payload containers.)	
	Diethylenethiaminepentaacetic acid (DPTA)	T
	Ethylene diaminetetraacetic acid (EDTA)	T
	Acetic acid	T
	Oxalic acid	T
	Sodium citrate	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butyl alcohol	T1
	Deconal	T1
	Ethanol	T1
	Ethylene glycol	T
	Hexanol	T1
	Isobutanol	T1
	Isopropanol	T1
	Methanol	T1
	Octanol	T1
	Propanol	T1
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to lading in payload containers.)	
	Ammonium hydroxide	T
	Calcium carbonate	T
	Potassium hydroxide	M
	Sodium carbonate	T
	Sodium hydroxide	M
GROUP 14:	ETHERS	
	Di-butylcyclohexono-18-crown-6-ether	T1
GROUP 19:	KETONES	
	Acetone	T
	Diethyl ketone	T1
	Diisobutyl ketone	T1
	Methyl ethyl ketone	T1

Argonne National Laboratory - West
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AW 125/225
(Continued)

TRU COMBUSTIBLE AND NONCOMBUSTIBLE WASTE

GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL (Constituents reacted prior to loading in payload containers.)	
	Barium	T
	Batteries (Lithium-based)	T
	Calcium	T
	Cesium	T
	Lithium	T
	Magnesium	T
	Potassium	T
	Rubidium	T
	Sodium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Transuranic elements	T
	Zirconium	M
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Antimony	T
	Cadmium	M
	Chromium	T
	Carbon steel	D
	Copper	M
	Filter housings (Metal)	D
	Iron	D
	Lead	D
	Metal cans (Tin)	M
	Nichrome heating elements	T
	Nickel wire	T
	Platinum	M
	Selenium	T2
	Silver pH electrodes	T
	Stainless Steel	D
	Tantalum	T
	Technetium	T
	Titanium	M
	Zinc	T2
	Zirconium	M

Argonne National Laboratory - West
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AW 125/225
(Continued)

TRU COMBUSTIBLE AND NONCOMBUSTIBLE WASTE

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T
	Arsenic	T2
	Barium	T
	Beryllium	T2
	Boron nitride	T
	Cadmium	M
	Chromium	T
	Copper	M
	Lead	M
	Nickel	M
	Potassium permanganate	T2
	Selenium	T2
	Silver	T2
	Strontium	T
	Titanium	M
	Zinc	T2
	Zirconium	M
GROUP 25:	NITRIDES	
	Boron nitride	T
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES, AND PHOSPHODITHIOATES	
	CMPO (Organophosphate)	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Beeswax	M
	Cellulose	D
	Grease	T
	Neoprene (Leaded and Non-Leaded)	D
	Oil	M
	Paint chips (Solidified in Portland Cement)	D
	Paper	D
	Polyester	T
	Polyethylene	D
	Polypropylene	M
	Polystyrene	M
	Polyurethane	M
	Polyvinyl chloride	D
	Resins (Cation and Anion)	M
	Rubber gloves (Leaded)	D
	Synthetic rubber	M
	Tape (Packaging material)	M
	Wood	M
GROUP 104:	OXIDIZING AGENTS, STRONG	
	Potassium permanganate	T2
	Sodium nitrate	T

Argonne National Laboratory - West
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code AW 125/225
(Continued)

TRU COMBUSTIBLE AND NONCOMBUSTIBLE WASTE

GROUP 105:	REDUCING AGENTS, STRONG	
	Calcium	T
	Hydroxyl amine	T
	Sodium	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	T
	Barium	T
	Calcium	T
	Hydrobromic acid	T
	Lithium	T
	Sodium	T
	Sulfuric acid	
OTHER ORGANICS		
	Filter media	M
	Hydraulic fluid	M
	Lexan (Glovebox windows)	D
	Polycarbonate	M
	Tetrafluoroethylene (Teflon ®)	M
OTHER INORGANICS		
	Aluminum nitrate	T
	Ceramic heating insulators	M
	Diamond saw blades	T
	Fiberglass (HEPA Filter media)	M
	Glass frit	M
	Glass labware	M
	Grit	T
	Lithium chloride	M
	Lithium-metaborate fluxes	T2
	Potassium chloride	M
	Reduced metal alloys (Thermal treatment product)	M
	Refractory (Oxides of Al, Si, Cr, Mg)	M
	Slag (Oxides of Si, Al, Fe, Ca, Na, K, Mg)	M
	Zeolites (Aluminum silicates)	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Aquaset/Petroset	D
	Diatomaceous Earth	D
	Oil-Dri	M
	Portland Cement (Hydrated)	D

Refer to Introduction for a description of the designations used in this chemical list.

Argonne National Laboratory - West
List of Chemicals and Materials
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TRU COMBINED SOLID ORGANICS, SOLID INORGANICS, AND SOLIDIFIED INORGANICS

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Boric acid	T
	Hydrobromic acid	T
	Hydrochloric acid	T
	Hydrofluoric acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	M
	Sulfuric acid	T
	Sulfamic acid	T
GROUP 3:	ACIDS, ORGANIC (ALL ISOMERS)	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butyl alcohol	T1
	Decanol	T1
	Ethanol	T1
	Hexanol	T1
	Isobutanol	T1
	Isopropanol	T1
	Methanol	T1
	Octanol	T1
	Propanol	T1
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T
	Calcium carbonate	T
	Potassium hydroxide	M
	Sodium carbonate	T
	Sodium hydroxide	M
GROUP 14:	ETHERS	
	Di-butylcyclohexano-18-crown-6-ether	T1
GROUP 19:	KETONES	
	Acetone	T1
	Diethyl ketone	T1
	Diisobutyl ketone	T1
	Methyl ethyl ketone	T1

Argonne National Laboratory - West
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TRU COMBINED SOLID ORGANICS, SOLID INORGANICS, AND SOLIDIFIED INORGANICS

GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL (Constituents reacted prior to loading in payload containers.)	
	Barium	T
	Batteries (Lithium-based)	T
	Calcium	T
	Cesium	T
	Lithium	T
	Magnesium	T
	Potassium	T
	Rubidium	T
	Sodium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGE	
	Transuranic elements	T
	Zirconium	M
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Antimony	T
	Cadmium	M
	Carbon steel	D
	Chromium	T
	Copper	M
	Iron	D
	Filter housings (Metal)	D
	Lead	D
	Metal cans (Tin)	M
	Nichrome heating elements	T
	Nickel wire	T
	Platinum	M
	Selenium	T2
	Silver pH electrodes	T
	Stainless Steel	D
	Tantalum	T
	Technetium	T
	Titanium	M
	Zinc	T2
	Zirconium	M

Argonne National Laboratory - West
List of Chemicals and Materials
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TRU COMBINED SOLID ORGANICS, SOLID INORGANICS, AND SOLIDIFIED INORGANICS

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T
	Arsenic	T2
	Barium	T
	Beryllium	T2
	Cadmium	M
	Calcium	T
	Chromium	T
	Copper	M
	Lead	M
	Nickel	M
	Potassium permanganate	T2
	Selenium	T2
	Silver	T2
	Strontium	T
	Titanium	M
	Zinc	T2
	Zirconium	M
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES, AND PHOSPHODITHIOATES	
	CMPO (Organophosphate)	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Beeswax	M
	Cellulose	D
	Grease	T
	Neoprene (Leaded and Non-Leaded)	D
	Oil	M
	Paint chips (Solidified in Portland Cement)	D
	Paper	D
	Polyester	T
	Polyethylene	D
	Polypropylene	M
	Polystyrene	M
	Polyurethane	M
	Polyvinyl chloride	D
	Resins (Cation and Anion)	M
	Rubber gloves (Leaded)	D
	Synthetic rubber	M
	Tape (Packaging material)	M
	Wood	M
GROUP 104:	OXIDIZING AGENTS, STRONG	
	Potassium permanaganate	T2
	Sodium nitrate	T

Argonne National Laboratory - West
List of Chemicals and Materials
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TRU COMBINED SOLID ORGANICS, SOLID INORGANICS, AND SOLIDIFIED INORGANICS

GROUP 105:	REDUCING AGENTS, STRONG	
	Calcium	T
	Hydroxyl amine	T
	Sodium	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T
	Calcium	T
	Hydrobromic acid	T
	Lithium	T
	Sodium	T
	Sulfuric acid	T
OTHER ORGANICS		
	Filter media	M
	Hydraulic fluid	M
	Lexan (Glovebox windows)	D
	Polycarbonate	M
	Tetrafluoroethylene (Teflon ®)	M
OTHER INORGANICS		
	Aluminum nitrate	T
	Ceramic heating insulators	M
	Diamond saw blades	T
	Fiberglass (HEPA Filter media)	M
	Glass frit	M
	Glass labware	M
	Grit	T
	Lithium chloride	M
	Lithium-metaborate fluxes	T2
	Potassium chloride	M
	Reduced metal alloys (Thermal treatment product)	M
	Refractory (Oxides of Al, Si, Cr, Mg)	M
	Slag (Oxides of Si, Al, Fe, Ca, Na, K, Mg)	M
	Zeolites (Aluminum silicates)	M
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Aquaset/Petroset	D
	Diatomaceous Earth	D
	Oil-Dri	M
	Portland Cement (Hydrated)	D

Refer to Introduction for a description of the designations used in this chemical list.

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
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SOLIDIFIED AQUEOUS WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Hydrochloric acid	D
	Hydrofluoric acid	D
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Acid residues	T
	Nitric acid	D
	Sulfuric acid	M
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T
	Ethanol	T
	Ethylene glycol monobutyl ether	T
	Isopropanol	T
	Methanol	T
	Propanol	T
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Ammonium hydroxide	M
	Calcium hydroxide	M
	Caustic residues	T
	Potassium hydroxide	D
	Sodium carbonate	T
	Sodium hydroxide	D
GROUP 14:	ETHERS	
	Ethylene glycol monobutyl ether	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Hydrochloric acid	D
	Hydrofluoric acid	M
GROUP 16:	HYDROCARBONS, AROMATIC	
	Ethyl benzene	T
	Instagel (xylene base)	T
	Toluene	T
	Xylene	T

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
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(Continued)

SOLIDIFIED AQUEOUS WASTE

GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Dichloromethane	T
	Ethylene glycol monobutyl ether	T
	Methylene chloride	T
	Tetrachloroethylene	T
	Trichloroethylene	T
GROUP 19:	KETONES	
	Acetone	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Mercury (vapor)	T
	Molybdenum	T
	Nickel	T
	Selenium	T
GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOYS AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Cadmium	T
	Chromium	T
	Iron	T
	Lead	T
	Molybdenum	T
	Selenium	T
	Silver	T
	Tantalum	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC (Constituents reacted prior to or concurrent with loading in payload containers.)	
	Beryllium	T
	Cadmium	T
	Chromium	T
	Copper salts	T
	Lead	T
	Mercury	T
	Mercury (vapor)	T
	Molybdenum	T
	Nickel	T
	Pyrosulfate salts	T
	Selenium	T
	Sodium chromate	T

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
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SOLIDIFIED AQUEOUS WASTE

GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Organophosphate	T
	Tributyl phosphate	T
	Tri-n-octyl phosphine oxide (TOPO)	T
	Spent cleansers and detergents	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Carbon (spent, activated)	M
	Mineral spirits	T
	Oils	T
	Paint	T
	Paper	T
	Polyethylene (Packaging material)	M
	Polypropylene	T
	Polyvinyl chloride (Packaging material)	M
	Resin	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Hydrogen peroxide (30%, 35%, and 50%)	M
GROUP 105:	REDUCING AGENTS, STRONG	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Hydroxyl amine	T
	Nitric acid	D
	Surfuric acid	M
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T
	Sludge (Fixed in matrix)	D
	Water	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Hydrogen peroxide (30%, 35%, and 50%)	M
	Sulfuric acid	M
OTHER ORGANICS		
	Flocculating agent (Polyelectrolyte)	T

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
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(Continued)

SOLIDIFIED AQUEOUS WASTE

OTHER INORGANICS		
	Aluminum hydroxide	T
	Ammonium bicarbonate	T
	Calcium chloride	D
	Copper carbonate	T
	Fabric softener	T
	Ferrous sulfamate	T
	Firebrick	T
	Glass	T
	Grit	T
	Insulation	T
	Iron hydroxide	D
	Magnesium chloride	M
	Magnesium sulfate	D
	Molds and Crucibles	T
	Potassium carbonate	T
	Potassium sulfate	D
	Sand	T
	Sodium hexametaphosphate	T
	Sodium sulfite	T
	Soil	T
	Soot	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Aquaset	M
	Autodri	D
	Diatomaceous earth	D
	Diatomite	D
	Dri-Rite	D
	Ferric sulfate (flocculating agent)	D
	Ferrous sulfate (flocculating agent)	D
	Florco	D
	Nalco 676 (flocculating agent)	T
	Oil-Dri	T
	Polyelectrolyte (flocculating agent)	T
	Portland Cement (Hydrated)	D
	Sorbal	D
	Surfactants	T
	Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
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SOLIDIFIED ORGANICS

GROUP 4:	ALCOHOLS AND GLYCOLS	
	Polyethylene glycol	M
GROUP 16:	HYDROCARBONS, AROMATIC	
	Xylene	M
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	D
	1,1,2-Trichloro-1,2,2-trifluoroethane	M
	Carbon tetrachloride	D
	Chloroform	D
	Methylene chloride	M
	Tetrachloroethylene	M
	Trichloroethylene	D
GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Depleted uranium metal	M
	Enriched uranium metal	M
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Beryllium	T
GROUP 28:	HYDROCARBON, ALIPHATIC UNSATURATED	
	Tetrachloroethylene	M
	Trichloroethylene	D
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	1,1,1-Trichloroethane	D
	1,1,2-Trichloro-1,2,2-trifluoroethane	M
	Chloroform	D
	Methylene chloride	M
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Hydraulic oil	M
	Oil (Absorbed)	D
	Oils, PCB	M
	Polyethylene (Packaging material)	T
	Polyvinyl chloride (Packaging material)	T
	Shell Vitrea Oil	D
	Texaco Regal Oil	D
	Vacuum pump oil	M
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	T

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
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Content Code ID 112/212
(Continued)

SOLIDIFIED ORGANICS

OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Calcium silicate	D
Envirostone ($CaSO_4$)	D
Oil-Dri	M
Potassium sulfate	M
Vermiculite	T

Refer to Introduction for a description of the designations used in this chemical list.

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
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SOLIDIFIED LABORATORY WASTE

GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T
	Ascorbic acid	T
	Citric acid	T
	EDTA	T
	Organic acids	M
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T
	Ethanol	T1
	Isopropanol	T1
	Methanol	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Xylene	T
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Methylene chloride	T
GROUP 19:	KETONES	
	Thenoyl trifluoroacetone (TTA)	T
GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Cadmium	T
	Lead	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Cadmium	T
	Lead	T
GROUP 28:	HYDROCARBON, ALIPHATIC UNSATURATED	
	Polypropylene	T
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	T
	Trioctyl phosphine oxide	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cardboard	T
	Polyethylene (Packaging material)	T
	Polypropylene	T
	Polyvinyl chloride (Packaging material)	T
	Resin	T

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
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SOLIDIFIED LABORATORY WASTE

GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures (Fixed in matrix)	M
	Sludge	D
	Water	T
OTHER ORGANICS		
	Alpha-hydroxyquinoline	T
	Chelating agents	T
	1,10-Phenanthroline	T3
	Sodium acetate	T
	Sodium citrate	T
OTHER INORGANICS		
	Firebrick	T
	Glass	T
	Insulation	T
	Molds and Crucibles	T
	Soot	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Concrete	D
	Magnesia Cement (Hydrated)	D
	Portland Cement (Hydrated)	D

Refer to Introduction for a description of the designations used in this chemical list.

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
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Content Code ID 114/214

TRU SOLIDIFIED INORGANIC PROCESS SOLIDS

GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T2
	Methanol	T2
GROUP 16:	HYDROCARBONS, AROMATIC	
	Toluene	T1
	Xylene	T1
GROUP 17:	HALOGENATED ORGANICS	
	Trichloroethylene	T
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Methylene chloride	T
GROUP 19:	KETONES	
	Acetone	T1
	Methyl ethyl ketone	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Batteries	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Graphite	D
	Lead	T1
	Steel	D
	Metal debris (Alloys of Fe, Al, Sn, Cu, Ta, W, Ti, Pb, etc.)	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Lead	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulosics (Paper, cardboard, wood, etc.)	T
	Plastic	T
	Polyethylene (Packaging material)	T
	Polyvinyl chloride (Packaging material)	T
	Rubber	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	T

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
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(Continued)

TRU SOLIDIFIED INORGANIC PROCESS SOLIDS

OTHER INORGANICS	
Asbestos	M
Ash/Pulverized fuel ash	D
Ceramic	D
Fiberglass	M
Firebrick	D
Glass	D
Grit	D
Incombustible material	D
Insulation	D
Miscellaneous oxides	D
Sand	D
Slag	D
Soil (Incinerated)	D
Soot	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Concrete	D
Oil-Dri	M
Portland Cement (Hydrated)	D
Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
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Content Code ID 115/215

GRAPHITE WASTE

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Graphite (Paint cans)	T
	Graphite (Molds and Crucibles)	D
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cardboard (Packaging material)	D
	Paper	T
	Polyethylene (Packaging material)	D
	Polyvinyl chloride (Packaging material)	M
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Oil-Dri	T
	Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

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Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
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Content Code ID 116/216

COMBUSTIBLE WASTE

GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T
	Sodium fluoride	T
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Methylene chloride	T
	Trichloroethylene	T
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Batteries	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	T
	Copper	T
	Iron	T
	Lead	T
	Low carbon steel	M
	Stainless Steel	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Copper	T
	Lead	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulose	D
	Paper	D
	Polyethylene	D
	Polypropylene	D
	Polyvinyl chloride	D
	Rubber gloves	D
	Rubber gloves (Leaded)	M
	Synthetic rubber	D
	Wood	M
OTHER INORGANICS		
	Glass, labware	T
	Other filters	M
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Concrete	D
	Oil-Dri	M
	Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

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Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
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TRU METAL WASTE

GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T
	Sodium fluoride	T
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Methylene chloride	T
	Polychlorinated biphenyls	T
GROUP 19:	KETONES	
	Xylene methyl isobutylketone	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Copper	D
	Iron	D
	Iron/Tin (alloy)	D
	Lead	D
	Low carbon steel	M
	Platinum	D
	Stainless Steel	D
	Tantalum	D
	Tungsten	D
	Zinc/Magnesium (alloy)	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Beryllium	T
	Copper	D
	Lead	D
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cardboard (Packaging material)	M
	Polyethylene (Packaging material)	D
	Polyvinyl chloride (Packaging material)	D
	Wood	T
OTHER INORGANICS		
	Calcium sulfate	M
	Clay (Bentonite)	D
	HEPA Filters	D
	Insulation	T
	Sodium chloride	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Oil-Dri	M
	Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

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Idaho National Engineering and Environmental Laboratory
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Content Code ID 118/218

TRU GLASS WASTE

GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T3
	Carbon tetrachloride	T
	Polychlorinated biphenyls	T
GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS , ETC.	
	Aluminum	T
	Lead	D
	Low Carbon Steel	M
	Stainless Steel	M
	Tungsten	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Lead	D
	Mercury	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cardboard (Packaging material)	M
	Paper	T
	Polyethylene (Packaging material)	M
	Polyvinyl chloride (Packaging material)	M
OTHER INORGANICS		
	Ceramic (Molds and Crucibles)	D
	Clay (Bentonite)	D
	Glass, labware	D
	Glass, raschig rings	D
	Sodium chloride	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Oil-Dri	M
	Vermiculite	D

Refer to Introduction for a description of the designations used in this chemical list.

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Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 119/219

FILTER WASTE

GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T
GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers.)	
	Caustic residues	T
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Methylene chloride	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Stainless Steel	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cloth/Rags	T
	Paper	T
	Polyethylene	M
	Polypropylene (Ful-Flo Filters)	D
	Polyvinyl chloride	M
	Synthetic rubber	T
	Wood	D
GROUP 104:	OXIDIZING AGENTS, STRONG (Constituents reacted prior to loading in payload containers.)	
	Nitrates	T
OTHER INORGANICS		
	Asbestos	M
	Fiberglass	M
	HEPA Filters (Or filter media)	D
	Insulation	D
	Other filters	D
	Plenum Prefilters (Fiberglass)	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Oil-Dri	D
	Portland Cement (Hydrated)	M

Refer to Introduction for a description of the designations used in this chemical list.

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Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 121/221

TRU ORGANIC SOLID WASTE

GROUP 16:	HYDROCARBONS, AROMATIC	
	Toluene	T1
	Xylene	T1
GROUP 17:	HALOGENATED ORGANICS	
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	1,1,1-Trichloroethane	T
	Carbon tetrachloride	T
	Methylene chloride	T
	Trichloroethylene	T
GROUP 19:	KETONES	
	Acetone	T1
	Methyl ethyl ketone	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Batteries	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Iron	T
	Metal Debris (Metals and Alloys of Fe, Al, Sn, Cu, Ta, W, Ti, Pb, etc.)	M
	Lead	D
	Stainless Steel	M
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Lead	D
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Asphalt	D
	Benelex	D
	Cardboard	D
	Cellulosics (paper, cardboard, wood, etc.)	D
	Leaded rubber	D
	Paper	D
	Phenolic resins	T
	Plastic	D
	Plexiglas	D
	Polyethylene	D
	Polymethyl methacrylate	D
	Polyvinyl chloride	T
	Rubber	D
	Synthetic rubber	T
	Wood	D

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 121/221
(Continued)

TRU ORGANIC SOLID WASTE

OTHER INORGANICS	
Asbestos	M
Ceramic	T
Crucibles	M
Fiberglass	M
Fly ash	M
Glass	T
HEPA Filters (Or other filters)	D
Sand	D
Slag	M
Soil	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Concrete	D
Oil-Dri	M
Portland Cement	M
Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
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Content Code ID 122/222

TRU SOLID INORGANIC WASTE

GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Nitric acid	M
GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers.)	
	Sodium hydroxide	M
GROUP 16:	HYDROCARBONS, AROMATIC	
	Toluene	T1
	Xylenes	T1
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Methylene chloride	T
	Trichloroethylene	T
GROUP 19:	KETONES	
	Acetone	T1
	Methyl ethyl ketone	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Batteries	M
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Brass metal	M
	Copper	T
	Depleted uranium metal	M
	Depleted uranium oxide (Roaster Oxide)	D
	Graphite	D
	Iron	T
	Iron/Tin (Alloy)	M
	Low carbon steel (packaging material)	D
	Metal Debris (Metals and Alloys of Fe, Al, Sn, Cu, Ta, W, Ti, Pb, etc.)	D
	Tin	T
	Titanium	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Copper	T
	Titanium	T

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 122/222
(Continued)

TRU SOLID INORGANIC WASTE

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cardboard (Packaging material)	D
	Cellulosics (paper, cardboard, wood, etc.)	T
	Paper	T
	Plastic	T
	Polyethylene (Packaging material)	M
	Polyvinyl chloride (Packaging material)	M
	Rubber	D
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	M
OTHER INORGANICS		
	Aluminum oxide	D
	Asbestos	M
	Ash	D
	Crucibles, Ceramic (Silicate-based)	D
	Dirt	D
	Fiberglass	M
	Firebrick	D
	Glass	D
	Grit	D
	Incombustible material	D
	Insulation	D
	Miscellaneous oxides	D
	Sand	D
	Slag	D
	Soil/Gravel	D
	Soot	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Concrete	M
	Magnesia cement	M
	Oil-Dri	M
	Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 123/223

LEADED RUBBER

GROUP 17:	HALOGENATED ORGANICS	
	Polychlorinated biphenyls	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Lead (Rubber gloves)	D
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Polyethylene	M
	Polyvinyl chloride	T
	Rubber gloves (Leaded)	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Oil-Dri	T
	Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

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Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 124/224

PYROCHEMICAL SALT WASTE

GROUP 10:	CAUSTICS (Constituents dispersed in chloride salts.)	
	Calcium oxide	M
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Iron/Tin (Alloy)	M
	Metal cans (For salt)	M
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Magnesium oxide	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Paper	T
	Polyethylene (Packaging material)	M
	Polyvinyl chloride (Packaging material)	M
GROUP 107:	WATER REACTIVE SUBSTANCES (Constituents dispersed in chloride salts.)	
	Calcium oxide	M
OTHER INORGANICS		
	Calcium chloride	D
	Cesium chloride	D
	Magnesium chloride	D
	Potassium chloride	D
	Salt (Fused Chloride)	D
	Sodium chloride	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Oil-Dri	T
	Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

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Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 125/225

INEEL STORED TRU COMBUSTIBLE AND NONCOMBUSTIBLE WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T
GROUP 15:	FLUORIDES, INORGANIC	
	Calcium fluoride	T
	Sodium fluoride	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Xylene	T
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Methylene chloride	T
	Polychlorinated biphenyls	T
GROUP 18:	ISOCYANATES	
	Ammonium thiocyanate	T
GROUP 19:	KETONES	
	Xylene methyl isobutyl ketone	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Aluminum	D
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Copper	D
	Iron	D
	Iron/Tin (Alloy)	D
	Lead	D
	Low carbon steel	M
	Platinum	D
	Stainless Steel	D
	Tantalum	D
	Tungsten	D
	Zinc/Magnesium (Alloy)	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Beryllium	T
	Copper	D
	Lead	D

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 125/225
(Continued)

INEEL STORED TRU COMBUSTIBLE AND NONCOMBUSTIBLE WASTE

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Bakelite	T
	Cardboard (Packaging material)	M
	Cloth	D
	Neoprene	M
	Oil	T
	Paper	T
	Polyethylene (Packaging material)	D
	Polypropylene	T
	Polyvinyl chloride (Packaging material)	D
	Rubber gloves	D
	Rubber gloves (Leaded)	M
	Synthetic rubber	M
	Wood	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Nitrates	T
OTHER INORGANICS		
	Calcium sulfate	M
	Clay (Bentonite)	D
	Glass, labware	D
	Glass, raschig rings	D
	HEPA Filters	M
	Insulation	T
	Sodium chloride	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Oil-Dri	M
	Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 126/226

CEMENTED PROCESS SOLIDS

GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T2
	Methanol	T2
GROUP 16:	HYDROCARBONS, AROMATIC	
	Toluene	T1
	Xylene	T1
GROUP 17:	HALOGENATED ORGANICS	
	Trichloroethylene	T
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Methylene chloride	T
GROUP 19:	KETONES	
	Acetone	T1
	Methyl ethyl ketone	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Batteries	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Iron/Tin (Alloy)	M
	Lead	T1
	Metal debris (Alloys of Fe, Al, Sn, Cu, Ta, W, Ti, Pb, etc.)	M
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Lead	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulosics (Paper, cardboard, wood, etc.)	D
	Leaded rubber	D
	Plastic	D
	Polyethylene	D
	Polyvinyl chloride	M
	Resins	D
	Rubber	D
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	T

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 126/226
(Continued)

CEMENTED PROCESS SOLIDS

OTHER INORGANICS	
Asbestos	M
Ceramic	T
Fiberglass	M
Firebrick	D
Glass	T
Grit	D
HEPA Filters	D
Other filters	T
Pulverized fuel ash	D
Sand	D
Slag	D
Soot	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Oil-Dri	M
Portland Cement (Hydrated)	D
Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 127/227

COMBINED SOLID ORGANICS, SOLID INORGANICS, AND SOLIDIFIED INORGANICS

This Content Code was created by combining other TRU Waste Content Codes. The List of Chemicals and Materials for Content Code ID 127/227 is a combination of the individual List of Chemicals and Materials for the following Content Codes:

ID 111/211	ID 119/219
ID 114/214	ID 121/221
ID 115/215	ID 122/222
ID 116/216	ID 123/223
ID 117/217	ID 124/224
ID 118/218	ID 125/225

ID 126/226

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Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 130/230

SOLID INORGANIC WITH RESIDUAL ORGANIC WASTE*

GROUP 16:	HYDROCARBONS, AROMATIC	
	Toluene	T1
	Xylenes	T1
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Tricholorethane	T
	1,1,2-Trichloro-1,2,2-trifluorethane	T
	Carbon tetrachloride	T
	Methylene chloride	T
	Polychlorinated biphenyls	T
	Trichloroethylene	T
GROUP 19:	KETONES	
	Acetone	T1
	Methyl ethyl ketone	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Batteries	T
GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOW, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Copper	D
	Iron	D
	Iron alloys	D
	Lead	D
	Tantalum	D
	Tin	D
	Titanium	D
	Tungsten	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Copper	D
	Lead	D
	Titanium	D
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELIANEOUS	
	Cellulosics (Paper, cardboard, wood, etc.)	M
	Plastic	M
	Rubber	M

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 130/230
(Continued)

SOLID INORGANIC WITH RESIDUAL ORGANIC WASTE*

OTHER INORGANIC	
Asbestos	M
Ceramic	D
Crucible	D
Fiberglass	M
Firebrick	D
Glass	D
Graphite	D
Grit	D
Insulation	D
Miscellaneous oxides	D
Sand	D
Slag	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Concrete	D
Oil-Dri	M
Vermiculite	M

Refer to introduction for a description of the designations used in this chemical list.

*The sum of the concentrations of water and organic materials must be less than or equal to 10 weight percent of the total waste.

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 132/232

SOLIDIFIED AQUEOUS WASTE/SLUDGE WASTE (GREATER THAN ONE WEIGHT PERCENT BERYLLIUM)

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Hydrochloric acid	D
	Hydrofluoric acid	D
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Acid residues	T
	Nitric acid	D
	Sulfuric acid	M
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T
	Ethanol	T
	Ethylene glycol monobutyl ether	T
	Isopropanol	T
	Methanol	T
	Propanol	T
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Ammonium hydroxide	M
	Calcium hydroxide	M
	Caustic residues	T
	Potassium hydroxide	D
	Sodium carbonate	T
	Sodium hydroxide	D
GROUP 14:	ETHERS	
	Ethylene glycol monobutyl ether	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Hydrochloric acid	D
	Hydrofluoric acid	M
GROUP 16:	HYDROCARBONS, AROMATIC	
	Ethyl benzene	T
	Instagel (xylene base)	T
	Toluene	T
	Xylene	T

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 132/232
(Continued)

SOLIDIFIED AQUEOUS WASTE/SLUDGE WASTE (GREATER THAN ONE WEIGHT PERCENT BERYLLIUM)

GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Dichloromethane	T
	Ethylene glycol monobutyl ether	T
	Methylene chloride	T
	Tetrachloroethylene	T
	Trichloroethylene	T
GROUP 19:	KETONES	
	Acetone	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Mercury (vapor)	T
	Molybdenum	T
	Nickel	T
	Selenium	T
GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOYS AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Cadmium	T
	Chromium	T
	Iron	T
	Lead	T
	Molybdenum	T
	Selenium	T
	Silver	T
	Tantalum	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC (Constituents reacted prior to or concurrent with loading in payload containers.)	
	Beryllium	D
	Cadmium	T
	Chromium	T
	Copper salts	T
	Lead	T
	Mercury	T
	Mercury (vapor)	T
	Molybdenum	T
	Nickel	T
	Pyrosulfate salts	T
	Selenium	T
	Sodium chromate	T

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 132/232
(Continued)

SOLIDIFIED AQUEOUS WASTE/SLUDGE WASTE (GREATER THAN ONE WEIGHT PERCENT BERYLLIUM)

GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Organophosphate	T
	Tributyl phosphate	T
	Tri-n-octyl phosphine oxide (TOPO)	T
	Spent cleansers and detergents	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Carbon (spent, activated)	M
	Mineral spirits	T
	Oils	T
	Paint	T
	Paper	T
	Polyethylene (Packaging material)	M
	Polypropylene	T
	Polyvinyl chloride (Packaging material)	M
	Resin	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Hydrogen peroxide (30%, 35%, and 50%)	M
GROUP 105:	REDUCING AGENTS, STRONG	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Hydroxyl amine	T
	Nitric acid	D
	Sulfuric acid	M
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T
	Sludge (Fixed in matrix)	D
	Water	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to or concurrent with loading in payload containers.)	
	Hydrogen peroxide (30%, 35%, and 50%)	M
	Sulfuric acid	M
OTHER ORGANICS		
	Flocculating agent (Polyelectrolyte)	T

Idaho National Engineering and Environmental Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code ID 132/232
(Continued)

SOLIDIFIED AQUEOUS WASTE/SLUDGE WASTE (GREATER THAN ONE WEIGHT PERCENT BERYLLIUM)

OTHER INORGANICS	
Aluminum hydroxide	T
Ammonium bicarbonate	T
Calcium chloride	D
Copper carbonate	T
Fabric softener	T
Ferrous sulfamate	T
Firebrick	T
Glass	T
Grit	T
Insulation	T
Iron hydroxide	D
Magnesium chloride	M
Magnesium sulfate	D
Molds and Crucibles	T
Potassium carbonate	T
Potassium sulfate	D
Sand	T
Sodium hexametaphosphate	T
Sodium sulfite	T
Soil	T
Soot	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Aquaset	M
Autodri	D
Diatomaceous earth	D
Diatomite	D
Dri-Rite	D
Ferric sulfate (flocculating agent)	D
Ferrous sulfate (flocculating agent)	D
Florco	D
Nalco 676 (flocculating agent)	T
Oil-Dri	T
Polyelectrolyte (flocculating agent)	T
Portland Cement (Hydrated)	D
Sorbal	D
Surfactants	T
Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

Los Alamos National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code LA 111/211

TRU SOLIDIFIED AQUEOUS OR HOMOGENEOUS INORGANIC SOLIDS

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T2
	Hydrofluoric acid	T2
	Phosphoric acid	T2
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T2
	Perchloric acid	T2
	Sulfuric acid (<70%)	T2
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Oxalic acid	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T2
	Isopropanol	T3
	Methanol	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T2
	Barium hydroxide	T3
	Beryllium hydroxide	T2
	Calcium carbonate	M
	Calcium hydroxide	T
	Calcium oxide	T1
	Potassium hydroxide	T2
	Sodium carbonate	T2
	Sodium hydroxide	T2
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium fluoride	T2
	Calcium fluoride	T1
	Hydrofluoric acid	T2
	Potassium fluoride	T2
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T2
	Bromoform	T2
	Carbon tetrachloride	T2
	Dichloroethane	T2
	Trichloroethylene	T2
GROUP 19:	KETONES	
	Acetone	T3
	Methyl ethyl ketone	T3

Los Alamos National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code LA 111/211
(Continued)

TRU SOLIDIFIED AQUEOUS OR HOMOGENEOUS INORGANIC SOLIDS

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Cadmium	T2
	Graphite (Molds and Crucibles)	T
	Iron	T3
	Lead	T1
	Stainless Steel	T3
	Tantalum	T2
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T2
	Barium chloride	T3
	Barium hydroxide	T3
	Beryllium	T2
	Beryllium hydroxide	T2
	Cadmium	T2
	Lead	T1
	Mercury	T2
GROUP 27:	NITRO COMPOUNDS (Constituents reacted prior to loading in payload containers.)	
	Nitrocellulose	T2
	Urea nitrate	T2
GROUP 28:	HYDROCARBON, ALIPHATIC, UNSATURATED	
	Polypropylene (Ful-Flo Filters)	T
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Oils (C6 to C20)	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulose	T1
	Grease	T2
	Methyl acetone	T3
	Oil	T2
	Polyethylene (Packaging material)	T1
	Polypropylene (Ful-Flo Filters)	T
	Polyvinyl chloride (Packaging material)	T1
	Resins	T1
	Rubber gloves	T2
	Rubber gloves (Leaded)	T
	Synthetic rubber	T2
	Wood	T2
GROUP 102:	EXPLOSIVES (Constituents reacted prior to loading in payload containers.)	
	Ammonium nitrate	T
	Nitrocellulose	T2
	Urea nitrate	T2

Los Alamos National Laboratory
List of Chemicals and Materials
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TRU SOLIDIFIED AQUEOUS OR HOMOGENEOUS INORGANIC SOLIDS

GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrogen peroxide	T2
	Other nitrate salts	M
	Sodium nitrate	D
	Urea nitrate	T2
GROUP 105:	REDUCING AGENTS, STRONG	
	Hydroxyl amine	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T1
	Water	T1
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium oxide	T1
	Sulfuric acid (>70%)	T2
OTHER INORGANICS		
	Ash	M
	Ferric hydroxide	D
	Firebrick	T1
	Glass, labware	T
	Grit	T1
	Insulation	T2
	Magnesium hydroxide	D
	Ceramic (Molds and Crucibles)	T
	Salt	T1
	Sand	T1
	Slag	T1
	Soot	T2
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Calcium silicate (Water glass - Na silicate)	M
	Envirostone	D
	Oxalate salts	M
	Perlite	M
	Portland Cement (Hydrated)	D
	Surfactants	T1
	Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

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SOLIDIFIED ORGANIC WASTE

GROUP 4:	ALCOHOLS AND GLYCOLS	
	Methanol	T2
	Ethanol	T1
	Propanol	T2
	Butanol	T2
	Polyethylene glycol	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Benzene	T2
	Toluene	T2
	Xylene	T2
GROUP 17:	HALOGENATED ORGANICS	
	PCB	T
	1,1,1-Trichloroethane	T1
	Carbon tetrachloride	T2
	Trichloroethylene	D
GROUP 19:	KETONES	
	Acetone	T2
GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOY, AS SHEETS, RODS, MOULDINGS, DROPS, ETC.	
	Cadmium	T2
	Chromium	T2
	Lead	T2
	Nickel	T2
	Selenium	T2
	Silver	T2
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T2
	Barium	T2
	Beryllium	T2
	Cadmium	T2
	Chromium	T2
	Lead	T2
	Mercury	T2
	Nickel	T2
	Selenium	T2
	Silver	T2
	Thallium	T2
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Oils (C6 to C20) (Absorbed)	D

Los Alamos National Laboratory
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SOLIDIFIED ORGANIC WASTE

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Oils (C6 to C20) (Absorbed)	D
	Polyethylene (Packaging material)	M
	Polyethylene glycol	T
	Polyvinyl chloride (Packaging material)	M
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	T
OTHER ORGANICS		
	Nochar Petro Bond N990 (or equivalent)	D
	Nochar Petro Bond N910 (or equivalent)	D
OTHER INORGANICS		
	Vermiculite	D

Refer to Introduction for a description of the designations used in this chemical list.

Los Alamos National Laboratory
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TRU SOLIDIFIED INORGANIC PROCESS SOLIDS

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T2
	Hydrofluoric acid	T2
	Phosphoric acid	T2
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T2
	Perchloric acid	T2
	Sulfuric acid (<70%)	T2
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Oxalic acid	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T2
	Isopropanol	T3
	Methanol	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T2
	Barium hydroxide	T3
	Beryllium hydroxide	T2
	Calcium hydroxide	T
	Calcium carbonate	M
	Calcium oxide	T1
	Potassium hydroxide	T2
	Sodium carbonate	T2
	Sodium hydroxide	T2
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium fluoride	T2
	Calcium fluoride	T1
	Hydrofluoric acid	T2
	Potassium fluoride	T2
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T2
	Bromoform	T2
	Carbon tetrachloride	T2
	Dichloroethane	T2
	Trichloroethylene	T2
GROUP 19:	KETONES	
	Acetone	T3
	Methyl ethyl ketone	T3

Los Alamos National Laboratory
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TRU SOLIDIFIED INORGANIC PROCESS SOLIDS

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Cadmium	T2
	Iron	T3
	Graphite (Molds and Crucibles)	T
	Lead	T1
	Stainless Steel	T3
	Tantalum	T2
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T2
	Barium chloride	T3
	Barium hydroxide	T3
	Beryllium	T2
	Beryllium hydroxide	T2
	Cadmium	T2
	Lead	T1
	Mercury	T2
GROUP 27:	NITRO COMPOUNDS (Constituents reacted prior to loading in payload containers.)	
	Nitrocellulose	T2
	Urea nitrate	T2
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Oils (C6 to C20)	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulose	T1
	Grease	T2
	Methyl acetone	T3
	Oil	T2
	Polyethylene (Packaging material)	T1
	Polypropylene (Ful-Flo Filters)	T
	Polyvinyl chloride (Packaging material)	T1
	Resins	T1
	Rubber gloves	T2
	Rubber gloves (Leaded)	T
	Synthetic rubber	T2
	Wood	T2
GROUP 102:	EXPLOSIVES (Constituents reacted prior to loading in payload containers.)	
	Ammonium nitrate	T
	Nitrocellulose	T2
	Urea nitrate	T2

Los Alamos National Laboratory
List of Chemicals and Materials
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(Continued)

TRU SOLIDIFIED INORGANIC PROCESS SOLIDS

GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrogen peroxide	T2
	Other nitrate salts	M
	Sodium nitrate	D
	Urea nitrate	T2
GROUP 105:	REDUCING AGENTS, STRONG	
	Hydroxyl amine	T2
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T1
	Water	T1
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium oxide	T1
	Sulfuric acid	T2
OTHER INORGANICS		
	Ash	M
	Ferric hydroxide	D
	Firebrick	T1
	Glass, labware	T
	Grit	T1
	Insulation	T2
	Magnesium hydroxide	D
	Ceramic (Molds and Crucibles)	T
	Salt	T1
	Sand	T1
	Slag	T1
	Soot	T2
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Calcium silicate (Water glass - Na silicate)	M
	Oxalate salts	M
	Perlite	M
	Portland Cement (Hydrated)	D
	Surfactants	T1
	Vermiculite	M

Refer to Introduction for a description of the designations used in this chemical list.

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Los Alamos National Laboratory
List of Chemicals and Materials
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TRU GRAPHITE WASTE

GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Aluminum	T1
	Mercury (Vapor)	T2
	Nickel	T2
	Zirconium	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	T1
	Cadmium	T2
	Copper	T1
	Graphite (Molds and Crucibles)	D
	Iron	T2
	Lead	T2
	Metal cans	D
	Stainless Steel	T1
	Tantalum	T1
	Zirconium	T2
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T2
	Beryllium	T2
	Beryllium hydroxide	T2
	Cadmium	T2
	Copper	T1
	Lead	T2
	Mercury	T2
	Nickel	T2
	Zirconium	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Bakelite	T1
	Benelex	T1
	Plexiglas	T1
	Polyethylene (Packaging material)	T1
	Polypropylene	T1
	Polyvinyl chloride (Packaging material)	T1
OTHER INORGANICS		
	Ash	T1
	Firebrick	T
	Glass, labware	T1
	Grit	T1
	Slag	T1
	Soot	T1

Refer to Introduction for a description of the designations used in this chemical list.

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Los Alamos National Laboratory
List of Chemicals and Materials
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Content Code LA 116/216

COMBUSTIBLE WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Boric acid	T2
	Hydrobromic acid	T2
	Hydrochloric acid	T1
	Hydrofluoric acid	T1
	Phosphoric acid	T2
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T1
	Perchloric acid	T2
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T2
	Ascorbic acid	T
	Citric acid	T
	EDTA	T2
	Oxalic acid	T1
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T1
	Isopropanol	T2
	Methanol	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T2
	Barium hydroxide	T2
	Beryllium hydroxide	T1
	Calcium oxide	T
	Potassium hydroxide	T1
	Sodium carbonate	T1
	Sodium hydroxide	T1
	Sodium hypochlorite	T2
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T
	Hydrofluoric acid	T2
	Potassium fluoride	T2
GROUP 16:	HYDROCARBONS, AROMATIC	
	Toluene	T2

Los Alamos National Laboratory
List of Chemicals and Materials
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Content Code LA 116/216
(Continued)

COMBUSTIBLE WASTE

GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T1
	Bromoform	T2
	Carbon tetrachloride	T2
	Dichloromethane	T2
	Trichloroethylene	T1
GROUP 19:	KETONES	
	Acetone	T2
	Thenoyl trifluoroacetone (TTA)	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Aluminum	D
	Mercury (Vapor)	T2
	Nickel	T2
	Zirconium	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Cadmium	T2
	Copper	T2
	Graphite (Molds and Crucibles)	T1
	Iron	D
	Lead	T2
	Stainless Steel	D
	Tantalum	T2
	Zirconium	T2
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T2
	Barium chloride	T2
	Barium hydroxide	T2
	Beryllium	T2
	Beryllium hydroxide	T1
	Cadmium	T2
	Copper	T2
	Lead	T2
	Mercury	T2
	Zirconium	T2
GROUP 25:	NITRIDES	
	(Constituents reacted prior to loading in payload containers.)	T1
	Sodium nitride	
GROUP 27:	NITRO COMPOUNDS	
	(Constituents reacted prior to loading in payload containers.)	
	Nitrocellulose	T1

Los Alamos National Laboratory
List of Chemicals and Materials
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Content Code LA 116/216
(Continued)

COMBUSTIBLE WASTE

GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Bakelite	M
	Benelex	T
	Carbon (Spent, Activated)	T
	Cellulose	D
	Grease	T1
	Oil	T
	Paper	D
	Plexiglas	T
	Polyethylene	D
	Polypropylene	M
	Polystyrene	T
	Polyurethane	M
	Polyvinyl chloride	D
	Resins	T
	Rubber gloves	M
	Rubber gloves (Leaded)	M
	Synthetic rubber	M
	Waxes	T1
	Wood	M
GROUP 102:	EXPLOSIVES	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium nitrate	T2
	Nitrocellulose	T2
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	T2
	Ammonium perchlorate	T2
	Bromine	T2
	Hydrogen peroxide	T2
	Sodium hypochlorite	T1
	Sodium nitrate	
GROUP 105:	REDUCING AGENTS, STRONG	
	Hydroxyl amine	T1
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T1
	Water	T1

Los Alamos National Laboratory
List of Chemicals and Materials
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(Continued)

COMBUSTIBLE WASTE

GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Aluminum chloride	T2
	Calcium oxide	T
	Hydrobromic acid	T2
OTHER INORGANICS		
	Ash	M
	Ceramic (Molds and Crucibles)	D
	Firebrick	T1
	Glass, labware	D
	Grit	T1
	Insulation	T1
	Other filters	T1
	Salt (Nitrates)	T1
	Sand	M
	Slag	T1
	Soot	T2
OTHER ORGANICS		
	Polyvinylidene fluoride	M
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Emulsifiers	T2
	Envirostone	T1
	Surfactants	T2
	Vermiculite	T2

Refer to Introduction for a description of the designations used in this chemical list.

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METAL WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrobromic acid	T2
	Hydrochloric acid	T2
	Hydrofluoric acid	T2
	Phosphoric acid	T2
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T2
	Perchloric acid	T2
	Sulfuric acid (<70%)	T2
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T2
	Oxalic acid	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T2
	Isopropanol	T2
	Methanol	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T2
	Barium hydroxide	T2
	Calcium oxide	T2
	Potassium hydroxide	T2
	Sodium carbonate	T2
	Sodium hydroxide	T2
	Sodium hypochlorite	T2
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T2
	Hydrofluoric acid	T2
	Potassium fluoride	T2
GROUP 17:	HALOGENATED ORGANICS	
	Carbon tetrachloride	T2
GROUP 19:	KETONES	
	Acetone	T2
	Methyl isobutyl ketone	T2

Los Alamos National Laboratory
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(Continued)

METAL WASTE

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Copper	T
	Iron	D
	Lead	T
	Stainless Steel	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Barium chloride	T2
	Barium hydroxide	T2
	Copper	T
	Lead	T
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Bakelite	T2
	Grease	T2
	Oil	T2
	Paper	T
	Polyethylene (Packaging material)	T
	Polypropylene	T2
	Polystyrene	T2
	Polyurethane	T2
	Polyvinyl chloride (Packaging material)	T
	Resins	T2
	Rubber gloves	T2
	Synthetic rubber	T2
	Waxes	T2
	Wood	T2
GROUP 104:	OXIDIZING AGENTS, STRONG (Constituents reacted prior to loading in payload containers.)	
	Ammonium perchlorate	T2
	Bromine	T2
	Sodium nitrate	T2
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T2
	Water	T2

Los Alamos National Laboratory
List of Chemicals and Materials
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(Continued)

METAL WASTE

GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Aluminum chloride	T2
	Calcium oxide	T2
	Hydrobromic acid	T2
	Sulfuric acid (>70%)	T2
OTHER INORGANICS		
	Ceramic (Molds and Crucibles)	T
	Glass, labware	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Portland Cement (Hydrated)	T1
	Vermiculite	T1

Refer to Introduction for a description of the designations used in this chemical list.

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Los Alamos National Laboratory
List of Chemicals and Materials
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GLASS WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrobromic acid	T2
	Hydrochloric acid	T2
	Hydrofluoric acid	T2
	Phosphoric acid	T2
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T2
	Perchloric acid	T2
	Sulfuric acid (<70%)	T2
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T2
	Oxalic acid	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T2
	Isopropanol	T2
	Methanol	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T2
	Barium hydroxide	T2
	Calcium oxide	T2
	Potassium hydroxide	T2
	Sodium carbonate	T2
	Sodium hydroxide	T2
	Sodium hypochlorite	T2
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T2
	Hydrofluoric acid	T2
	Potassium fluoride	T2
GROUP 17:	HALOGENATED ORGANICS	
	Carbon tetrachloride	T2
GROUP 19:	KETONES	
	Acetone	T2
	Methyl isobutyl ketone	T2

Los Alamos National Laboratory
List of Chemicals and Materials
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GLASS WASTE

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Copper	T
	Iron	D
	Lead	T
	Stainless Steel	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Barium chloride	T2
	Barium hydroxide	T2
	Copper	T
	Lead	T
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Bakelite	T2
	Grease	T2
	Oil	T2
	Paper	T
	Polyethylene (Packaging material)	T
	Polypropylene	T2
	Polystyrene	T2
	Polyurethane	T2
	Polyvinyl chloride (Packaging material)	T
	Resins	T2
	Rubber gloves	T2
	Synthetic rubber	T2
	Waxes	T2
	Wood	T2
GROUP 104:	OXIDIZING AGENTS, STRONG (Constituents reacted prior to loading in payload containers.)	
	Ammonium perchlorate	T2
	Bromine	T2
	Sodium nitrate	T2
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T2
	Water	T2

Los Alamos National Laboratory
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(Continued)

GLASS WASTE

GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Aluminum chloride	T2
	Calcium oxide	T2
	Hydrobromic acid	T2
	Sulfuric acid (>70%)	T2
OTHER INORGANICS		
	Ash	M
	Ceramic (Molds and Crucibles)	T
	Glass, labware	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Portland Cement (Hydrated)	T1
	Vermiculite	T1

Refer to Introduction for a description of the designations used in this chemical list.

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Los Alamos National Laboratory
List of Chemicals and Materials
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Content Code LA 119/219

FILTER WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Boric acid	T2
	Hydrobromic acid	T3
	Hydrochloric acid	T1
	Hydrofluoric acid	T1
GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T1
	Sulfuric acid (<70%)	T2
GROUP 3:	ACIDS, ORGANIC (Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T2
	Ascorbic acid	T1
	EDTA	T
	Oxalic acid	T1
GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T2
	Beryllium hydroxide	T1
	Calcium hydroxide	T
	Potassium hydroxide	T1
	Sodium carbonate	T
	Sodium hydroxide	T1
	Sodium hypochlorite	T2
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T
	Hydrofluoric acid	T2
GROUP 19:	KETONES	
	Thenoyl trifluoroacetone (TTA)	T3
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Nickel	T3
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Cadmium	T2
	Lead	T2
	Plenum Prefilters (Stainless Steel)	D
	Tantalum	T3

Los Alamos National Laboratory
List of Chemicals and Materials
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FILTER WASTE

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Beryllium	T1
	Beryllium hydroxide	T3
	Cadmium	T2
	Lead	T2
	Nickel	T3
GROUP 25:	NITRIDES	
	(Constituents reacted prior to loading in payload containers.)	
	Sodium nitride	T2
GROUP 27:	NITRO COMPOUNDS	
	(Constituents reacted prior to loading in payload containers.)	
	Nitrocellulose	T2
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	T1
	Trioctyl phosphine oxide	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Carbon (Spent, Activated)	T1
	Cellulose	T1
	Filters (Plastic)	D
	Oil	T1
	Paper	T1
	Polyethylene (Packaging material)	M
	Polyvinyl chloride (Packaging material)	M
	Synthetic rubber	M
	Waxes	T1
	Wood	D
GROUP 102:	EXPLOSIVES	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium nitrate	T2
	Nitrocellulose	T2
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Sodium hypochlorite	T2
	Sodium nitrate	T1
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T1
	Water	T

Los Alamos National Laboratory
List of Chemicals and Materials
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(Continued)

FILTER WASTE

GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Aluminum chloride	T2
	Calcium oxide	T
	Hydrobromic acid	T3
	Sulfuric acid (>70%)	T2
OTHER INORGANICS		
	Ash	T1
	Cement powder (Portland Cement or Envirostone)	T1
	Grit	T1
	HEPA Filters (Or filter media)	T1
	Insulation	T1
	Salt (Nitrates)	T1
	Soot	T2
	Vermiculite	T1

Refer to Introduction for a description of the designations used in this chemical list.

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List of Chemicals and Materials
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TRU ISOTOPIC SOURCE WASTE

GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers.)	
	Sodium oxide	T
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS (Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Magnesium	T
	Potassium	T
	Sodium	T
GROUP 22:	METALS OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Aluminum	D
	Americium	D
	Cobalt	T
	Bismuth	T
	Beryllium	T
	Molybdenum	T
	Manganese	T
	Nickel	T
GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Americium (Foil, wire)	D
	Aluminum	T
	Bismuth	T
	Boron	T
	Cadmium	T
	Chromium	T
	Cobalt	T
	Copper	T
	Hastelloy-C	T
	Iron	T
	Lead	T
	Manganese	T
	Molybdenum	T
	Platinum	T
	Silicon	T
	Stainless Steel	D
	Steel	D

Los Alamos National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

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(Continued)

TRU ISOTOPIC SOURCE WASTE

GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC. (Continued)	
	Tungsten	D
	Tungsten (Alloy)	D
	Titanium	D
	Tin	D
	Tantalum	D
	Zirconium	D
	Zinc	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Beryllium	T
	Bismuth	T
	Cadmium	T
	Calcium	T
	Chromium	T
	Cobalt	T
	Copper	T
	Lead	T
	Manganese	T
	Molybdenum	T
	Nickel	T
	Titanium	D
	Zinc	T
	Zirconium	D
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Grease	T
	Nitrile rubber gloves	T
	Paper	T
	Polyethelene	T
	Polypropylene	T
	Polyvinyl chloride	T
	Synthetic rubber	T
	Wood	T
GROUP 105:	REDUCING AGENTS, STRONG (Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Sodium	T
GROUP 107:	WATER REACTIVE SUBSTANCES (Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Potassium	T
	Sodium oxide	T
	Sodium	T

Los Alamos National Laboratory
List of Chemicals and Materials
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(Continued)

TRU ISOTOPIC SOURCE WASTE

OTHER INORGANICS	
Americium oxide	D
Beryllium windows	T
Ceramic	D
Cesium in glass	D
Filter media (Inorganic)	D
Magnesium oxide	D
Glass, labware	D
Plutonium oxide	D
Sand	D
Soil	D
Silicon oxide	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Vermiculite	D

Refer to Introduction for a description of the designations used in this chemical list.

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Los Alamos National Laboratory
List of Chemicals and Materials
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SOLID INORGANIC WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING (Constituents reacted prior to loading the payload containers) Hydrofluoric acid	T3
GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading the payload containers) Nitric acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS Ethanol	T3
GROUP 10:	CAUSTICS (Constituents reacted prior to loading the payload containers) Potassium hydroxide	T3
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading the payload containers) Hydrofluoric acid	T3
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC. Tin (Inner packaging)	D
GROUP 27:	NITRO COMPOUNDS Nitrocellulose	T3
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS Polyethylene (Packaging material) Polyvinyl chloride (Packaging material)	M M
GROUP 102:	EXPLOSIVES (Constituents reacted prior to loading in payload containers.) Nitrocellulose	T3
OTHER INORGANICS	Ash Borosilicate glass Ferric nitrate	D D T3

Refer to Introduction for a description of the designations used in this chemical list.

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Los Alamos National Laboratory
List of Chemicals and Materials
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TRU LEADED RUBBER WASTE AND TRU METAL

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T1
	Hydrofluoric acid	T1
	Phosphoric acid	T2
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T1
	Sulfuric acid (<70%)	T2
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Oxalic acid	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T2
	Methanol	T2
	Polyethylene glycol	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Beryllium hydroxide	T1
	Potassium hydroxide	T1
	Sodium hydroxide	T1
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T1
	Hydrofluoric acid	T1
	Potassium fluoride	T2
GROUP 17:	HALOGENATED ORGANICS	
	Bromoform	T2
	Carbon tetrachloride	T2
	Dichloromethane	T2
GROUP 19:	KETONES	
	Methyl ethyl ketone	T2
GROUP 21:	METAL, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Batteries (Alkaline)	T1
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Mercury (Vapor)	T2
	Nickel	T2
	Zirconium	T2

Los Alamos National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code LA 123/223
(Continued)

TRU LEADED RUBBER WASTE AND TRU METAL

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Cadmium	T1
	Copper	T
	Graphite (Molds and Crucibles)	T1
	Iron	D
	Lead	M
	Stainless Steel	D
	Tantalum	M
	Zirconium	T2
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T2
	Beryllium hydroxide	T1
	Cadmium	T1
	Copper	T
	Lead	M
	Mercury	T2
	Nickel	T2
	Zirconium	T2
GROUP 27:	NITRO COMPOUNDS (Constituents reacted prior to loading in payload containers.)	
	Nitrocellulose	T2
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Bakelite	T1
	Benelex	T1
	Carbon (Spent, Activated)	T1
	Cellulose	T1
	Grease	T1
	Oil	T1
	Paper	T1
	Plexiglas	T1
	Polyethylene	T1
	Polypropylene	T1
	Polystyrene	T1
	Polyurethane	T1
	Polyvinyl chloride	T1

Los Alamos National Laboratory
List of Chemicals and Materials
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Content Code LA 123/223
(Continued)

TRU LEADED RUBBER WASTE AND TRU METAL

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS (Continued)	
	Resins	T1
	Rubber gloves (Leaded)	D
	Synthetic rubber	T1
	Waxes	T1
	Wood	T1
GROUP 102:	EXPLOSIVES (Constituents reacted prior to loading in payload containers.)	
	Ammonium nitrate	T2
	Nitrocellulose	T2
GROUP 104:	OXIDIZING AGENTS, STRONG (Constituents reacted prior to loading in payload containers.)	
	Sodium nitrate	T1
GROUP 105:	REDUCING AGENTS, STRONG	
	Hydroxyl amine	T2
GROUP 107:	WATER REACTIVE SUBSTANCES	
	Sulfuric acid (>70%)	T2
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T2
	Water	T2
OTHER INORGANICS		
	Ash	T1
	Ceramic (Molds and Crucibles)	T1
	Firebrick	T
	Glass, labware	T1
	Grit	T2
	HEPA Filters	T3
	Insulation	T1
	Other filters	T1
	Salt (Calcium fluoride and calcium chloride)	T1
	Sand	T1
	Slag	T2
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Envirostone	T1
	Surfactants	T2
	Vermiculite	T2

Refer to Introduction for a description of the designations used in this chemical list.

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Los Alamos National Laboratory
List of Chemicals and Materials
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TRU PYROCHEMICAL SALT

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Hydrofluoric acid	T1
GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers.)	
	Beryllium hydroxide	T1
	Calcium oxide	D
	Potassium hydroxide	T1
	Sodium hydroxide	T1
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	D
	Hydrofluoric acid	T1
	Potassium fluoride	T2
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS (Constituents reacted prior to loading in payload containers.)	
	Calcium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Mercury (Vapor)	T2
	Nickel	T2
	Zirconium	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	T1
	Cadmium	T2
	Copper	T
	Iron	M
	Lead	M
	Stainless Steel	T1
	Tantalum	T
	Zirconium	T2
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T2
	Beryllium	T2
	Beryllium hydroxide	T2
	Cadmium	T2
	Calcium	T
	Copper	T
	Lead	M
	Mercury	T2
	Nickel	T2
	Zirconium	T2

Los Alamos National Laboratory
List of Chemicals and Materials
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TRU PYROCHEMICAL SALT

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Bakelite	T2
	Benelex	T2
	Plexiglas	T2
	Polyethylene (Packaging material)	T2
	Polypropylene	T2
	Polyvinyl chloride (Packaging material)	T2
	Rubber gloves (Leaded)	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Sodium nitrate	T2
OTHER INORGANICS		
	Ceramic (Molds and Crucibles)	D
	Salt (Calcium fluoride and calcium chloride)	D
	Salt (Sodium chloride and potassium chloride)	D
	Salt (Magnesium chloride)	M

Refer to Introduction for a description of the designations used in this chemical list.

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List of Chemicals and Materials
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MIXED COMBUSTIBLE/NONCOMBUSTIBLE WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Boric acid	T2
	Hydrobromic acid	T2
	Hydrochloric acid	T1
	Hydrofluoric acid	T1
	Phosphoric acid	T2
GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T1
	Perchloric acid	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Polyethylene glycol	T2
GROUP 5:	ALDEHYDES	
	Formaldehyde	T2
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	D
	Hydrofluoric acid	T1
GROUP 21:	METAL, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Batteries (Carbon/Zinc and Alkaline)	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Cadmium	T
	Copper	M
	Iron	M
	Lead	D
	Stainless Steel	D
	Tantalum	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Cadmium	T
	Copper	M
	Lead	D
	Mercury	T2

Los Alamos National Laboratory
List of Chemicals and Materials
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Content Code LA 125/225
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MIXED COMBUSTIBLE/NONCOMBUSTIBLE WASTE

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Bakelite	M
	Benelex (Polymethyl methacrylate)	M
	Carbon (Spent, Activated)	T
	Cellulose	D
	Grease	T
	Oil	T
	Paper	D
	Plexiglas (Polymethyl methacrylate)	M
	Polyethylene	D
	Polypropylene	M
	Polystyrene	M
	Polyurethane	M
	Polyvinyl chloride	D
	Resins	T
	Rubber gloves	M
	Rubber gloves (Leaded)	M
	Synthetic rubber	M
	Waxes	T
	Wood	D
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T2
	Water	T2
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrobromic acid	T2
OTHER INORGANICS		
	Ash (Burned gaskets, etc.)	T2
	Calcium chloride	D
	Calcium fluoride	D
	Firebrick	T
	Glass, labware (Glovebox windows)	M
	HEPA Filters	T
	Insulation	T
	Magnesium chloride	D
	Other filters (Glass fiber, furnace)	T
	Potassium chloride	D
	Slag (Dross from plasma arc cutting)	T
	Sodium chloride	D

Los Alamos National Laboratory
List of Chemicals and Materials
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(Continued)

MIXED COMBUSTIBLE/NONCOMBUSTIBLE WASTE

OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Concrete	M
Envirostone	M
Oil-Dri	T
Portland Cement (Hydrated)	T
Vermiculite	T

Refer to Introduction for a description of the designations used in this chemical list.

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Los Alamos National Laboratory
List of Chemicals and Materials
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SOLIDIFIED ORGANIC PROCESS SOLIDS

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T2
	Hydrofluoric acid	T2
	Phosphoric acid	T2
GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T2
	Perchloric acid	T2
	Sulfuric acid (<70%)	T2
GROUP 3:	ACIDS, ORGANIC (Constituents reacted prior to loading in payload containers.)	
	Oxalic acid	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T1
	Methanol	T2
GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers.)	
	Calcium oxide	T1
	Potassium hydroxide	T2
	Sodium hydroxide	T2
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T1
	Hydrofluoric acid	T2
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T
	Bromoform	T2
	Carbon tetrachloride	T2
	Dichloroethane	T2
	Trichloroethylene	T
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS (Constituents reacted prior to loading in payload containers.)	
	Calcium	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Cadmium	T2
	Graphite (Molds and Crucibles)	T
	Iron	T1
	Lead	T1
	Stainless Steel	T1
	Tantalum	T2

Los Alamos National Laboratory
List of Chemicals and Materials
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SOLIDIFIED ORGANIC PROCESS SOLIDS

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T2
	Beryllium	T2
	Cadmium	T2
	Calcium	T
	Lead	T1
	Mercury	T2
GROUP 27:	NITRO COMPOUNDS	
	(Constituents reacted prior to loading in payload containers.)	
	Nitrocellulose	T2
	Urea nitrate	T2
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Oils (C6 to C20)	M
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	M
	Trioctyl phosphine oxide	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulose	T1
	Oil	M
	Polyethylene	T1
	Polypropylene (Ful-Flo Filters)	T
	Polyvinyl chloride	T1
	Resins	M
	Rubber gloves (Leaded)	T1
	Synthetic rubber	T2
	Wood	T2
GROUP 102:	EXPLOSIVES	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium nitrate	T
	Calcium	T
	Nitrocellulose	T2
	Urea nitrate	T2
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrogen peroxide	T2
	Other nitrate salts	T
	Sodium nitrate	M
	Urea nitrate	T2
GROUP 105:	REDUCING AGENTS, STRONG	
	Calcium	T
	Hydroxyl amine	T2

Los Alamos National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code LA 126/226
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SOLIDIFIED ORGANIC PROCESS SOLIDS

GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T1
	Water	T1
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Calcium oxide	T1
	Sulfuric acid (>70%)	T2
OTHER INORGANICS		
	Ash	M
	Firebrick	T1
	Glass, labware	T
	Grit	T1
	HEPA Filters	T
	Insulation	T2
	Ceramic (Molds and Crucibles)	T
	Other filters	T1
	Salt (Calcium fluoride and calcium chloride)	T1
	Sand	T1
	Slag	T2
	Soot	T3
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Envirostone	D
	Oxalate salts	T
	Surfactants	T1
	Vermiculite	T1

Refer to Introduction for a description of the designations used in this chemical list.

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List of Chemicals and Materials
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SOLIDIFIED AQUEOUS WASTE and TRITIUM CONTAMINATED INORGANIC WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	M
	Hydrofluoric acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	M
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T
	Citric acid	T
	Lactic acid	T
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T
	Isopropanol	T
	Methanol	T
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T
	Calcium oxide	T
	Potassium hydroxide	M
	Sodium hydroxide	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium fluoride	T
	Hydrofluoric acid	T
GROUP 17:	HALOGENATED ORGANICS	
	Carbon tetrachloride	T
	Chloroform	T
	Trichloroethylene	T
GROUP 19:	KETONES	
	Acetone	T
	Methyl ethyl ketone	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS, IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Titanium sponges	D

Lawrence Livermore National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code LL 111/211
(Continued)

SOLIDIFIED AQUEOUS WASTE and TRITIUM CONTAMINATED INORGANIC WASTE

GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOYS, ASSHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Chromium	T
	Lead	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Beryllium	T
	Chromium	T
	Lead	T
GROUP 27	NITRO COMPOUNDS	
	Picric acid (<0.01%)	T
GROUP 31	PHENOLS AND CREOSOLS	
	Picric acid (<0.01%)	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Oil	T
GROUP 102:	EXPLOSIVES	
	(Constituents reacted prior to loading in payload containers.)	
	Picric acid (<0.01%)	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrogen peroxide	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium oxide	T
	Sulfuric acid	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Cement (Hydrated)	D
	Emulsifiers	T
	Envirostone	D
	Sodium silicate	T
	Zeolite (Alumina)	D

Refer to Introduction for a description of the designations used in this chemical list.

Lawrence Livermore National Laboratory
List of Chemicals and Materials
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Content Code LL 113/213

SOLIDIFIED LIQUID AND FINE PARTICLE WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	M
	Hydrofluoric acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	M
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T
	Citric acid	T
	Lactic acid	T
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T
	Isopropanol	T
	Methanol	T
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T
	Calcium oxide	T
	Potassium hydroxide	M
	Sodium hydroxide	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium fluoride	T
	Hydrofluoric acid	T
GROUP 17:	HALOGENATED ORGANICS	
	(Constituents reacted prior to loading in payload containers.)	
	Carbon tetrachloride	T
	Chloroform	T
	Trichloroethylene	T
GROUP 19:	KETONES	
	(Constituents reacted prior to loading in payload containers.)	
	Acetone	T
	Methyl ethyl ketone	T
GROUP 23:	METALS, OTHER ELEMETNTAL, AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Chromium	T
	Lead	T

Lawrence Livermore National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code LL 113/213
(Continued)

SOLIDIFIED LIQUID AND FINE PARTICLE WASTE

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	(Constituents reacted prior to loading in payload containers.)	
	Beryllium	T
	Chromium	T
	Lead	T
GROUP 27	NITRO COMPOUNDS	
	Picric acid (<0.01%)	T
GROUP 31	PHENOLS AND CREOSOLS	
	Picric acid (<0.01%)	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	(Constituents reacted prior to loading in payload containers.)	
	Oil	D
GROUP 102:	EXPLOSIVES	
	(Constituents reacted prior to loading in payload containers.)	
	Picric acid (<0.01%)	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrogen peroxide	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium oxide	T
	Sulfuric acid	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Aquaset	D
	Cement (Hydrated)	D
	Emulsifiers	T
	Envirostone	D
	Petroset	D
	Sodium silicate	T

Refer to Introduction for a description of the designations used in this chemical list.

Lawrence Livermore National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code LL 116/216

TRU COMBUSTIBLE WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
	Hydrofluoric acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T
	Citric acid	T
	Lactic acid	T
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T
	Isopropanol	T
	Methanol	T
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T
	Calcium oxide	T
	Potassium hydroxide	T
	Sodium carbonate	T
	Sodium hydroxide	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium fluoride	T
	Calcium fluoride	T
	Hydrofluoric acid	T
GROUP 17:	HALOGENATED ORGANICS	
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Chloroform	T
	Trichloroethylene	T
GROUP 19:	KETONES	
	Acetone	T
	Methyl ethyl ketone	T

Lawrence Livermore National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code LL 116/216
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Magnesium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Aluminum	T
	Magnesium	T
	Uranium	T
	Zirconium	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	T
	Chromium	T
	Copper	T
	Graphite (Molds and Crucibles)	M
	Iron	T
	Lead	T
	Nickel	T
	Stainless Steel	M
	Tantalum	T
	Zirconium	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Beryllium	T
	Calcium	T
	Chromium	T
	Copper	T
	Lead	T
	Nickel	T
	Zirconium	T
GROUP 27	NITRO COMPOUNDS	
	Picric acid (<0.01%)	T
GROUP 31	PHENOLS AND CREOSOLS	
	Picric acid (<0.01%)	T

Lawrence Livermore National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code LL 116/216
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Bakelite	T
	Cellulose	T
	Grease	T
	Oil	T
	Paper	M
	Polyethylene	M
	Polypropylene	T
	Polystyrene	T
	Polyvinyl chloride	T
	Resins	T
	Rubber gloves	M
	Rubber gloves (Leaded)	T
	Synthetic rubber	T
GROUP 102:	EXPLOSIVES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Picric acid (<0.01%)	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrogen peroxide	T
GROUP 105:	REDUCING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Calcium oxide	T
	Sulfuric acid	T
OTHER INORGANICS		
	Firebrick	T
	Glass, labware	M
	Insulation (Furnace)	T
	Ceramic (Molds and Crucibles)	T
	Other filters	T
	Salt (Calcium fluoride and calcium chloride)	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Cement	T
	Oil-Dri	T

Refer to Introduction for a description of the designations used in this chemical list.

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Lawrence Livermore National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code LL 119/219

FILTER WASTE

GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Caustic residues	T
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Methylene chloride	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Stainless Steel	T
GROUP 28:	HYDROCARBONS, ALIPHATIC, UNSATURATED (ALL ISOMERS)	
	Polypropylene (Ful-Flo Filters)	D
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cloth/Rags	T
	Paper	T
	Polyethylene	M
	Polypropylene (Ful-Flo Filters)	D
	Polyvinyl chloride	M
	Synthetic rubber	T
	Wood	D
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Nitrates	T
OTHER INORGANICS		
	Asbestos	M
	Fiberglass	M
	HEPA Filters (Or filter media)	D
	Insulation	D
	Other filters	D
	Plenum Prefilters (Fiberglass)	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Oil-Dri	D
	Portland Cement (Hydrated)	M

Refer to Introduction for a description of the designations used in this chemical list.

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Lawrence Livermore National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code LL 124/224

TRU PYROCHEMICAL SALT WASTE

GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers.) Calcium oxide	 M
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers.) Calcium fluoride	 D
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS (Constituents reacted prior to loading in payload containers.) Calcium	 T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC. Stainless Steel	 M
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC Calcium	 T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS Other Plastic Material Polyethylene (Packaging material) Polyvinyl chloride (Packaging material)	 T M M
GROUP 102:	EXPLOSIVES Calcium	 T
GROUP 105:	REDUCING AGENTS, STRONG Calcium	 T
GROUP 107:	WATER REACTIVE SUBSTANCES (Constituents reacted prior to loading in payload containers.) Calcium Calcium oxide	 T M
OTHER INORGANICS	 Salt	 D

Refer to Introduction for a description of the designations used in this chemical list.

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Lawrence Livermore National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code LL 125/225

TRU COMBINED METAL SCRAP AND INCIDENTAL COMBUSTIBLES

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
	Hydrofluoric acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC (Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T
	Citric acid	T
	Lactic acid	T
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T
	Isopropanol	T
	Methanol	T
	Polyethylene glycol	T
GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T
	Calcium oxide	T
	Potassium hydroxide	T
	Sodium carbonate	T
	Sodium hydroxide	T
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers.)	
	Ammonium fluoride	T
	Calcium fluoride	T
	Hydrofluoric acid	T
GROUP 17:	HALOGENATED ORGANICS	
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Chloroform	T
	Trichloroethylene	T
GROUP 19:	KETONES	
	Acetone	T
	Methyl ethyl ketone	T

Lawrence Livermore National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code LL 125/225
(Continued)

TRU COMBINED METAL SCRAP AND INCIDENTAL COMBUSTIBLES

GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Magnesium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Aluminum	T
	Magnesium	T
	Uranium	T
	Zirconium	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Copper	T
	Graphite (Molds and Crucibles)	M
	Iron	T
	Lead	M
	Stainless Steel	D
	Tantalum	M
	Zirconium	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Beryllium	T
	Calcium	T
	Chromium	T
	Copper	T
	Lead	T
	Nickel	T
	Zirconium	T
GROUP 27	NITRO COMPOUNDS	
	Picric acid (<0.01%)	T
GROUP 31	PHENOLS AND CREOSOLS	
	Picric acid (<0.01%)	T

Lawrence Livermore National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code LL 125/225
(Continued)

TRU COMBINED METAL SCRAP AND INCIDENTAL COMBUSTIBLES

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Bakelite	T
	Cellulose	T
	Grease	T
	Oil	T
	Paper	M
	Polyethylene	D
	Polypropylene	T
	Polystyrene	T
	Polyvinyl chloride	M
	Resins	T
	Rubber gloves	M
	Rubber gloves (Leaded)	T
	Synthetic rubber	T
GROUP 102:	EXPLOSIVES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Picric acid (<0.01%)	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrogen peroxide	T
GROUP 105:	REDUCING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Calcium oxide	T
	Sulfuric acid	T
OTHER INORGANICS		
	Firebrick	T
	Glass, labware	M
	Insulation (Furnace)	T
	Ceramic (Molds and Crucibles)	T
	Other Filters	T
	Salt (Calcium fluoride and calcium chloride)	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Cement	T
	Oil-Dri	T

Refer to Introduction for a description of the designations used in this chemical list.

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Mound Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code MD 111/211

SOLIDIFIED AQUEOUS WASTE AND CONTAMINATED SOIL

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T1
	Hydrofluoric acid	T2
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hypochlorous acid	T2
	Nitric acid	T1
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Lactic acid	T2
	Oxalic acid	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T1
	Methanol	T1
	Propanol	T1
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T1
	Sodium carbonate	T
	Sodium hydroxide	T
	Sodium hypochlorite	T1
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrofluoric acid	T2
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T2
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Trichloroethylene	T1
GROUP 19:	KETONES	
	Acetone	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T2
	Magnesium	T2
	Potassium	T2
	Sodium	T2

Mound Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code MD 111/211
(Continued)

SOLIDIFIED AQUEOUS WASTE AND CONTAMINATED SOIL

GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Aluminum	T2
	Cobalt	T2
	Magnesium	T2
	Manganese	T2
	Mercury (Vapor)	T2
	Nickel	T2
	Thorium	M
	Titanium	T2
	Uranium	T
	Zirconium	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	T2
	Cadmium	T2
	Carbon steel	M
	Chromium	T2
	Cobalt	T2
	Copper	T2
	Iron	T
	Lead	T1
	Manganese	T
	Selenium	T2
	Silicon	T1
	Silver	T2
	Thorium	M
	Tin	T
	Titanium	T2
	Uranium	T
	Zirconium	T2

Mound Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code MD 111/211
(Continued)

SOLIDIFIED AQUEOUS WASTE AND CONTAMINATED SOIL

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Beryllium	T
	Cadmium	T2
	Calcium	T2
	Chromium	T2
	Cobalt	T2
	Copper	T2
	Lead	T1
	Manganese	T
	Mercury	T
	Nickel	T
	Selenium	T2
	Strontium	T2
	Thorium	M
	Titanium	T2
	Zirconium	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Carbon (Spent, Activated)	T
	Cellulose	T
	Oil	T
	Polybutadiene	T2
	Polystyrene	T1
	Wood	T
GROUP 102:	EXPLOSIVES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrogen peroxide	T2
	Sodium nitrate	T
GROUP 105:	REDUCING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T2
	Phosphorous	T
	Sodium	T2
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T
	Water	T

Mound Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code MD 111/211
(Continued)

SOLIDIFIED AQUEOUS WASTE AND CONTAMINATED SOIL

GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T2
	Phosphorous	T
	Potassium	T2
	Sodium	T2
	Sulfuric acid	T
OTHER INORGANICS		
	Ash	M
	Calcium chloride	M
	Ferric hydroxide	M
	Sand	M
	Soil	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Ash	M
	Cement (Hydrated)	D
	Florco	M
	Sludge	D
	Surfactants	T
	Vermiculite	T

Refer to Introduction for a description of the designations used in this chemical list.

Mound Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code MD 116/216

COMBUSTIBLE WASTE

GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Thorium	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Lead	T1
	Thorium	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Lead	T1
	Mercury	T2
	Thorium	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulose	M
	Grease	T
	Oil	T
	Paper	D
	Polybutadiene	T
	Polyethylene	D
	Polypropylene	M
	Polystyrene	M
	Polyurethane	T
	Polyvinyl chloride	D
	Rubber gloves	M
	Rubber gloves (Leaded)	D
	Synthetic rubber	M
	Wood	M
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	T1
OTHER INORGANICS		
	HEPA Filters	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Florco	M

Refer to Introduction for a description of the designations used in this chemical list.

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Mound Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code MD 117/217

NON-COMBUSTIBLE TRU WASTE

GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T2
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Aluminum	T1
	Nickel	T1
	Thorium	T
	Uranium	T
	Zirconium	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	T
	Cadmium	T2
	Chromium	T
	Copper	T
	Iron	D
	Lead	T
	Selenium	T2
	Silver	T2
	Stainless Steel	D
	Thorium	T
	Uranium	T
	Zirconium	T2
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Barium	T2
	Cadmium	T2
	Chromium	T
	Copper	T
	Lead	T
	Mercury	T1
	Nickel	T1
	Selenium	T2
	Thorium	T
	Zirconium	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Benelex	T
	Plexiglas	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	Barium	T2

Mound Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code MD 117/217
(Continued)

NON-COMBUSTIBLE TRU WASTE

OTHER INORGANICS	
Ash	T1
Glass, labware	M
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Concrete	M

Refer to Introduction for a description of the designations used in this chemical list.

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 111/211

SOLIDIFIED AQUEOUS WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	M
	Hydrofluoric acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	M
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T
	Citric acid	T
	Lactic acid	T
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T
	Isopropanol	T
	Methanol	T
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T
	Calcium oxide	T
	Potassium hydroxide	M
	Sodium hydroxide	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium fluoride	T
	Hydrofluoric acid	T
GROUP 17:	HALOGENATED ORGANICS	
	Carbon tetrachloride	T
	Chloroform	T
	Trichloroethylene	T
GROUP 19:	KETONES	
	Acetone	T
	Methyl ethyl ketone	T
GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOY, AS SHEETS, RODS, MOULDINGS, DROPS, ETC.	
	Chromium	T
	Lead	T

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 111/211
(Continued)

SOLIDIFIED AQUEOUS WASTE

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Beryllium	T
	Chromium	T
	Lead	T
GROUP 27	NITRO COMPOUNDS	
	Picric acid (<0.01%)	T
GROUP 31	PHENOLS AND CREOSOLS	
	Picric acid (<0.01%)	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Oil	T
GROUP 102:	EXPLOSIVES	
	(Constituents reacted prior to loading in payload containers.)	
	Picric acid (<0.01%)	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrogen peroxide	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium oxide	T
	Sulfuric acid	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Cement (Hydrated)	D
	Emulsifiers	T
	Envirostone	D
	Sodium silicate	T

Refer to Introduction for a description of the designations used in this chemical list.

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 115/215

GRAPHITE WASTE

GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Benzoic acid	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Benzyl alcohol	T3
	Methanol	T1
GROUP 7:	AMINES, ALIPHATIC AND AROMATIC	
	N-Nitrosodimethylamine	T2
	Pyridine	T3
GROUP 13:	ESTERS	
	Bis(2-Ethylhexyl) phthalate	T2
	Butyl benzyl phthalate	T2
	Diethyl phthalate	T2
	Dimethyl phthalate	T2
	Di-n-butyl phthalate	T2
	Di-n-octyl phthalate	T2
GROUP 14:	ETHERS	
	Dibenzofuran	T3
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	D
GROUP 16:	HYDROCARBONS, AROMATIC	
	2-Methylnaphthalene	T3
	Benzene	T1
	Ethylbenzene	T3
	Naphthalene	T2
	Phenanthrene	T3
	Toluene	T1
	m,p-Xylene	T2
	o-Xylene	T2

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 115/215
(Continued)

GRAPHITE WASTE

GROUP 17:	HALOGENATED ORGANICS	
	1,1-Dichloroethene	T1
	1,2-Dichloroethane	T3
	1,1,1-Trichloroethane	T1
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Bromodichloromethane	T3
	Carbon tetrachloride	T1
	Chlorobenzene	T3
	Chloroethane	T3
	Chloroform	T1
	Chloromethane	T3
	Hexachlorobenzene	T3
	Hexachloroethane	T2
	Methylene chloride	T1
	Pentachlorobenzene	T3
	Tetrachloroethene	T2
	Trichloroethene	T1
GROUP 19:	KETONES	
	2-Butanone	T1
	2-Hexanone	T2
	4-Methyl-2-pentanone	T2
	Acetone	T1
	Acetophenone	T2
GROUP 20:	MERCAPTANS AND OTHER ORGANIC SULFIDES	
	Carbon disulfide	T3
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T1
	Magnesium	D
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Aluminum	M
	Cobalt	T2
	Magnesium	D
	Manganese	T1
	Molybdenum	T1
	Nickel	T
	Selenium	T1
	Titanium	T1
	Zinc	T1

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 115/215
(Continued)

GRAPHITE WASTE

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Antimony	T2
	Cadmium	T2
	Chromium	T
	Cobalt	T2
	Copper	M
	Depleted uranium	M
	Graphite (Molds and Crucibles)	D
	Iron	M
	Lead	T1
	Manganese	T1
	Molybdenum	T2
	Selenium	T1
	Titanium	T1
	Zinc	T1
	Zinc-Magnesium Alloy	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T2
	Arsenic	T2
	Barium	T1
	Beryllium	T2
	Cadmium	T2
	Chromium	T
	Cobalt	T2
	Copper	M
	Lead	T1
	Manganese	T1
	Mercury	T2
	Molybdenum	T2
	Nickel	T
	Selenium	T1
	Silver	T2
	Strontium	T
	Thallium	T2
	Titanium	T1
	Vanadium	T2
	Zinc	T1

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 115/215
(Continued)

GRAPHITE WASTE

GROUP 27:	NITRO COMPOUNDS	
	2-Nitrophenol	T2
	4-Nitrophenol	T2
	2,4-Dinitrophenol	T2
	2,6-Dinitrotoluene	T3
	4,6-Dinitro-2-methylphenol	T2
	N-Nitrosodimethylamine	T2
	Nitrobenzene	T3
GROUP 31:	PHENOLS AND CRESOLS	
	2-Methylphenol	T3
	2-Nitrophenol	T2
	3-Methylphenol	T3
	4-Methylphenol	T3
	4-Nitrophenol	T2
	2,4-Dimethyl phenol	T3
	2,4-Dinitrophenol	T2
	4,6-Dinitro-2-methylphenol	T2
	Phenol	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Celotex (Packaging material)	D
	Polyethylene (Packaging material)	T
	Polyvinyl chloride (Packaging material)	T
GROUP 105:	REDUCING AGENTS, STRONG	
	Phosphorus	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T1
	Phosphorus	T
OTHER ORGANICS		
	2-Picoline	T3
	Nochar Acid Bond	T
	Nochar Petro Bond	T
	Waste Lock 770™	T
	WaterWorks Crystals®	T

Refer to Introduction for a description of the designations used in this chemical list.

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 116/216

TRU COMBUSTIBLE WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
	Hydrofluoric acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	0300 Liquid	T
	Nitric acid	T
	Sulfamic acid	T2
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	0200 Liquid	T
	Acetic acid	T
	Citric acid	T
	Cyclohexanediaminetetraacetic acid (CDTA)	T2
	Lactic acid	T
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	0100 Liquid	T
	1-Butanol	T1
	Ethanol	T
	Isopropanol	T
	Methanol	T
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T
	Calcium oxide	T
	Potassium hydroxide	T
	Sodium carbonate	T
	Sodium hydroxide	T
GROUP 14:	ETHERS	
	0100 Liquid	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	0200 Liquid	T
	Ammonium fluoride	T
	Calcium fluoride	T
	Hydrofluoric acid	T
	Potassium fluoride	T
	Sodium fluoride	T

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 116/216
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 16:	HYDROCARBONS, AROMATIC	
	1,2,4-Trimethylbenzene	T1
	1,3,5-Trimethylbenzene	T1
	Benzene	T1
	Ethylbenzene	T1
	Toluene	T1
	Xylene	T1
GROUP 17:	HALOGENATED ORGANICS	
	0100 Liquid	T
	1,1-Dichloroethane	T1
	1,1-Dichloroethene	T1
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Chloroform	T
	cis-1,2-dichloroethene	T2
	Methylene chloride	T1
	Tetrachloroethylene	T1
	Trichloroethylene	T
GROUP 19:	KETONES	
	2-Butanone	T1
	Acetone	T
	Methyl ethyl ketone	T
GROUP 20:	MERCAPTANS AND OTHER ORGANIC SULFIDES	
	Carbon disulfide	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T2
	Calcium	T
	Magnesium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Aluminum	T
	Magnesium	T
	Selenium	T2
	Uranium	T
	Zirconium	T

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 116/216
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Cadmium	T2
	Chromium	M
	Copper	M
	Depleted uranium	M
	Graphite (Molds & Crucibles)	M
	Iron	M
	Lead	M
	Low Carbon Steel	M
	Selenium	T2
	Stainless Steel	M
	Tantalum	T
	Zinc-Magnesium Alloy	T
	Zirconium	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Barium	T2
	Beryllium	T
	Cadmium	T2
	Calcium	T
	Chromium	T
	Copper	M
	Lead	M
	Lead acetate	T1
	Mercury	T2
	Nickel	T
	Potassium dichromate	T
	Potassium permanganate	T2
	Selenium	T2
	Silver	T2
	Zirconium	T
GROUP 27	NITRO COMPOUNDS	
	Picric acid (<0.01%)	T
GROUP 28:	HYDROCARBON, ALIPHATIC UNSATURATED	
	Polypropylene	M
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Cyclohexane	T1
	Hexane	T1
	Isooctane	T2
GROUP 31	PHENOLS AND CREOSOLS	
	Picric acid (<0.01%)	T

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 116/216
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Bakelite	T
	Cardboard	D
	Cellulose	D
	Celotex (Packaging material)	D
	Fiberglass	M
	Filter media	M
	Granular activated carbon	M
	Grease	D
	Insulation	M
	Leather	M
	Oil	D
	Paint	M
	Paper	D
	Polyamides	M
	Polyethylene	D
	Polypropylene	M
	Polystyrene	M
	Polyurethane	M
	Polyvinyl chloride	D
	Rags and cloth	D
	Resins	T
	Rubber gloves	M
	Rubber gloves (Leaded)	T
	Synthetic rubber	D
	Teflon	M
	Tygon tubing	D
	Wood	D
GROUP 102:	EXPLOSIVES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Picric acid (<0.01%)	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Aluminum nitrate	T1
	Calcium nitrate	T1
	Hydrogen peroxide	T
	Potassium dichromate	T
	Potassium permanganate	T2
GROUP 105:	REDUCING AGENTS, STRONG	
	Calcium	T

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 116/216
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	D
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T2
	Calcium	T
	Calcium oxide	T
	Sulfuric acid	T
OTHER ORGANICS		
	Carboline Neoprene F1 Adhesive Tubegrade	T
	Cellusolve	T1
	Developer	T1
	Dioctyl sebecate	T1
	Dykem Blue	T2
	Impression casting compound	T
	K W Cleaner	T
	Karl Fischer Reagent	T1
	Mariko	T1
	Molykote	T1
	Nochar Acid Bond (A660)	M
	Nochar Petro Bond (A610)	M
	Nye's Watch Oil	T
	Scintillation Cocktail	T2
	Triple Ionic Strength Adjustment Buffer (TISAB)	T2
	Waste Lock 770™	M
	WaterWorks Crystals®	M
OTHER INORGANICS		
	Asbestos	M
	Ceramic (molds and crucibles)	M
	Cerium nitrate	T
	Chloride salts	T1
	Fiberglass	M
	Filter media	M
	Firebrick	T
	Fuller's Earth	M
	Glass, labware	M
	Insulation (Furnace)	M
	Kathene	T1
	Other filters	T
	Potassium iodide	T1
	Salt (Calcium fluoride and calcium chloride)	T
	Silicone	M

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 116/216
(Continued)

TRU COMBUSTIBLE WASTE

OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Absorbent polymers	D
Abzorbit	M
AquaSorbe-HP	M
Cement	D
Oil-Dri	D

Refer to Introduction for a description of the designations used in this chemical list.

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 117/217

METAL WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	0300 Liquid	T
	Nitric acid	T
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	0200 Liquid	T
	Ammonium (Diethylene triamine) pentaacetic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	0100 Liquid	T
	Butanol	T1
	Ethyl alcohol	T
	Isobutyl alcohol	T1
	Methanol	T1
GROUP 7:	AMINES, ALIPHATIC AND AROMATIC	
	Pyridine	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonia	T
	Ammonium hydroxide	T
	Sodium hydroxide	T
GROUP 11:	CYANIDES	
	Cyanide	T2
GROUP 14:	ETHERS	
	0100 Liquid	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	0200 Liquid	T
	Calcium fluoride	T
	Sodium fluoride	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Benzene	T1
	Ethyl benzene	T1
	Toluene	T1
	1,2,4-Trimethylbenzene	T1
	1,3,5-Trimethylbenzene	T1
	Xylene	TI

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 117/217
(Continued)

METAL WASTE

GROUP 17:	HALOGENATED ORGANICS	
	0100 Liquid	T
	1,1,1-Trichloroethane	T1
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Carbon tetrachloride	T1
	Chloroform	T1
	Methylene chloride	T1
GROUP 19:	KETONES	
	Acetone	T1
	2-Butanone	T1
	Methyl isobutyl ketone	T1
GROUP 20:	MERCAPTANS AND OTHER ORGANIC SULFIDES	
	Carbon disulfide	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T1
	Lithium	T1
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Nickel	T1
	Selenium	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Antimony	T2
	Cadmium	T1
	Chromium	T1
	Copper	D
	Depleted uranium	D
	Iron	D
	Lead	D
	Selenium	T2
	Steel	D
	Stainless Steel	D
	Tantalum	D
	Tungsten	D
	Zinc-Magnesium Alloy	D

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 117/217
(Continued)

METAL WASTE

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T2
	Arsenic	T2
	Barium	T1
	Beryllium	T
	Boron trifluoride	T
	Cadmium	T1
	Cerium nitrate	T
	Chromium	T1
	Copper	D
	Lead	D
	Mercury	T2
	Nickel	T1
	Potassium permanganate	T
	Selenium	T2
	Silver	T
	Thallium	T2
GROUP 28:	HYDROCARBON, ALIPHATIC UNSATURATED	
	Polypropylene	T
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Cyclohexane	T1
GROUP 31:	PHENOLS AND CRESOLS	
	Phenol	T2
GROUP 33:	SULFIDES, INORGANIC	
	Sulfide	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Celotex (Packaging material)	D
	Insulation	T
	Neoprene	T
	Oil	T
	Paint	T
	Polyamides	T
	Polyethylene (Packaging material)	M
	Polypropylene	T
	Polyurethane	T
	Polyvinyl chloride (Packaging material)	M
	Rubber	T
	Teflon	T
	Wood	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Cerium nitrate	T
	Potassium permanganate	T

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 117/217
(Continued)

METAL WASTE

GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T1
	Boron trifluoride	T
	Lithium	T1
	Sulfuric acid (>70%)	T
OTHER ORGANICS		
	Carboline Neoprene F1 Adhesive Tubegrade	T
	Dykem Blue	T2
	Firedam Spray fixative coating	T
	Hydroxylamine hydrochloride	T
	Impression compound	T
	K W Cleaner	T
	Mariko	T1
	Nochar Acid Bond	T
	Nochar Petro Bond	T
	Oxalate	T
	Soap	T
	Waste Lock 770™	T
	WaterWorks Crystals®	T
OTHER INORGANICS		
	Asbestos	D
	Ammonium chloride	T
	Ceramics	M
	Fiberglass	M
	Filter media	M
	Fuller's Earth	M
	Glass	M
	Insulation	M
	Kathene	T1
	Silicone	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Abzorbit	M
	AquaSorbe-HP	T
	Oil-Dri	M

Refer to Introduction for a description of the designations used in this chemical list.

Nevada Test Site
List of Chemicals and Materials
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Content Code NT 119/219

TRU FILTER WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
	Hydrofluoric acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T
	Perchloric acid	T
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T
	Citric acid	T
	Lactic acid	T
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T
	Isopropanol	T
	Methanol	T
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T
	Calcium oxide	T
	Potassium hydroxide	T
	Sodium carbonate	T
	Sodium hydroxide	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium fluoride	T
	Calcium fluoride	T
	Hydrofluoric acid	T
GROUP 17:	HALOGENATED ORGANICS	
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Chloroform	T
	Trichloroethylene	T
GROUP 19:	KETONES	
	Acetone	T
	Methyl ethyl ketone	T

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 119/219
(Continued)

TRU FILTER WASTE

GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Magnesium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Aluminum	T
	Magnesium	T
	Nickel	T
	Zirconium	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	T
	Chromium	T
	Copper	T
	Graphite	T
	Lead	T
	Steel	D
	Zirconium	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Beryllium	T
	Calcium	T
	Chromium	T
	Copper	T
	Lead	T
	Nickel	T
	Uranium	T
	Zirconium	T
GROUP 27	NITRO COMPOUNDS	
	Picric acid (<0.01%)	T
GROUP 28	HYDROCARBON, ALIPHATIC, UNSATURATED	
	Polypropylene	D
GROUP 31	PHENOLS AND CREOSOLS	
	Picric acid (<0.01%)	T

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 119/219
(Continued)

TRU FILTER WASTE

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Bakelite	T
	Cellulose	T
	Ful-Flo Filters	D
	Grease	T
	Neoprene	M
	Oil	T
	Paper	M
	Plastic	M
	Plastic Bags	M
	Polyethylene	M
	Polypropylene	D
	Polystyrene	T
	Polyvinyl chloride	T
	Resins	T
	Synthetic rubber	M
	Tape	M
	Urethane	M
	Wood	D
GROUP 102:	EXPLOSIVES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Picric acid (<0.01%)	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrogen peroxide	T
	Oxalic acid	T
GROUP 105:	REDUCING AGENTS, STRONG	
	Calcium	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Calcium oxide	T
	Oxalic acid	T
	Sulfuric acid (<70%)	T
OTHER INORGANICS		
	Cement	T
	Fiberglass	D
	Filter Frames	D
	Filter Material (Boron silica)	D
	HEPA Filter (Media)	D
	WEF Filters, Flanges	D

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 119/219
(Continued)

TRU FILTER WASTE

OTHER SOLIDIFICATION MATERIAL/ABSORBENTS Oil-Dri	T

Refer to Introduction for a description of the designations used in this chemical list.

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 125/225

TRU COMBUSTIBLE WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
	Hydrofluoric acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T
	Citric acid	T
	Lactic acid	T
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T
	Isopropanol	T
	Methanol	T
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T
	Calcium oxide	T
	Potassium hydroxide	T
	Sodium carbonate	T
	Sodium hydroxide	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium fluoride	T
	Calcium fluoride	T
	Hydrofluoric acid	T
GROUP 17:	HALOGENATED ORGANICS	
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Chloroform	T
	Trichloroethylene	T
GROUP 19:	KETONES	
	Acetone	T
	Methyl ethyl ketone	T

Nevada Test Site
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Content Code NT 125/225
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Magnesium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Aluminum	T
	Magnesium	T
	Uranium	T
	Zirconium	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	T
	Chromium	T
	Copper	T
	Graphite (Molds and Crucibles)	M
	Iron	M
	Lead	T
	Stainless Steel	M
	Tantalum	T
	Zirconium	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Beryllium	T
	Calcium	T
	Chromium	T
	Copper	T
	Lead	T
	Nickel	T
	Uranium	T
	Zirconium	T
GROUP 27	NITRO COMPOUNDS	
	Picric acid (<0.01%)	T
GROUP 28	HYDROCARBON, ALIPHATIC, UNSATURATED	
	Polypropylene	T
GROUP 31	PHENOLS AND CREOSOLS	
	Picric acid (<0.01%)	T

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 125/225
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Bakelite	T
	Cellulose	D
	Grease	T
	Oil	T
	Paper	D
	Polyethylene	D
	Polypropylene	T
	Polystyrene	T
	Polyvinyl chloride	T
	Resins	T
	Rubber gloves	M
	Rubber gloves (Leaded)	T
	Synthetic rubber	M
GROUP 102:	EXPLOSIVES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Picric acid (<0.01%)	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrogen peroxide	T
	Oxalic acid	T
GROUP 105:	REDUCING AGENTS, STRONG	
	Calcium	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Calcium oxide	T
	Oxalic acid	T
	Sulfuric acid (<70%)	T
OTHER INORGANICS		
	Firebrick	T
	Glass, labware	M
	Insulation (Furnace)	T
	Ceramic (Molds and Crucibles)	T
	Other filters	T
	Salt (Calcium fluoride and calcium chloride)	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Cement	T
	Oil-Dri	T

Refer to Introduction for a description of the designations used in this chemical list.

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Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 131/231

SOLID INORGANIC WASTE (GREATER THAN TRACE QUANTITIES OF BERYLLIUM)

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium (Diethylene triamine) pentaacetic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T1
	Ethyl alcohol	T
	Isobutyl alcohol	T1
	Methanol	T1
GROUP 7:	AMINES, ALIPHATIC AND AROMATIC	
	Pyridine	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonia	T
	Ammonium hydroxide	T
	Sodium hydroxide	T
GROUP 11:	CYANIDES	
	Cyanide	T2
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T
	Sodium fluoride	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Benzene	T1
	Ethyl benzene	T1
	Toluene	T1
	1,2,4-Trimethylbenzene	T1
	1,3,5-Trimethylbenzene	T1
	Xylene	TI
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T1
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Carbon tetrachloride	T1
	Chloroform	T1
	Methylene chloride	T1

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 133/233
(Continued)

TRU COMBUSTIBLE WASTE (GREATER THAN TRACE QUANTITIES OF BERYLLIUM)

GROUP 19:	KETONES	
	Acetone	T1
	2-Butanone	T1
	Methyl isobutyl ketone	T1
GROUP 20:	MERCAPTANS AND OTHER ORGANIC SULFIDES	
	Carbon disulfide	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T1
	Lithium	T1
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Nickel	T1
	Selenium	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Antimony	T2
	Cadmium	T1
	Chromium	T1
	Copper	D
	Depleted uranium	D
	Iron	D
	Lead	D
	Selenium	T2
	Steel	D
	Stainless Steel	D
	Tantalum	D
	Tungsten	D
	Zinc-Magnesium Alloy	D

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 133/233
(Continued)

TRU COMBUSTIBLE WASTE (GREATER THAN TRACE QUANTITIES OF BERYLLIUM)

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T2
	Arsenic	T2
	Barium	T1
	Beryllium	D
	Boron trifluoride	T
	Cadmium	T1
	Chromium	T1
	Copper	D
	Lead	D
	Mercury	T2
	Nickel	T1
	Potassium permanganate	T
	Selenium	T2
	Silver	T
	Thallium	T2
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Cyclohexane	T1
GROUP 31:	PHENOLS AND CRESOLS	
	Phenol	T2
GROUP 33:	SULFIDES, INORGANIC	
	Sulfide	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Celotex (Packaging material)	D
	Oil	T
	Polyethylene (Packaging material)	M
	Polyvinyl chloride (Packaging material)	M
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Potassium permanganate	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T1
	Boron trifluoride	T
	Lithium	T1
	Sulfuric acid (>70%)	T

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 133/233
(Continued)

TRU COMBUSTIBLE WASTE (GREATER THAN TRACE QUANTITIES OF BERYLLIUM)

OTHER ORGANICS	
Carboline Neoprene F1 Adhesive Tubegrade	T
Dykem Blue	T2
Firedam Spray fixative coating	T
Hydroxylamine hydrochloride	T
Impression compound	T
K W Cleaner	T
Mariko	T1
Nochar Acid Bond	T
Nochar Petro Bond	T
Oxalate	T
Soap	T
Waste Lock 770™	T
WaterWorks Crystals®	T
OTHER INORGANICS	
Asbestos	D
Ammonium chloride	T
Kathene	T1
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Oil-Dri	M

Refer to Introduction for a description of the designations used in this chemical list.

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 133/233

TRU COMBUSTIBLE WASTE (GREATER THAN TRACE QUANTITIES OF BERYLLIUM)

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium (Diethylene triamine) pentaacetic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T1
	Ethyl alcohol	T
	Isobutyl alcohol	T1
	Methanol	T1
GROUP 7:	AMINES, ALIPHATIC AND AROMATIC	
	Pyridine	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonia	T
	Ammonium hydroxide	T
	Sodium hydroxide	T
GROUP 11:	CYANIDES	
	Cyanide	T2
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T
	Sodium fluoride	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Benzene	T1
	Ethyl benzene	T1
	Toluene	T1
	1,2,4-Trimethylbenzene	T1
	1,3,5-Trimethylbenzene	T1
	Xylene	TI
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T1
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Carbon tetrachloride	T1
	Chloroform	T1
	Methylene chloride	T1

Nevada Test Site
List of Chemicals and Materials
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Content Code NT 133/233
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TRU COMBUSTIBLE WASTE (GREATER THAN TRACE QUANTITIES OF BERYLLIUM)

GROUP 19:	KETONES	
	Acetone	T1
	2-Butanone	T1
	Methyl isobutyl ketone	T1
GROUP 20:	MERCAPTANS AND OTHER ORGANIC SULFIDES	
	Carbon disulfide	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T1
	Lithium	T1
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Nickel	T1
	Selenium	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Antimony	T2
	Cadmium	T1
	Chromium	T1
	Copper	D
	Depleted uranium	D
	Iron	D
	Lead	D
	Selenium	T2
	Steel	D
	Stainless Steel	D
	Tantalum	D
	Tungsten	D
	Zinc-Magnesium Alloy	D

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 133/233
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TRU COMBUSTIBLE WASTE (GREATER THAN TRACE QUANTITIES OF BERYLLIUM)

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T2
	Arsenic	T2
	Barium	T1
	Beryllium	D
	Boron trifluoride	T
	Cadmium	T1
	Chromium	T1
	Copper	D
	Lead	D
	Mercury	T2
	Nickel	T1
	Potassium permanganate	T
	Selenium	T2
	Silver	T
	Thallium	T2
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Cyclohexane	T1
GROUP 31:	PHENOLS AND CRESOLS	
	Phenol	T2
GROUP 33:	SULFIDES, INORGANIC	
	Sulfide	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cardboard	D
	Cellulose	D
	Celotex	D
	Cloth	D
	Fiberboard	D
	Latex gloves	D
	Oil	T
	Paper	D
	Plastic	D
	Plexiglass	D
	Polyethylene	D
	Polyvinyl chloride	D
	Rubber	D
	Wood	D
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Potassium permanganate	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	T

Nevada Test Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code NT 133/233
(Continued)

TRU COMBUSTIBLE WASTE (GREATER THAN TRACE QUANTITIES OF BERYLLIUM)

GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T1
	Boron trifluoride	T
	Lithium	T1
	Sulfuric acid (>70%)	T
OTHER ORGANICS		
	Carboline Neoprene F1 Adhesive Tubegrade	T
	Dykem Blue	T2
	Firedam Spray fixative coating	T
	Hydroxylamine hydrochloride	T
	Impression compound	T
	K W Cleaner	T
	Mariko	T1
	Nochar Acid Bond	T
	Nochar Petro Bond	T
	Oxalate	T
	Soap	T
	Waste Lock 770™	T
	WaterWorks Crystals®	T
OTHER INORGANICS		
	Asbestos	D
	Ammonium chloride	T
	Kathene	T1
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Oil-Dri	M

Refer to Introduction for a description of the designations used in this chemical list.

Oak Ridge National Laboratory
List of Chemicals and Materials
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Content Code OR 125/225

TRU MIXED PAPER, METAL, AND GLASS

GROUP 3:	ACIDS, ORGANIC	
	EDTA	T1
GROUP 4:	ALCOHOLS AND GLYCOLS	
	2-Ethyl-1-hexanol	T2
	Ethanol	T2
	Isopropanol	T2
	Methanol	T2
GROUP 6:	AMIDES	
	Acetamide	T2
GROUP 7:	AMINES, ALIPHATIC AND AROMATIC	
	Adogen-364-HP (Trilaurylamine)	T2
GROUP 8:	AZO COMPOUNDS, DIAZO COMPOUNDS, AND HYDRAZINES (Constituents reacted prior to loading in payload containers.)	
	Hydrazine	T
GROUP 13:	ESTERS	
	Amyl acetate	T2
GROUP 16:	HYDROCARBONS, AROMATIC	
	Diethyl benzene (DEB)	T2
	Diisopropylbenzene	T2
	Toluene	T2
GROUP 17:	HALOGENATED ORGANICS	
	Carbon tetrachloride	T2
GROUP 19:	KETONES	
	2-5-Di-tert-butyl-hydroquinone (DBHQ)	T2
	Acetone	T2
	Thenoylfluoroacetone (TFA)	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	T
	Copper	T
	Gold	T
	Hastelloy-C	T
	Iron	D
	Platinum	T1
	Stainless Steel	D
	Tantalum	T1
	Tungsten	T
	Uranium	T
	Zinc	T
	Zircalloy	T

Oak Ridge National Laboratory
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code OR 125/225
(Continued)

TRU MIXED PAPER, METAL, AND GLASS

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Copper	T
	Nickel	T
	Uranium	T
	Zinc	T
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	N-Dodecane	T1
	N-Paraffin hydrocarbons (NPH)	T
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulose	T
	Cork	T
	Cotton	T
	Deodorized mineral spirits	T
	Ful-Flo Filters (Polypropylene)	T
	Paper	D
	Polyethylene	D
	Polypropylene	T
	Polystyrene	T
	Polyurethane	T
	Polyvinyl chloride	T
	Resins	T
	Rubber gloves	M
	Rubber gloves (Leaded)	T
	Synthetic rubber	T
	Teflon	T
	Vacuum grease	T
	Wood	T
GROUP 104:	OXIDIZING AGENTS, STRONG (Constituents reacted prior to loading in payload containers.)	
	Hydrogen peroxide	T1
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	T
OTHER INORGANICS		
	Glass, labware	D
	HEPA Filters (Old)	D

Refer to Introduction for a description of the designations used in this chemical list.

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 111/211

SOLIDIFIED AQUEOUS WASTE

GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Tetraphosphoric acid	T1
GROUP 3:	ACIDS, ORGANIC (Constituents reacted prior to loading in payload containers.)	
	Oxalic acid	T1
	Ethylenediaminetetraacetic acid (EDTA)	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T2
	Ethanol	T2
	Isopropanol	T2
	Methanol	T2
GROUP 11:	CYANIDES	
	Cyanide	T1
GROUP 16:	HYDROCARBONS, AROMATIC	
	Benzene	T1
	Ethyl benzene	T2
	Toluene	T2
	Xylene	T2
GROUP 17:	HALOGENATED ORGANICS	
	1,2-Dichloroethane	T2
	1,1,1-Trichloroethane	T2
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Carbon tetrachloride	T2
	Methylene chloride	T1
	Tetrachloroethylene	T1
	Trichloroethylene	T1
GROUP 19:	KETONES	
	Acetone	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T1
	Magnesium	T1
GROUP 22:	METALS OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Magnesium	T1
	Selenium	T1

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 111/211
(Continued)

SOLIDIFIED AQUEOUS WASTE

GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Cadmium	T2
	Depleted uranium	M
	Iron	T1
	Lead	T
	Selenium	T1
	Zinc-Magnesium Alloy	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T1
	Barium	T1
	Beryllium	T2
	Cadmium	T2
	Lead	T
	Mercury	T1
	Selenium	T1
GROUP 28:	HYDROCARBON, ALPHATIC, SATURATED	
	Polypropylene	T
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	T3
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulose	T
	Celotex (Packaging material)	D
	Polyethylene (Packaging material)	M
	Polypropylene	T
	Polyvinyl chloride (Packaging material)	M
	Resin	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures (Fixed in matrix)	D
	Sludge (Fixed in matrix)	D
	Water	D
GROUP 107:	WATER REACTIVE SUBSTANCES (Constituents reacted prior to loading in payload containers.)	
	Barium	T1
OTHER ORGANICS		
	Flocculating agent (Polyelectrolyte)	T
	Nochar Acid Bond	T
	Waste Lock 770™	T
	WaterWorks Crystals®	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

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(Continued)

SOLIDIFIED AQUEOUS WASTE

OTHER INORGANICS	
Firebrick	T
Fuller's Earth	M
Glass	T
Insulation	T
Molds and Crucibles	T
Soot	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Abzorbit	M
Diatomite	D
Oil-Dry	D
Portland Cement (Hydrated)	D
Ramcote Cement (Hydrated)	D

Refer to Introduction for a description of the designations used in this chemical list.

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Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 112/212

SOLIDIFIED ORGANICS

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers)	
	Hydrofluoric acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T2
	CC T207®	D
	ET Glycerine Solution®	M
	Ethanol	T2
	Isopropanol	T2
	Methanol	T2
GROUP 10:	CAUSTICS	
	Magnesium hydroxide (packaging material)	M
	Sodium carbonate (packaging material)	M
GROUP 13:	ESTERS	
	Polyethylene glycol ester	M
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium fluoride	T
	Hydrofluoric acid	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Ethyl benzene	T2
	Toluene	T2
	Xylene	T2
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	D
	1,1,2-Trichloro-1,2,2-trifluoroethane	D
	Carbon tetrachloride	D
	Chloroform	D
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Nickel	T2
	Selenium	T1
GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Cadmium	T2
	Chromium	T2
	Depleted uranium	M
	Iron	T2
	Lead	T2
	Metal cans	D
	Selenium	T1
	Zinc-Magnesium Alloy	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 112/212
(Continued)

SOLIDIFIED ORGANICS

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T1
	Beryllium	T2
	Cadmium	T2
	Chromium	T2
	Lead	T2
	Mercury	T1
	Nickel	T2
	Selenium	T1
	Silver	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	CC T207®	D
	Celotex (Packaging material)	D
	Ion exchange resin	D
	Oil	D
	Polyethylene (Packaging material)	T
	Polyvinyl chloride (Packaging material)	T
	Grease	D
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	CC T207®	D
	ET Glycerine Solution®	M
	Water	D
OTHER INORGANICS		
	Aluminum nitrate	T
	Ferrous sulfamate	T
	Fuller's Earth	M
OTHER ORGANICS		
	Flocculating agents	T
	Nochar Acid Bond	M
	Nochar Petro Bond	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Abzorbit	M
	Absorbent polymers	M
	Envirostone ($CaSO_4$)	D
	Flocculating agents	T
	Magnesia Cement	D
	Oil-Dry	D
	Portland Cement	D
	Potassium sulfate	M

Refer to Introduction for a description of the designations used in this chemical list.

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 113/213

SOLIDIFIED LABORATORY WASTE

GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T
	Ascorbic acid	T
	Citric acid	T
	EDTA	T
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T1
	Ethanol	T1
	Isopropanol	T1
	Methanol	M
GROUP 16:	HYDROCARBONS, AROMATIC	
	Toluene	T2
	Xylene	T1
GROUP 17:	HALOGENATED ORGANICS	
	1,2-Dichloroethane	T2
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Methylene chloride	T2
GROUP 19:	KETONES	
	Thenoyl trifluoroacetone (TTA)	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Cadmium	T2
	Depleted uranium	M
	Zinc-Magnesium Alloy	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T2
	Beryllium	T2
	Cadmium	T2
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	T
	Trioctyl phosphine oxide	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulose	T
	Celotex (Packaging material)	D
	Polyethylene (Packaging material)	T
	Polypropylene	T
	Polyvinyl chloride (Packaging material)	T
	Resin	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 113/213
(Continued)

SOLIDIFIED LABORATORY WASTE

GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures (Fixed in Matrix)	D
	Water	D
OTHER ORGANICS		
	1,10-Phenanthroline	T3
	Alpha-hydroxyquinoline	T
	Nochar Acid Bond	M
	Nochar Petro Bond	D
	Sodium acetate	T
	Sodium citrate	T
OTHER INORGANICS		
	Firebrick	T
	Glass	T
	Insulation	T
	Molds and Crucibles	T
	Soot	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Abzorbit	M
	Diatomite	D
	Magnesia Cement (Hydrated)	D
	Oil dri	M
	Portland Cement (Hydrated)	D
	Ramcote cement (Hydrated)	D

Refer to Introduction for a description of the designations used in this chemical list.

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 114/214

CEMENTED INORGANIC PROCESS SOLIDS

GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T2
	Ethanol	T2
	Isopropanol	T2
	Methanol	T2
GROUP 16:	HYDROCARBONS, AROMATIC	
	Ethyl benzene	T2
	Toluene	T2
	Xylene	T2
GROUP 17:	HALOGENATED ORGANICS	
	1,2-Dichloroethane	T2
	1,1,1-Trichloroethane	T1
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Carbon tetrachloride	T1
	Methylene chloride	T1
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Selenium	T1
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Cadmium	T2
	Chromium	T1
	Depleted uranium	M
	Lead	T1
	Metal cans	D
	Selenium	T1
	Sliver	T1
	Zinc-Magnesium Alloy	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T1
	Beryllium	T2
	Cadmium	T1
	Chromium	T1
	Lead	T1
	Mercury	T1
	Selenium	T1
	Silver	T1
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES, PHOSPHODITHIOATES	
	Tributyl phosphate	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Celotex (Packaging material)	D
	Polyethylene (Packaging material)	T
	Polyvinyl chloride (Packaging material)	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 114/214
(Continued)

CEMENTED INORGANIC PROCESS SOLIDS

GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	T
OTHER INORGANICS		
	Ash	D
	Ash heel	D
	Firebrick	D
	Grit	D
	Sand	D
	Sand (Slag and Crucible)	D
	Sand (Slag and Crucible heel)	D
	Slag	D
	Soot	D
	Soot heel	D
OTHER ORGANICS		
	Nochar Acid Bond	T
	Waste Lock 770™	T
	WaterWorks Crystals®	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Absorbent polymers	T
	Flocculating agents (Polyelectrolyte)	T
	Portland Cement (Hydrated)	D

Refer to Introduction for a description of the designations used in this chemical list.

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 115/215

GRAPHITE WASTE

GROUP 3:	ACIDS, ORGANIC (Constituents reacted prior to loading in payload containers.)	
	Benzoic acid	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Benzyl alcohol	T3
	Methanol	T1
GROUP 7:	AMINES, ALIPHATIC AND AROMATIC	
	N-Nitrosodimethylamine	T2
	Pyridine	T3
GROUP 13:	ESTERS	
	Bis(2-Ethylhexyl) phthalate	T2
	Butyl benzyl phthalate	T2
	Diethyl phthalate	T2
	Dimethyl phthalate	T2
	Di-n-butyl phthalate	T2
	Di-n-octyl phthalate	T2
GROUP 14:	ETHERS	
	Dibenzofuran	T3
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	D
GROUP 16:	HYDROCARBONS, AROMATIC	
	2-Methylnaphthalene	T3
	Benzene	T1
	Ethylbenzene	T3
	Naphthalene	T2
	Phenanthrene	T3
	Toluene	T1
	m,p-Xylene	T2
	o-Xylene	T2

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 115/215
(Continued)

GRAPHITE WASTE

GROUP 17:	HALOGENATED ORGANICS	
	1,1-Dichloroethene	T1
	1,2-Dichloroethane	T3
	1,1,1-Trichloroethane	T1
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Bromodichloromethane	T3
	Carbon tetrachloride	T1
	Chlorobenzene	T3
	Chloroethane	T3
	Chloroform	T1
	Chloromethane	T3
	Hexachlorobenzene	T3
	Hexachloroethane	T2
	Methylene chloride	T1
	Pentachlorobenzene	T3
	Tetrachloroethene	T2
	Trichloroethene	T1
GROUP 19:	KETONES	
	2-Butanone	T1
	2-Hexanone	T2
	4-Methyl-2-pentanone	T2
	Acetone	T1
	Acetophenone	T2
GROUP 20:	MERCAPTANS AND OTHER ORGANIC SULFIDES	
	Carbon disulfide	T3
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T1
	Magnesium	D
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Aluminum	M
	Cobalt	T2
	Magnesium	D
	Manganese	T1
	Molybdenum	T1
	Nickel	T
	Selenium	T1
	Titanium	T1
	Zinc	T1

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 115/215
(Continued)

GRAPHITE WASTE

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Antimony	T2
	Cadmium	T2
	Chromium	T
	Cobalt	T2
	Copper	M
	Depleted uranium	M
	Graphite (Molds and Crucibles)	D
	Iron	M
	Lead	T1
	Manganese	T1
	Molybdenum	T2
	Selenium	T1
	Titanium	T1
	Zinc	T1
	Zinc-Magnesium Alloy	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T2
	Arsenic	T2
	Barium	T1
	Beryllium	T2
	Cadmium	T2
	Chromium	T
	Cobalt	T2
	Copper	M
	Lead	T1
	Manganese	T1
	Mercury	T2
	Molybdenum	T2
	Nickel	T
	Selenium	T1
	Silver	T2
	Strontium	T
	Thallium	T2
	Titanium	T1
	Vanadium	T2
	Zinc	T1

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 115/215
(Continued)

GRAPHITE WASTE

GROUP 27:	NITRO COMPOUNDS	
	2-Nitrophenol	T2
	4-Nitrophenol	T2
	2,4-Dinitrophenol	T2
	2,6-Dinitrotoluene	T3
	4,6-Dinitro-2-methylphenol	T2
	N-Nitrosodimethylamine	T2
	Nitrobenzene	T3
GROUP 31:	PHENOLS AND CRESOLS	
	2-Methylphenol	T3
	2-Nitrophenol	T2
	3-Methylphenol	T3
	4-Methylphenol	T3
	4-Nitrophenol	T2
	2,4-Dimethyl phenol	T3
	2,4-Dinitrophenol	T2
	4,6-Dinitro-2-methylphenol	T2
	Phenol	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Celotex (Packaging material)	D
	Polyethylene (Packaging material)	T
	Polyvinyl chloride (Packaging material)	T
GROUP 105:	REDUCING AGENTS, STRONG	
	Phosphorus	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T1
	Phosphorus	T
OTHER ORGANICS		
	2-Picoline	T3
	Nochar Acid Bond	T
	Nochar Petro Bond	T
	Waste Lock 770™	T
	WaterWorks Crystals®	T

Refer to Introduction for a description of the designations used in this chemical list.

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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COMBUSTIBLE WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	0300 Liquid	T
	Nitric acid	T
	Sulfamic acid	T2
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	0200 Liquid	T
	Cyclohexanediaminetetraacetic acid (CDTA)	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	0100 Liquid	T
	1-Butanol	T1
	Ethyl alcohol	T1
	Isopropyl alcohol	T2
	Methanol	T1
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Potassium hydroxide	T
	Sodium hydroxide	T
GROUP 14:	ETHERS	
	0100 Liquid	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	0200 Liquid	T
	Calcium fluoride	T
	Potassium fluoride	T
	Sodium fluoride	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	1,2,4-Trimethylbenzene	T1
	1,3,5-Trimethylbenzene	T1
	Benzene	T1
	Ethylbenzene	T1
	Toluene	T1
	Xylene	T1

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 116/216
(Continued)

COMBUSTIBLE WASTE

GROUP 17:	HALOGENATED ORGANICS	
	0100 Liquid	T
	1,1-Dichloroethane	T1
	1,1-Dichloroethene	T1
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T1
	Chloroform	T1
	Cis-1,2-dichloroethene	T2
	Methylene chloride	T1
	Trichloroethylene	T1
	Tetrachloroethylene	T1
GROUP 19:	KETONES	
	2-Butanone	T1
	Acetone	T1
GROUP 20:	MERCAPTANS AND OTHER ORGANIC SULFIDES	
	Carbon disulfide	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T2
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Selenium	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Cadmium	T2
	Chromium	M
	Copper	M
	Depleted uranium	M
	Graphite	T
	Iron	M
	Lead	M
	Low carbon steel	M
	Selenium	T2
	Stainless steel	M
	Zinc-Magnesium Alloy	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 116/216
(Continued)

COMBUSTIBLE WASTE

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Barium	T2
	Beryllium	T1
	Cadmium	T2
	Chromium	T2
	Copper	M
	Lead	M
	Lead acetate	T1
	Mercury	T2
	Potassium dichromate	T
	Potassium permanganate	T2
	Selenium	T2
	Silver	T2
GROUP 28:	HYDROCARBON, ALIPHATIC UNSATURATED	
	Polypropylene	M
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Cyclohexane	T1
	Hexane	T1
	Isooctane	T2
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 116/216
(Continued)

COMBUSTIBLE WASTE

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cardboard	D
	Celotex (Packaging material)	D
	Fiberglass	M
	Filter media	M
	Granular activated carbon	M
	Grease	D
	Insulation	M
	Leather	M
	Oil	D
	Paint	M
	Paper	D
	Polyamides	M
	Polyethylene	D
	Polypropylene	M
	Polystyrene	M
	Polyurethane	M
	Polyvinyl chloride	D
	Rags and Cloth	D
	Synthetic rubber	D
	Teflon	M
	Tygon tubing	D
	Wood	D
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Aluminum nitrate	T1
	Calcium nitrate	T1
	Hydrogen peroxide	T2
	Potassium dichromate	T
	Potassium permanganate	T2
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	D
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T2

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 116/216
(Continued)

COMBUSTIBLE WASTE

OTHER ORGANICS	
Carboline Neoprene F1 Adhesive Tubegrade	T
Cellusolve	T1
Developer	T1
Dioctyl sebecate	T1
Dykem Blue	T2
Impression casting compound	T
K W Cleaner	T
Karl Fischer Reagent	T1
Mariko	T1
Molykote	T1
Nochar Acid Bond (A660)	M
Nochar Petro Bond (A610)	M
Nye's Watch Oil	T
Scintillation Cocktail	T2
Triple Ionic Strength Adjustment Buffer (TISAB)	T2
Waste Lock 770™	M
WaterWorks Crystals®	M
OTHER INORGANICS	
Asbestos	M
Ceramics	M
Cerium nitrate	T
Chloride salts	T1
Fiberglass	M
Filter media	M
Fuller's Earth	M
Insulation	M
Kathene	T1
Potassium iodide	T1
Silicone	M
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Absorbent polymers	D
Abzorbit	M
AquaSorbe-HP	M
Cement	D
Oil-Dri	D

Refer to Introduction for a description of the designations used in this chemical list.

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Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 117/217

METAL WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	0300 Liquid	T
	Nitric acid	T
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC (Constituents reacted prior to loading in payload containers.)	
	0200 Liquid	T
	Ammonium (Diethylene triamine) pentaacetic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	0100 Liquid	T
	Butanol	T1
	Ethyl alcohol	T
	Isobutyl alcohol	T1
	Methanol	T1
GROUP 7:	AMINES, ALIPHATIC AND AROMATIC	
	Pyridine	T2
GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers.)	
	Ammonia	T
	Ammonium hydroxide	T
	Sodium hydroxide	T
GROUP 11:	CYANIDES	
	Cyanide	T2
GROUP 14:	ETHERS	
	0100 Liquid	T
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers.)	
	0200 Liquid	T
	Calcium fluoride	T
	Sodium fluoride	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Benzene	T1
	Ethyl benzene	T1
	Toluene	T1
	1,2,4-Trimethylbenzene	T1
	1,3,5-Trimethylbenzene	T1
	Xylene	TI

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 117/217
(Continued)

METAL WASTE

GROUP 17:	HALOGENATED ORGANICS	
	0100 Liquid	T
	1,1,1-Trichloroethane	T1
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Carbon tetrachloride	T1
	Chloroform	T1
	Methylene chloride	T1
GROUP 19:	KETONES	
	Acetone	T1
	2-Butanone	T1
	Methyl isobutyl ketone	T1
GROUP 20:	MERCAPTANS AND OTHER ORGANIC SULFIDES	
	Carbon disulfide	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T1
	Lithium	T1
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Nickel	T1
	Selenium	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Antimony	T2
	Cadmium	T1
	Chromium	T1
	Copper	D
	Depleted uranium	D
	Iron	D
	Lead	D
	Selenium	T2
	Steel	D
	Stainless Steel	D
	Tantalum	D
	Tungsten	D
	Zinc-Magnesium Alloy	D

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 117/217
(Continued)

METAL WASTE

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T2
	Arsenic	T2
	Barium	T1
	Beryllium	T
	Boron trifluoride	T
	Cadmium	T1
	Cerium nitrate	T
	Chromium	T1
	Copper	D
	Lead	D
	Mercury	T2
	Nickel	T1
	Potassium permanganate	T
	Selenium	T2
	Silver	T
	Thallium	T2
GROUP 28:	HYDROCARBON, ALIPHATIC UNSATURATED	
	Polypropylene	T
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Cyclohexane	T1
GROUP 31:	PHENOLS AND CRESOLS	
	Phenol	T2
GROUP 33:	SULFIDES, INORGANIC	
	Sulfide	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Celotex (Packaging material)	D
	Insulation	T
	Neoprene	T
	Oil	T
	Paint	T
	Polyamides	T
	Polyethylene (Packaging material)	M
	Polypropylene	T
	Polyurethane	T
	Polyvinyl chloride (Packaging material)	M
	Rubber	T
	Teflon	T
	Wood	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Cerium nitrate	T
	Potassium permanganate	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 117/217
(Continued)

METAL WASTE

GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T1
	Boron trifluoride	T
	Lithium	T1
	Sulfuric acid (>70%)	T
OTHER ORGANICS		
	Carboline Neoprene F1 Adhesive Tubegrade	T
	Dykem Blue	T2
	Firedam Spray fixative coating	T
	Hydroxylamine hydrochloride	T
	Impression compound	T
	K W Cleaner	T
	Mariko	T1
	Nochar Acid Bond	T
	Nochar Petro Bond	T
	Oxalate	T
	Soap	T
	Waste Lock 770™	T
	WaterWorks Crystals®	T
OTHER INORGANICS		
	Asbestos	D
	Ammonium chloride	T
	Ceramics	M
	Fiberglass	M
	Filter media	M
	Fuller's Earth	M
	Glass	M
	Insulation	M
	Kathene	T1
	Silicone	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Abzorbit	M
	AquaSorbe-HP	T
	Oil-Dri	M

Refer to Introduction for a description of the designations used in this chemical list.

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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GLASS WASTE

GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Cyclohexanediaminetetraacetic acid (CDTA)	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethanol	T1
	Ethylene glycol	T1
	Isopropanol	T2
	Methanol	T1
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Potassium hydroxide	T
	Sodium hydroxide	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Benzene	T1
	Ethybenzene	T1
	Toluene	T1
	Xylene	T1
GROUP 17:	HALOGENATED ORGANICS	
	1,2-Dichloroethane	T2
	1,1,1-Trichloroethane	T3
	1,1,2-Trichloro-1,2,2-trifluoroethane	T3
	Carbon tetrachloride	T3
	Chloroform	T1
	Methylene chloride	T1
	Tetrachloroethylene	T2
	Trichloroethylene	T2
GROUP 19:	KETONES	
	Acetone	T1
	2-Butanone	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T2
	Calcium (Metal)	T2
	Magnesium	T2
	Sodium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Magnesium	T2
	Nickel	T2
	Selenium	T2

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 118/218
(Continued)

GLASS WASTE

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	T
	Cadmium	T2
	Chromium	T2
	Copper	T1
	Depleted uranium	M
	Lead	D
	Selenium	T2
	Steel	T
	Tungsten	T
	Zinc-Magnesium Alloy	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Barium	T2
	Beryllium	T1
	Cadmium	T2
	Calcium	T2
	Chromium	T2
	Copper	T1
	Lead	D
	Mercury	T2
	Nickel	T2
	Potassium permanganate	T
	Selenium	T2
	Silver	T2
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Cyclohexane	T1
GROUP 31:	PHENOLS AND CRESOLS	
	2,4,6-Trichlorophenol	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Celotex (Packaging material)	D
	Oil	T
	Polyethylene (Packaging material)	M
	Polyvinyl chloride (Packaging material)	M
GROUP 102:	EXPLOSIVES	
	Calcium (metal)	T2
GROUP 104:	OXIDIZING AGENTS, STRONG (Constituents reacted prior to loading in payload containers.)	
	Potassium permanganate	T
GROUP 105:	REDUCING AGENTS, STRONG	
	Calcium (Metal)	T2
	Sodium	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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(Continued)

GLASS WASTE

GROUP 107:	WATER REACTIVE SUBSTANCES (Constituents reacted prior to loading in payload containers.)	
	Barium	T2
	Calcium (Metal)	T2
	Sodium	T
OTHER ORGANICS		
	Carboline Neoprene F1 Adhesive Tubegrade	T
	Impression compound	T
	Mariko	T1
	Nochar Acid Bond	T
	Nochar Petro Bond	T
	Spent developer	T
	Spent emulsifier	T
	Spent X-ray developer/starter	T
	Trimsol	T
	Triple Ionic Strength Adjustment Buffer (TISAB)	T
	Waste Lock 770™	T
	WaterWorks Crystals®	T
OTHER INORGANICS		
	Calcium chloride	M
	Cesium chloride	M
	Diamond Paste	T
	Glass, labware	D
	Glass, raschig rings	D
	Kathene	T2
	Magnesium chloride	M
	Magnesium oxide	D
	Ceramic (Molds and Crucibles)	D
	Oakite	T1
	Potassium chloride	M
	Silica oxide	D
	Sodium chloride	M
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Absorbent polymers	T
	Cement	D
	Oil-Dri	D

Refer to Introduction for a description of the designations used in this chemical list.

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Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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FILTER WASTE

GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid (Absorbed)	M
	Mineral acids (Absorbed)	M
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Ethyl alcohol	T
	Methanol	T
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Potassium hydroxide	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T
	Potassium fluoride	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Toluene	T2
GROUP 17:	HALOGENATED ORGANICS	
	1,2-Dichloroethane	T2
	1,1,1-Trichloroethane	T1
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Carbon tetrachloride	T1
	Chloroform	T1
	Methylene chloride	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Cadmium	T2
	Chromium	T1
	Depleted uranium	M
	Lead	T1
	Metal cans	D
	Stainless Steel	M
	Tinned steel	M
	Zinc-Magnesium Alloy	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T2
	Beryllium	T2
	Cadmium	T2
	Chromium	T1
	Lead	T1

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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FILTER WASTE

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Celotex (Packaging materials)	D
	Granular activated carbon	M
	Grease	D
	Oil	D
	Polyethylene (Packaging material)	M
	Polypropylene (Ful-Flo Filters)	D
	Polyvinyl chloride (Packaging material)	M
	Wood	D
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted to loading in payload containers.)	
	Hydrogen peroxide	T1
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	D
OTHER ORGANICS		
	Nochar Acid Bond	M
	Nochar Petro Bond	M
	Waste Lock 770™	M
	WaterWorks Crystals®	M
OTHER INORGANICS		
	Fuller's Earth	M
	Grit	T
	HEPA Filters (Or filter media)	D
	Other fiber filters	D
	Other filters	D
	Plenum Prefilters (Fiberglass)	D
	Poly-fiber-wound cartridges	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Absorbent polymers	D
	Abzorbit	M
	AquaSorbe-HP	M
	Oil-Dri	D
	Cement (Hydrated)	D

Refer to Introduction for a description of the designations used in this chemical list.

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ORGANIC SOLID WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	0300 Liquid	T
	Nitric acid	M
	Sulfamic acid	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	0200 Liquid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	0100 Liquid	T
	Butanol	T1
	Ethyl alcohol	T
	Isobutyl alcohol	T1
	Methanol	T1
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonia	T
	Ammonium hydroxide	T
	Potassium hydroxide	T
	Sodium hydroxide	T
GROUP 14:	ETHERS	
	0100 Liquid	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	0200 Liquid	T
	Calcium fluoride	T
	Potassium fluoride	T
	Sodium fluoride	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	1,2,4-Trimethylbenzene	T1
	1,3,5-Trymethylbenzene	T1
	Benzene	T1
	Ethylbenzene	T1
	Toluene	T1
	Xylene	T1

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 121/221
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ORGANIC SOLID WASTE

GROUP 17:	HALOGENATED ORGANICS	
	0100 Liquid	T
	1,1-Dichloroethane	T1
	1,1-Dichloroethene	T1
	1,2-Dichloroethane	T2
	1,2-Dichloroethylene	T1
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	cis-1,2-Dichloroethene	T2
	Carbon tetrachloride	T
	Chloroform	T1
	Methylene chloride	T1
	Tetrachloroethylene	T1
	Trichloroethylene	T1
GROUP 19:	KETONES	
	2-Butanone	T1
	Acetone	T1
GROUP 20:	MERCAPTANS AND OTHER ORGANIC SULFIDES	
	Carbon disulfide	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T1
	Batteries	M
	Lithium	T1
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Nickel	T1
	Selenium	T2

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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(Continued)

ORGANIC SOLID WASTE

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Aluminum alloys	D
	Antimony	T2
	Cadmium	T1
	Chromium	T1
	Copper	D
	Depleted uranium	M
	Graphite	M
	Iron	D
	Lead	D
	Selenium	T2
	Stainless steel	D
	Steel	D
	Tantalum	T
	Tungsten	T
	Zinc-Magnesium Alloy	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T2
	Arsenic	T2
	Barium	T1
	Beryllium	T
	Boron trifluoride	T
	Cadmium	T1
	Cerium nitrate	T
	Chromium	T1
	Copper	D
	Lead	D
	Mercury	T
	Nickel	T1
	Potassium permanganate	T
	Selenium	T2
	Silver	T
GROUP 28:	HYDROCARBON, ALIPHATIC UNSATURATED	
	Polypropylene	M
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Cyclohexane	T1
	Hexane	T1

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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ORGANIC SOLID WASTE

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Asphalt	D
	Benelex	D
	Cardboard	D
	Celotex (Packaging material)	D
	Fiberglass	M
	Filter media	M
	Granular activated carbon	M
	Grease	D
	HEPA filters	M
	Insulation	M
	Ion exchange resin	D
	Leather	T
	Neoprene	M
	Oil	D
	Paint	T
	Phenolic resins	T
	Plexiglass	D
	Polyamides	M
	Polyethylene (Packaging material)	D
	Polymethyl methacrylate	D
	Polypropylene	M
	Polystyrene	M
	Polyurethane	M
	Polyvinyl chloride (Packaging material)	D
	Rags and cloth	D
	Rubber	M
	Teflon	M
	Tygon tubing	M
	Wood	D
GROUP 104:	OXIDIZING AGENTS, STRONG	
	Aluminum nitrate	T1
	Calcium nitrate	T1
	Cerium nitrate	T
	Hydrogen peroxide	T2
	Potassium permanganate	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	D
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T1
	Boron trifluoride	T
	Lithium	T1
	Sulfamic acid	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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(Continued)

ORGANIC SOLID WASTE

OTHER ORGANICS	
Butyl diglyme	T2
Carboline Neoprene F1 Adhesive Tubegrade	T
Firedam spray fixative coating	T
K W Cleaner	T
Mariko	T1
Nochar Acid Bond	M
Nochar Petro Bond	M
Soap	T
Waste Lock 770™	M
WaterWorks Crystals®	M
OTHER INORGANICS	
Asbestos	D
Ash	D
Ceramics	M
Fiberglass	M
Fuller's Earth	M
Glass	D
HEPA filters	M
Insulation	M
Kathene	T1
Sand	D
Silicone	M
Soil	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Abzorbit	M
AquaSorbe-HP	M
Concrete	D
Oil-Dri	D

Refer to Introduction for a description of the designations used in this chemical list.

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Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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SOLID INORGANIC WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T
	Sulfuric acid (<70%)	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Methanol	T1
GROUP 7:	AMINES, ALIPHATIC AND AROMATIC	
	Pyridine	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonia	T
	Ammonium hydroxide	T
	Calcium oxide (Oxidized calcium)	D
	Sodium hydroxide	T
GROUP 11:	CYANIDES	
	Cyanide	T1
GROUP 16:	HYDROCARBONS, AROMATIC	
	Toluene	T2
GROUP 17:	HALOGENATED ORGANICS	
	1,2-Dichloroethane	T2
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T1
	Methylene chloride	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T2
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Nickel	T
	Selenium	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Antimony	T2
	Copper	T
	Depleted uranium	M
	Iron	T
	Iron Tin (Alloy)	M

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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(Continued)

SOLID INORGANIC WASTE

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC. (Continued)	
	Lead	T
	Low carbon steel	M
	Selenium	T2
	Stainless Steel	M
	Tin	T
	Titanium	T
	Zinc-Magnesium Alloy	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T2
	Barium	T2
	Beryllium	T2
	Boron trifluoride	T
	Copper	T
	Lead	T
	Mercury	T2
	Nickel	T
	Potassium dichromate	T
	Potassium permanganate	T
	Selenium	T2
	Silver	T2
	Thallium	T2
	Titanium	T
GROUP 31:	PHENOLS AND CRESOLS	
	Phenol	T2
GROUP 33:	SULFIDES, INORGANIC	
	Sulfide	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Celotex (Packaging material)	D
	Cloth	T
	Leather	T
	Paper	T
	Polyethylene (Packaging material)	M
	Polyvinyl chloride (Packaging material)	M
	Rubber	T
GROUP 104:	OXIDIZING AGENTS, STRONG (Constituents reacted prior to loading in payload containers.)	
	Potassium dichromate	T
	Potassium permanganate	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 122/222
(Continued)

SOLID INORGANIC WASTE

GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T2
	Boron trifluoride	T
	Calcium oxide (Oxidized Calcium)	D
	Sulfuric acid (>70%)	T
OTHER ORGANICS		
	Carboline Neoprene F1 Adhesive Tubegrade	T
	Hydroxylamine hydrochloride	T1
	Mariko	T
	Nochar Acid Bond	T
	Nochar Petro Bond	T
	Waste Lock 770™	T
	WaterWorks Crystals®	T
OTHER INORGANICS		
	Ammonium chloride	T
	Ammonium DTPA	T2
	Asbestos	D
	Crucibles	D
	Fire blankets	D
	Firebrick	D
	Firebrick heel	D
	Fuller's Earth	M
	Glass	D
	Grit	D
	Insulation	D
	Miscellaneous oxides	D
	Oxalate	T
	Sand	D
	Sand (Slag and Crucible heel)	D
	Slag	D
	Soot	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Abzorbit	M
	AquaSorbe-HP	T
	Oil-Dri	D

Refer to Introduction for a description of the designations used in this chemical list.

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LEADED RUBBER

GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers.)	
	Potassium hydroxide	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Toluene	T2
GROUP 17:	HALOGENATED ORGANICS	
	1,2-Dichloroethane	T2
	1,1,1-Trichloroethane	T
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Methylene chloride	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Nickel	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Cadmium	T2
	Chromium	T2
	Depleted uranium	M
	Lead (rubber gloves)	D
	Zinc-Magnesium Alloy	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T2
	Beryllium	T2
	Cadmium	T2
	Chromium	T2
	Lead (Rubber gloves)	D
	Nickel	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Celotex (Packaging material)	D
	Grease	D
	Oil	D
	Polyethylene	T
	Polyvinyl chloride	T
	Rubber gloves (Leaded)	D
OTHER ORGANICS		
	De-Solv-it	T2
	Impression compound	T
	Nochar Acid Bond	M
	Nochar Petro Bond	M
	Waste Lock 770™	M
	WaterWorks Crystals®	M

Refer to Introduction for a description of the designations used in this chemical list.

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Rocky Flats Environmental Technology Site
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Content Code RF 124/224

PYROCHEMICAL SALT WASTE

GROUP 10:	CAUSTICS (Constituents dispersed in chloride salts.)	
	Calcium oxide	M
	Sodium carbonate	M
	Sodium oxide	M
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T3
	Calcium	M
	Magnesium	M
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Aluminum	T1
	Cobalt	T2
	Magnesium	M
	Manganese	T2
	Nickel	T1
	Selenium	T3
	Titanium	T1
	Zinc	T1
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	T1
	Antimony	T2
	Cadmium	T3
	Chromium	T1
	Cobalt	T2
	Copper	T2
	Depleted uranium	M
	Iron	T
	Metal cans (For salt)	M
	Lead	T2
	Manganese	T2
	Selenium	T3
	Titanium	T1
	Zinc	T1
	Zinc-Magnesium Alloy	D

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 124/224
(Continued)

PYROCHEMICAL SALT WASTE

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T2
	Arsenic	T3
	Barium	T3
	Beryllium	T2
	Cadmium	T3
	Calcium	M
	Chromium	T1
	Cobalt	T2
	Copper	T2
	Lead	T2
	Manganese	T2
	Nickel	T1
	Selenium	T3
	Silver	T2
	Strontium	T2
	Thallium	T2
	Titanium	T1
	Vanadium	T2
	Zinc	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Celotex (Packaging material)	D
	Polyethylene (Packaging material)	T
	Polyvinyl chloride (Packaging material)	T
GROUP 102:	EXPLOSIVES	
	Calcium	M
GROUP 105:	REDUCING AGENTS, STRONG	
	Calcium	M
	Phosphorous	T1
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents dispersed in chloride salts.)	
	Barium	T3
	Calcium	M
	Calcium oxide	M
	Phosphorous	T1
	Sodium oxide	M
OTHER ORGANICS		
	Nochar Acid Bond	T
	Nochar Petro Bond	T
	Waste Lock 770™	T
	WaterWorks Crystals®	T

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Content Code RF 124/224
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PYROCHEMICAL SALT WASTE

OTHER INORGANICS	
Calcium chloride	D
Cesium chloride	D
Magnesium chloride	D
Magnesium oxide	M
Magnetite	T
Potassium chloride	D
Sodium chloride	D

Refer to Introduction for a description of the designations used in this chemical list.

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Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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SOLIDIFIED ORGANIC PROCESS SOLIDS

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Hydrofluoric acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T2
	Ethanol	T2
	Isopropanol	T2
	Methanol	T2
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers.)	
	Ammonium fluoride	T
	Hydrofluoric acid	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Ethyl benzene	T2
	Toluene	T2
	Xylene	T2
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T1
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Carbon tetrachloride	T1
	Methylene chloride	T1
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Nickel	T2
	Selenium	T1
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Cadmium	T1
	Chromium	T2
	Depleted uranium	M
	Iron	T2
	Lead	T2
	Metal cans	D
	Selenium	T1
	Zinc-Magnesium Alloy	T

Rocky Flats Environmental Technology Site
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Content Code RF 126/226
(Continued)

SOLIDIFIED ORGANIC PROCESS SOLIDS

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T1
	Beryllium	T1
	Cadmium	T1
	Chromium	T2
	Lead	T2
	Mercury	T1
	Nickel	T2
	Selenium	T1
	Silver	T1
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES, AND PHOSPHODITHIOATES	
	Tributyl phosphate	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Celotex (Packaging material)	D
	Grease	D
	Ion exchange resin	D
	Oil	D
	Polyethylene	T
	Polyvinyl chloride	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	M
OTHER ORGANICS		
	Nochar Acid Bond	M
	Nochar Petro Bond	M
	Waste Lock 770™	M
	WaterWorks Crystals®	M
OTHER INORGANICS		
	Aluminum nitrate	T
	Ferrous sulfamate	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Absorbent polymers	M
	Flocculating agents	T
	Cement (Portland and Magnesia)	D
	Oil-Dry	D

Refer to Introduction for a description of the designations used in this chemical list.

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List of Chemicals and Materials
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Content Code RF 127/227

TRU COMBINED SOLID ORGANICS, SOLID INORGANICS, AND SOLIDIFIED INORGANICS

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric Acid	T
	Sulfuric acid (<70%)	T
	Tetraphosphoric acid	T1
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium (Diethylene triamine) pentaacetic acid	T
	Oxalic acid	T1
	Ethylenediaminetetraacetic acid (EDTA)	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T2
	Ethanol	T2
	Isobutyl alcohol	T1
	Isopropanol	T2
	Methanol	T2
GROUP 7:	AMINES, ALIPHATIC AND AROMATIC	
	Pyridine	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonia	T
	Ammonium hydroxide	T
	Sodium hydroxide	T
GROUP 11:	CYANIDES	
	Cyanide	T1
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T
	Sodium fluoride	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	1,2,4-Trimethylbenzene	T1
	1,3,5-Trimethylbenzene	T1
	Benzene	T1
	Ethyl benzene	T2
	Toluene	T2
	Xylene	T2

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 127/227
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TRU COMBINED SOLID ORGANICS, SOLID INORGANICS, AND SOLIDIFIED INORGANICS*

GROUP 17:	HALOGENATED ORGANICS	
	1,2-Dichloroethane	T2
	1,1,1-Trichloroethane	T2
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Carbon tetrachloride	T2
	Chloroform	T1
	Methylene chloride	T1
	Tetrachloroethylene	T1
	Trichloroethylene	T1
GROUP 19:	KETONES	
	2-Butanone	T1
	Acetone	T1
	Methyl isobutyl ketone	T1
GROUP 20:	MERCAPTANS AND OTHER ORGANIC SULFIDES	
	Carbon disulfide	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T1
	Lithium	T1
	Magnesium	T1
GROUP 22:	METALS OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Magnesium	T1
	Nickel	T1
	Selenium	T1
GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Antimony	T2
	Cadmium	T2
	Chromium	T1
	Copper	D
	Depleted uranium	D
	Iron	T1
	Lead	T
	Selenium	T1
	Steel	D
	Stainless steel	D
	Tantalum	D
	Tungsten	D
	Zinc-Magnesium Alloy	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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(Continued)

TRU COMBINED SOLID ORGANICS, SOLID INORGANICS, AND SOLIDIFIED INORGANICS*

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T2
	Arsenic	T1
	Barium	T1
	Beryllium	T2
	Cadmium	T2
	Cerium nitrate	D
	Chromium	T1
	Copper	D
	Lead	T
	Mercury	T1
	Nickel	T1
	Potassium permanganate	T
	Selenium	T1
	Silver	T
	Thallium	T2
GROUP 28:	HYDROCARBON, ALPHATIC, SATURATED	
	Polypropylene	T
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Cyclohexane	T1
GROUP 31:	PHENOLS AND CRESOLS	
	Phenol	T2
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	T3
GROUP 33:	SULFIDES, INORGANIC	
	Sulfide	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulose	D
	Celotex (Packaging material)	D
	Grease	D
	Oil	D
	Polyethylene	D
	Polyethylene (Packaging material)	M
	Polypropylene	D
	Polyvinyl chloride	D
	Polyvinyl chloride (Packaging material)	M
	Resin	T
GROUP 104:	OXIDIZING AGENTS, STRONG (Constituents reacted prior to loading in payload containers.)	
	Cerium nitrate	D
	Potassium permanganate	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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(Continued)

TRU COMBINED SOLID ORGANICS, SOLID INORGANICS, AND SOLIDIFIED INORGANICS*

GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures (Fixed in matrix)	T
	Sludge (Fixed in matrix)	D
	Water	D
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T1
	Lithium	T1
	Sulfuric acid (>70%)	T
OTHER ORGANICS		
	Dykem Blue	T2
	Firedam Spray fixative coating	T
	Flocculating agent (Polyelectrolyte)	T
	Hydroxylamine hydrochloride	T
	Impression compound	T
	KW Cleaner	T
	Mariko	T1
	Nochar Acid Bond	D
	Nochar Petro Bond	M
	Oxalate	T
	Soap	T
	Waste Lock 770™	D
	WaterWorks Crystals®	D
OTHER INORGANICS		
	Ammonium chloride	T
	Asbestos	D
	Firebrick	T
	Fuller's Earth	M
	Glass	T
	Insulation	T
	Kathene	T1
	Molds and Crucibles	T
	Soot	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Abzorbit	D
	Diatomite	D
	Oil-Dry	D
	Portland Cement (Hydrated)	D
	Ramcote Cement (Hydrated)	D

Refer to Introduction for a description of f the designations used in this chemical list.

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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SOLID INORGANIC WITH RESIDUAL ORGANIC WASTE*

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	0300 Liquid	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	0200 Liquid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	0100 Liquid	T
	Butanol	T2
	Methanol	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium oxide	M
	Potassium hydroxide	T1
	Sodium carbonate	M
	Sodium oxide	M
GROUP 14:	ETHERS	
	0100 Liquid	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	0200 Liquid	T
	Calcium fluoride	M
	Sodium fluoride	T1
GROUP 16:	HYDROCARBONS, AROMATIC	
	Aromatic polyamide fibers	T1
	Benzene	T1
	Toluene	T2
	Xylene	T2
GROUP 17:	HALOGENATED ORGANICS	
	0100 Liquid	T
	1,2-Dichloroethane	T2
	1,1,1-Trichloroethane	T1
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Carbon tetrachloride	T1
	Chloroform	T1
	Methylene chloride	T1
GROUP 20:	MERCAPTANS AND OTHER ORGANIC SULFIDES	
	Carbon disulfide	T1

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 130/230
(Continued)

SOLID INORGANIC WITH RESIDUAL ORGANIC WASTE*

GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T3
	Calcium	M
	Magnesium	M
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Aluminum	T1
	Cobalt	T2
	Magnesium	M
	Manganese	T2
	Nickel	T1
	Selenium	T3
	Titanium	T1
	Zinc	T1
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Aluminum alloys	D
	Antimony	T2
	Cadmium	T2
	Chromium	T1
	Cobalt	T2
	Copper	M
	Depleted uranium	M
	Graphite	T
	Iron	D
	Lead	D
	Low carbon steel	M
	Manganese	T2
	Selenium	T3
	Titanium	T1
	Zinc	T1
	Zinc-Magnesium Alloy	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 130/230
(Continued)

SOLID INORGANIC WITH RESIDUAL ORGANIC WASTE*

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T2
	Arsenic	T2
	Barium	T3
	Beryllium	T
	Boron trifluoride	T
	Cadmium	T2
	Calcium	M
	Cerium nitrate	T
	Chromium	T1
	Cobalt	T2
	Copper	M
	Lead	D
	Manganese	T2
	Metal cans	D
	Nickel	T1
	Potassium dichromate	T
	Selenium	T3
	Silver	T2
	Strontium	T2
	Thallium	T2
	Titanium	T1
	Vanadium	T2
	Zinc	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Adhesive	T
	Celotex (Packaging material)	D
	Epoxy	T
	Grease	D
	Insulation	M
	Leather	T
	Neoprene	M
	Oil	D
	Paint	M
	Paper	M
	Polyethylene (Packaging material)	T
	Polyurethane sealant (Or other sealant)	T
	Polyvinyl chloride (Packaging material)	T
	Rags and Cloth	M
	Synthetic rubber	M
	Teflon	M
	Thermoset vinyl	T
	Wood	M
GROUP 102:	EXPLOSIVES	
	Calcium	M

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 130/230
(Continued)

SOLID INORGANIC WITH RESIDUAL ORGANIC WASTE*

GROUP 104:	OXIDIZING AGENTS, STRONG	
	Aluminum nitrate	T1
	Cerium nitrate	T
	Potassium dichromate	T
GROUP 105:	REDUCING AGENTS, STRONG	
	Calcium	M
	Phosphorous	T1
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	M
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T3
	Boron trifluoride	T
	Calcium	M
	Calcium oxide	M
	Phosphorous	T1
	Sodium oxide	M
OTHER ORGANICS		
	Carboline Neoprene F1 Adhesive Tubegrade	T
	Firedam spray fixative coating	T
	Nochar Acid Bond	M
	Nochar Petro Bond	M
	Waste Lock 770™	M
	WaterWorks Crystals®	M

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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SOLID INORGANIC WITH RESIDUAL ORGANIC WASTE*

OTHER INORGANICS	
Asbestos	M
Ash	D
Ash heel	D
Calcium chloride	D
Ceramics	M
Cesium chloride	D
Fiberglass	D
Filter media	D
Firebrick	D
Fuller’s Earth	M
Grit	D
Glass	D
HEPA Filters	D
Insulation	M
Magnesium chloride	D
Magnesium oxide	M
Magnetite	T
Other filters	D
Oxides	D
Potassium chloride	D
Sand	D
Silicone	M
Slag	D
Sodium chloride	D
Soot	D
Soot heel	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Absorbent polymers	M
Abzorbit	M
Aquasorbe-HP	M
Cement	D
Glass	D
Oil-Dri	D

Refer to Introduction for a description of the designations used in this chemical list.

*The sum of the concentrations of water and organic materials must be less than or equal to 10 weight percent of the total waste.

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Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 131/231

SOLID INORGANIC WASTE (GREATER THAN TRACE QUANTITIES OF BERYLLIUM)

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium (Diethylene triamine) pentaacetic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T1
	Ethyl alcohol	T
	Isobutyl alcohol	T1
	Methanol	T1
GROUP 7:	AMINES, ALIPHATIC AND AROMATIC	
	Pyridine	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonia	T
	Ammonium hydroxide	T
	Sodium hydroxide	T
GROUP 11:	CYANIDES	
	Cyanide	T2
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T
	Sodium fluoride	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Benzene	T1
	Ethyl benzene	T1
	Toluene	T1
	1,2,4-Trimethylbenzene	T1
	1,3,5-Trimethylbenzene	T1
	Xylene	TI
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T1
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Carbon tetrachloride	T1
	Chloroform	T1
	Methylene chloride	T1

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 131/231
(Continued)

SOLID INORGANIC WASTE (GREATER THAN TRACE QUANTITIES OF BERYLLIUM)

GROUP 19:	KETONES	
	Acetone	T1
	2-Butanone	T1
	Methyl isobutyl ketone	T1
GROUP 20:	MERCAPTANS AND OTHER ORGANIC SULFIDES	
	Carbon disulfide	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T1
	Lithium	T1
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Nickel	T1
	Selenium	T2
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Antimony	T2
	Cadmium	T1
	Chromium	T1
	Copper	D
	Depleted uranium	D
	Iron	D
	Lead	D
	Selenium	T2
	Steel	D
	Stainless Steel	D
	Tantalum	D
	Tungsten	D
	Zinc-Magnesium Alloy	D

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 131/231
(Continued)

SOLID INORGANIC WASTE (GREATER THAN TRACE QUANTITIES OF BERYLLIUM)

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Antimony	T2
	Arsenic	T2
	Barium	T1
	Beryllium	D
	Boron trifluoride	T
	Cadmium	T1
	Chromium	T1
	Copper	D
	Lead	D
	Mercury	T2
	Nickel	T1
	Potassium permanganate	T
	Selenium	T2
	Silver	T
	Thallium	T2
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Cyclohexane	T1
GROUP 31:	PHENOLS AND CRESOLS	
	Phenol	T2
GROUP 33:	SULFIDES, INORGANIC	
	Sulfide	T1
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Celotex (Packaging material)	D
	Oil	T
	Polyethylene (Packaging material)	M
	Polyvinyl chloride (Packaging material)	M
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Potassium permanganate	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T1
	Boron trifluoride	T
	Lithium	T1
	Sulfuric acid (>70%)	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 131/231
(Continued)

SOLID INORGANIC WASTE (GREATER THAN TRACE QUANTITIES OF BERYLLIUM)

OTHER ORGANICS	
Carboline Neoprene F1 Adhesive Tubegrade	T
Dykem Blue	T2
Firedam Spray fixative coating	T
Hydroxylamine hydrochloride	T
Impression compound	T
K W Cleaner	T
Mariko	T1
Nochar Acid Bond	T
Nochar Petro Bond	T
Oxalate	T
Soap	T
Waste Lock 770™	T
WaterWorks Crystals®	T
OTHER INORGANICS	
Asbestos	D
Ammonium chloride	T
Kathene	T1
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Oil-Dri	M

Refer to Introduction for a description of the designations used in this chemical list.

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 132/232

SOLIDIFIED AQUEOUS WASTE/SLUDGE WASTE
(GREATER THAN ONE WEIGHT PERCENT BERYLLIUM)

GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Tetraphosphoric acid	T1
GROUP 3:	ACIDS, ORGANIC (Constituents reacted prior to loading in payload containers.)	
	Oxalic acid	T1
	Ethylenediaminetetraacetic acid (EDTA)	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T2
	Ethanol	T2
	Isopropanol	T2
	Methanol	T2
GROUP 11:	CYANIDES	
	Cyanide	T1
GROUP 16:	HYDROCARBONS, AROMATIC	
	Benzene	T1
	Ethyl benzene	T2
	Toluene	T2
	Xylene	T2
GROUP 17:	HALOGENATED ORGANICS	
	1,2-Dichloroethane	T2
	1,1,1-Trichloroethane	T2
	1,1,2-Trichloro-1,2,2-trifluoroethane	T1
	Carbon tetrachloride	T2
	Methylene chloride	T1
	Tetrachloroethylene	T1
	Trichloroethylene	T1
GROUP 19:	KETONES	
	Acetone	T1
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	Barium	T1
	Magnesium	T1
GROUP 22:	METALS OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Magnesium	T1
	Selenium	T1

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
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Content Code RF 132/232
(Continued)

SOLIDIFIED AQUEOUS WASTE/SLUDGE WASTE
(GREATER THAN ONE WEIGHT PERCENT BERYLLIUM)

GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Cadmium	T2
	Depleted uranium	M
	Iron	T1
	Lead	T
	Selenium	T1
	Zinc-Magnesium Alloy	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T1
	Barium	T1
	Beryllium	M
	Cadmium	T2
	Lead	T
	Mercury	T1
	Selenium	T1
GROUP 28:	HYDROCARBON, ALPHATIC, SATURATED	
	Polypropylene	T
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	T3
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulose	T
	Celotex (Packaging material)	D
	Polyethylene (Packaging material)	M
	Polypropylene	T
	Polyvinyl chloride (Packaging material)	M
	Resin	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures (Fixed in matrix)	T
	Sludge (Fixed in matrix)	D
	Water	D
GROUP 107:	WATER REACTIVE SUBSTANCES (Constituents reacted prior to loading in payload containers.)	
	Barium	T1
OTHER ORGANICS		
	Flocculating agent (Polyelectrolyte)	T
	Nochar Acid Bond	T
	Waste Lock 770™	T
	WaterWorks Crystals®	T

Rocky Flats Environmental Technology Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RF 132/232
(Continued)

SOLIDIFIED AQUEOUS WASTE/SLUDGE WASTE
(GREATER THAN ONE WEIGHT PERCENT BERYLLIUM)

OTHER INORGANICS	
Firebrick	T
Fuller's Earth	M
Glass	T
Insulation	T
Molds and Crucibles	T
Soot	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Abzorbit	M
Diatomite	D
Oil-Dry	D
Portland Cement (Hydrated)	D
Ramcote Cement (Hydrated)	D

Refer to Introduction for a description of the designations used in this chemical list.

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Richland Hanford
List of Chemicals and Materials
in TRU Waste Content Codes

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SOLIDIFIED INORGANIC PROCESS SOLIDS AND SOLIDIFIED SS&C RESIDUES

GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to closure of payload containers.)	
	Nitric acid	D
	Plutonium nitrates (Pu/U, Pu/Th, Pu/Eu)	D
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butyl alcohol	T
GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers.)	
	Calcium oxide	M
	Sodium hydroxide	T
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	D
	Sodium fluoride	T2
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL (Constituents reacted prior to loading in payload containers.)	
	Calcium	M
	Barium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Aluminum	M
	Nickel	T
	Selenium	T
	Uranium	M
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Cadmium	T
	Chromium	D
	Copper	T
	Iron (Including Cemented Sludges)	T2
	Lead	T
	Selenium	T
	Silver	T2
	Uranium	M

Richland Hanford
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RH 111/211
(Continued)

SOLIDIFIED INORGANIC PROCESS SOLIDS AND SOLIDIFIED SS&C RESIDUES

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T
	Barium	T
	Beryllium	T2
	Boron	T
	Cadmium	T
	Calcium	T
	Chromium	D
	Copper	T
	Gadolinium	T
	Lead	T
	Mercury	T
	Nickel	D
	Plutonium nitrates (Pu/U, Pu/Th, Pu/Eu)	D
	Selenium	T
	Silver	T2
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES, AND PHOSPHODITHIOATES	
	Dibutyl phosphate	T
	Monobutyl phosphate	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Camel hair brush bristles	T
	Nylon brush bristles	T
	Polyethylene (Packaging material)	D
	Polyvinyl chloride (Packaging material)	D
GROUP 104:	OXIDIZING AGENTS, STRONG (Constituents reacted prior to loading in payload containers.)	
	Aluminum nitrate nanohydrate	T
	Sodium nitrate	T
GROUP 105:	REDUCING AGENTS, STRONG (Constituents reacted prior to loading in payload containers.)	
	Calcium	M
GROUP 106:	WATER AND MIXTURES CONTAING WATER	
	Aqueous solutions and mixtures	T
	Sludge	D
GROUP 107:	WATER REACTIVE SUBSTANCES (Constituents reacted prior to loading in payload containers.)	
	Barium	T
	Calcium oxide	M

Richland Hanford
List of Chemicals and Materials
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Content Code RH 111/211
(Continued)

SOLIDIFIED INORGANIC PROCESS SOLIDS AND SOLIDIFIED SS&C RESIDUES

OTHER INORGANICS	
Ash (ash bottoms, fly ash, soot)	T
Calcium iodide	D
Chlorides	T
Clay	T
Clean Up, Taft (amorphous silica)	D
Concrete and Graphite molds	T
Fiberglass and Fiberglass filter media	T
Firebrick	T
Glass	D
Grit	T
Heel (ash heel, soot heel, firebrick heel, sand, slag, and crucible heel)	T
Insulation	T
Magnesium hydroxide	T
Magnesium oxide	D
Manganese oxide	T1
Plutonium oxide	T
Sand, Slag, and Crucible pieces	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Bentonite	D
Celite	T
Diatomaceous Earth	T
Diatomite	T
Florco	T
Oil-Dri	T
Perlite	M
Petroset	T
Portland cement	D
Vermiculite	T

Refer to Introduction for a description of the designations used in this chemical list.

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Richland Hanford
List of Chemicals and Materials
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SOLIDIFIED ORGANICS

GROUP 16:	HYDROCARBONS, AROMATIC	
	Trimethylbenzene	D
	Xylene	D
GROUP 17:	HALOGENATED ORGANICS	
	Carbon tetrachloride	D
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC	
	Iron	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Chromium	D
	Nickel	D
GROUP 29:	HYDROCARBONS, ALIPHATIC, SATURATED	
	N-Paraffin hydrocarbons (NPH)	D
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	D
	Trioctyl phosphine oxide	D
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Polyethylene (Packaging material)	M
	Polyvinyl chloride (Packaging material)	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Conwed pads	D
	Non-ionic detergent	D

Refer to Introduction for a description of the designations used in this chemical list.

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Richland Hanford
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RH 114/214

SOLIDIFIED INORGANIC PROCESS SOLIDS AND SOLIDIFIED SS&C RESIDUES

GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	D
GROUP 10:	CAUSTIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium oxide	D
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	D
	Sodium fluoride	T2
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL	
	Calcium	D
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Chromium	D
	Iron (Cemented sludges)	T2
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Calcium	D
	Chromium	D
	Nickel	D
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Camel hair brush bristles	T
	Nylon brush bristles	T
	Polyethylene (Packaging material)	D
	Polyvinyl chloride (Packaging material)	D
GROUP 102:	EXPLOSIVES	
	Calcium	D
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Aluminum nitrate nanohydrate	T
	Sodium nitrate	T
GROUP 105:	REDUCING AGENTS, STRONG	
	Calcium	D
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T
	Sludge	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	D
	Calcium oxide	D

Richland Hanford
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RH 114/214
(Continued)

SOLIDIFIED INORGANIC PROCESS SOLIDS AND SOLIDIFIED SS&C RESIDUES

OTHER INORGANICS	
Calcium iodide	D
Glass	D
Magnesium oxide	D
Sand, Slag, and Crucible pieces	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Portland Cement	D

Refer to Introduction for a description of the designations used in this chemical list.

Richland Hanford
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RH 117/217

TRU METAL WASTE

GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Nickel	T
	Zirconium	M
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum alloys	D
	Cadmium	T
	Carbon steel	D
	Iron	T
	Lead	D
	Zirconium	M
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Cadmium	T
	Chromium	D
	Lead	D
	Nickel	D
	Zirconium	M
OTHER INORGANICS		
	Cryolite	M
	Magnesium oxide	T
	Silica	T
	Stainless steel	D
OTHER ORGANICS		
	Amercoat	T

Refer to Introduction for a description of the designations used in this chemical list.

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Richland Hanford
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RH 122/222

SOLID INORGANIC WASTE

GROUP 10:	CAUSTICS	
	Calcium Oxide (Oxidized calcium)	D
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL	
	Barium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Nickel	T1
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Cadmium	T2
	Calcium	T
	Chromium	T
	Lead	T1
	Tin	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Barium	T
	Beryllium	T1
	Cadmium	T2
	Chromium	T
	Lead	T1
	Nickel	T1
	Silver	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Celotex (Packaging material	D
	Polyethylene (Packaging material)	M
	Polyvinyl chloride (Packaging material)	M
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T
	Calcium oxide (Oxidized calcium)	D
OTHER INORGANICS		
	Crucibles	D
	Plutonium	T
	Plutonium oxide	D
	Sand	D
	Sand (Slag and crucible heel)	D
	Slag	D
	Uranium oxide	D

Refer to Introduction for a description of the designations used in this chemical list.

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Richland Hanford
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RH 123/223

TRU LEADED RUBBER

GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T1
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Lead (Encapsuled)	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Lead	D
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	T2
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cloth	D
	Polyethylene	M
	Polyvinyl chloride	M
	Rubber gloves (Leaded)	D
OTHER INORGANICS		
	Asbestos	D
	Leaded glass	M
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Diatomaceous Earth	D

Refer to Introduction for a description of the designations used in this chemical list.

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Richland Hanford
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RH 125/225

TRU MIXED PAPER, METAL, AND GLASS

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T
	Sulfamic acid	T
	Sulfuric acid (<70%)	T1
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T
	Benzyl butyl ester phthalic acid	T1
	Formic acid	T
	Methyl ester methacrylic acid	T
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	2-Butoxyethanol	T
	Butyl alcohol	T
	Ethanol	T
	Isopropyl alcohol	T
GROUP 7:	AMINES, ALIPHATIC AND AROMATIC	
	Ethanolamine	T
	Triheptylamine	T
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonia (Ammonium hydroxide)	T
	Calcium hydroxide	D
	Potassium hydroxide	M
	Sodium carbonate	T
	Sodium hydroxide	M
	Trioctylphosphinic oxide	T
GROUP 11:	CYANIDES	
	Cuprous cyanide	T
	Cyanide	T
	Potassium cyanide	T
	Sodium cyanide	T
GROUP 13:	ESTERS	
	Bis(2-Ethylhexyl) phthalate	T
	Di-n-octyl phthalate	T

Richland Hanford
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RH 125/225
(Continued)

TRU MIXED PAPER, METAL, AND GLASS

GROUP 15:	FLUORIDES	
	Calcium fluoride	D
	Potassium fluoride	T1
	Sodium fluoride	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Benzene	T
	Bis(2-Ethylhexyl) phthalate	T
	Di-n-octyl phthalate	T
	1,2,4-Trimethylbenzene	T
	Xylene	T
GROUP 17:	HALOGENATED ORGANICS	
	1,1-Dichloroethylene	T1
	1,2-Dichloroethane	T1
	1,1,1-Trichloroethane	T
	Carbon tetrachloride	T
	Chloroform	T
	Chloroethylene	T1
	Dichloromethane	T
	Heptachlor	T
	Hexachlorobutadiene	T1
	Hexachloroethane	T1
	Polychlorinated biphenyls	T1*
	Tetrachloroethylene	T1
	Trichloroethene	T
GROUP 19:	KETONES	
	4-Methyl-2-pentanone	T
	Acetone	T
	Methyl ethyl ketone	T
	Trenoyltrifluoroacetone	T
GROUP 21:	METALS, ALKALI, AND ALKALINE EARTH, ELEMENTAL (Constituents reacted prior to loading in payload containers.)	
	Barium	T
	Batteries	M
	Lithium	M
	Sodium	T

*Polychlorinated biphenyl concentration is less than 50 ppm

Richland Hanford
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RH 125/225
(Continued)

TRU MIXED PAPER, METAL, AND GLASS

GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Aluminum	M
	Nickel	T
	Selenium	T
	Zirconium	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Aluminum Alloys	D
	Cadmium	M
	Carbon Steel	D
	Chromium	M
	Copper	M
	Iron	D
	Lead (Encapsuled)	D
	Selenium	T
	Silver	T
	Stainless Steel	D
	Zirconium	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T1
	Barium	T
	Beryllium	T
	Cadmium	M
	Chromic oxide	T
	Chromium	M
	Copper	M
	Copper sulfate	T
	Cuprous cyanide	T
	Lead	D
	Lead chromate	M
	Mercury	M
	Molybdic acid	T
	Nickel	T
	Selenium	T
	Silver	T
	Silver oxide	T
	Vanadium pentoxide	T
	Zirconium	T
GROUP 28:	HYDROCARBONS, ALIPHATIC, UNSATURATED (ALL ISOMERS)	
	Polypropylene	M
GROUP 29:	HYDROCARBONS, ALIPHATIC, SATURATED	
	Cyclohexane	T

Richland Hanford
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RH 125/225
(Continued)

TRU MIXED PAPER, METAL, AND GLASS

GROUP 31:	PHENOLS, CREOSOLS	
	Creosol	T
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES, PHOSPHODITHIOATES	
	Di-butyl phosphate	M
	Monobutyl phosphite	M
	Tributyl phosphate	D
GROUP 34:	EPOXIDES	
	1-Butoxyl-2,3-Epoxy-Propane	T
GROUP 101:	COMBUSTIBLES AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Asphalt	D
	Bakelite	M
	Cork	M
	Kerosene	T
	Leather	M
	Naphtha	M
	Oil products	D
	Paper products	D
	Plastic	D
	Plexiglas/Lucite	D
	Polyamides (Nylon)	M
	Polyethylene	D
	Polypropylene	M
	Polyurethane	M
	Polyvinyl chloride	M
	Rags and Cloth	D
	Rope	M
	Rubber products	D
	Rubber gloves (Leaded)	D
	Synthetic rubber	D
	Tape	M
	Teflon	M
	Waxes and Greases	D
	Wood	D
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Sodium nitrate	T
GROUP 105:	REDUCING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Sodium	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Water (Absorbed)	M

Richland Hanford
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RH 125/225
(Continued)

TRU MIXED PAPER, METAL, AND GLASS

GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Barium	T
	Lithium	M
	Sodium	T
	Sulfuric acid (>70%)	T1
OTHER INORGANICS		
	Aluminum oxide	T
	Ammonium chloride	T1
	Asbestos	D
	Calcium chlorofluorophosphate	T
	Clays	D
	Cryolite	M
	Dipotassium dichromate	T1
	Ferrous ammonium sulfate	T1
	HEPA Filters	D
	Glass	D
	Leaded glass	M
	Paint	D
	Salts	D
	Sand	D
	Silver chloride	M
	Sodium bisulfate	T1
	Sodium chloride	T1
	Sodium sulfate	T
	Soil	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Concrete	D
	Diatomaceous Earth	D
	Kitty Litter	D
	Perlite	D
	Portland Cement	D
	Vermiculite	D

Refer to Introduction for a description of the designations used in this chemical list.

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Richland Hanford
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RH 130/230

SOLID INORGANIC WITH RESIDUAL ORGANIC WASTE

GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T2
	Methanol	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Sodium hydroxide	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium fluoride	T1
	Sodium fluoride	T1
GROUP 16:	HYDROCARBONS, AROMATIC	
	Xylene	T2
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T1
	1,1,2-Trichloro-1,2,2-Trifluoroethane	T1
	Carbon tetrachloride	T2
	Methylene chloride	T2
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Nickel	T
	Zirconium	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Aluminum alloys	D
	Iron	T
	Low carbon steel	M
	Zirconium	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Lead	T1
	Nickel	T
	Zirconium	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulose	M
	Paper	M
	Plastic (*Specify if known)	M
	Rags and cloth	M
	Synthetic rubber	M
	Wood	M
GROUP 106:	WATER AND MIXTURES CONTAING WATER	
	Water	T

Richland Hanford
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code RH 130/230
(Continued)

SOLID INORGANIC WITH RESIDUAL ORGANIC WASTE

OTHER INORGANICS	
Asbestos	T
Ash	D
Ash heel	D
Carbon alloys	M
Cryolite	M
Fiberglass filter media	D
Oxides	D
Silica	T
Soot	D
Soot heel	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Glass	D
Oil-Dri	M

Refer to Introduction for a description of the designations used in this chemical list.

Sandia National Laboratories/California
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SL 111/211

ADSORBED/SOLIDIFIED TRITIUM CONTAMINATED LIQUID WASTE

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Stainless Steel	M
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Superfine or Florco Clay	D

Refer to Introduction for a description of the designations used in this chemical list.

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Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 111/211

SOLIDIFIED AQUEOUS OR HOMOGENEOUS INORGANIC SOLID WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING (Constituents reacted prior to loading in payload containers)	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers)	T
GROUP 3:	ACIDS, ORGANIC (Constituents reacted prior to loading in payload containers)	T
GROUP 4:	ALCOHOLS AND GLYCOLS	T
GROUP 8:	AZO COMPOUNDS, DIAZO COMPOUNDS, AND HYDRAZINES	T
GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers)	
	Ammonium hydroxide	T1
	Potassium hydroxide	D
	Sodium carbonate	T
	Sodium hydroxide	D
	Sodium hypochlorite	T1
GROUP 11:	CYANIDES	T2
GROUP 13:	ESTERS	T2
GROUP 14:	ETHERS	T
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers)	T
GROUP 16:	HYDROCARBONS, AROMATIC	T
GROUP 17:	HALOGENATED ORGANICS	T
GROUP 18:	ISOCYANATES	T2
GROUP 19:	KETONES	T
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS (Constituents reacted prior to loading in payload containers)	
	Magnesium	T2
	Sodium	T2

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 111/211
(Continued)

SOLIDIFIED AQUEOUS OR HOMOGENEOUS INORGANIC SOLID WASTE

GROUP 22:	METALS OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Aluminum	T1
	Cobalt	T2
	Magnesium	T2
	Manganese	T2
	Mercury (Vapor)	T1
	Nickel	T2
	Thorium	M
	Titanium	D
	Uranium	T
	Zirconium	T1
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	T1
	Cadmium	T2
	Chromium	T2
	Cobalt	T2
	Copper	T1
	Iron	T
	Lead	T1
	Manganese	T
	Metal cans	D
	Reduced metal alloys	D
	Selenium	T2
	Silver	T2
	Stainless Steel	D
	Thorium	M
	Tin	T1
	Titanium	T2
	Uranium	T
	Zirconium	D

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 111/211
(Continued)

SOLIDIFIED AQUEOUS OR HOMOGENEOUS INORGANIC SOLID WASTE

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Beryllium	T
	Cadmium	D
	Chromium	T2
	Cobalt	T2
	Copper	T1
	Lead	D
	Manganese	T
	Mercury	T
	Nickel	D
	Silver nitrate	T2
	Selenium	T2
	Silver	T2
	Strontium	T2
	Thorium	M
	Titanium	T2
	Uranium	T
	Zirconium	T1
GROUP 25:	NITRIDES	T2
GROUP 28:	HYDROCARBON, ALIPHATIC, UNSATURATED	T
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	T
GROUP 30:	PEROXIDES AND HYDROPEROXIDES, ORGANIC	T
	(Constituents reacted prior to loading in payload containers)	
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Carbon	M
GROUP 103:	POLYMERIZABLE COMPOUNDS	T
	(Constituents reacted prior to loading in payload containers)	
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers)	
	Hydrogen peroxide	T2
	Silver nitrate	T2
	Sodium hypochlorite	T1
	Sodium nitrate	D
GROUP 105:	REDUCING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers)	
	Phosphorous	T
	Sodium	T2

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 111/211
(Continued)

SOLIDIFIED AQUEOUS OR HOMOGENEOUS INORGANIC SOLID WASTE

GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	M
	Water	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers)	
	Aluminum chloride	D
	Phosphorous	T
	Sodium	T2
OTHER INORGANICS		
	Ash	D
	Calcium chloride	M
	Ferric hydroxide	M
	Nitrate salts	D
	Refractory	D
	Sand	M
	Silicon	T1
	Slag	D
	Soil	D
	Zeolite	D
OTHER ORGANICS		T
OTHER SOLIDIFICATION MATERIALS/ABSORBENT		
	Aquaset/Petroset	D
	Cement	D
	Diatomaceous Earth	D
	Envirostone	D
	Florco	M
	Oil-Dri	D
	Portland Cement	D
	Radsorb	M
	Sludge	D
	Superfine or Florco Clay	D
	Surfactants	T
	Vermiculite	D

Refer to Introduction for a description of the designations used in this chemical list.

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 112/212

SOLIDIFIED ORGANIC WASTE

GROUP 3:	ACIDS, ORGANIC (Constituents reacted prior to loading in payload containers)	D
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	D
	Ethanol	D
	Isopropanol	D
	Methanol	D
GROUP 13:	ESTERS	
	Ethyl acetate	M
GROUP 16:	HYDROCARBONS, AROMATIC	
	Ethyl benzene	M
	Toluene	M
	Trimethylbenzene	D
	Xylene	M
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	D
	1,1,2-Trichloro-1,2,2-trifluoroethane	D
	Carbon tetrachloride	D
	Chloroform	D
	Methylene chloride	D
	Trichloroethylene	D
GROUP 19:	KETONES	
	Acetone	D
	Methyl ethyl ketone	M
	Methyl isobutyl ketone	M
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS, IN THE FORM OF POWDERS, VAPORS OR SPONGES	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	T
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	N-Paraffin hydrocarbons (NPH)	D
	Oil (Absorbed)	D
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	D
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Grease	M
	Hydraulic oil	D
	Mineral oil	D
	Oil (Absorbed)	D
	Polyethylene (Packaging material)	D
	Polyethylene glycol	D
	Polyvinyl chloride (Packaging material)	D

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 112/212
(Continued)

SOLIDIFIED ORGANIC WASTE

GROUP 106: WATER AND MIXTURES CONTAINING WATER	T
OTHER INORGANICS	
Calcium silicate	D
Potassium sulfate	D
OTHER SOLIDIFICATION MATERIALS/ABSORBENT	
Concrete	D
Diatomaceous Earth	D
Envirostone	D
Magnesia Cement (Hydrated)	D
Portland Cement	D
Sludge	D

Refer to Introduction for a description of the designations used in this chemical list.

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 114/214

CEMENTED INORGANIC PROCESS SOLIDS

GROUP 4:	ALCOHOLS AND GLYCOLS	T
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers)	T
GROUP 16:	HYDROCARBONS, AROMATIC	T
GROUP 17:	HALOGENATED ORGANICS	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Low Carbon Steel	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	T
OTHER INORGANICS		
	Clay (Bentonite)	D
	Firebrick	D
	Grit	D
	Sand	D
	Slag	D
	Sodium chloride	D
	Soot	D
OTHER SOLIDIFICATION MATERIALS/ABSORBENT		
	Concrete (Cemented sludges)	D
	Portland Cement (Hydrated)	D

Refer to Introduction for a description of the designations used in this chemical list.

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Small Quantity Site
List of Chemicals and Materials
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Content Code SQ 120/220

TRU ISOTOPIC SOURCE WASTE

GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers.)	
	Sodium oxide	T
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS (Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Magnesium	T
	Potassium	T
	Sodium	T
GROUP 22:	METALS OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	
	Aluminum	D
	Cobalt	T
	Bismuth	T
	Beryllium	T
	Magnesium	T
	Manganese	T
	Molybdenum	T
	Nickel	T
	Titanium	D
	Zinc	T
	Zirconium	D

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 120/220
(Continued)

TRU ISOTOPIC SOURCE WASTE

GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Americium (Foil, wire)	D
	Aluminum	T
	Bismuth	T
	Boron	T
	Cadmium	T
	Chromium	T
	Cobalt	T
	Copper	T
	Hastelloy-C	T
	Iron	T
	Manganese	T
	Molybdenum	T
	Lead	T
	Platinum	T
	Silicon	T
	Stainless Steel	D
	Steel	D
	Tungsten	D
	Tungsten (Alloy)	D
	Titanium	D
	Tin	D
	Tantalum	D
	Zirconium	D
	Zinc	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Beryllium	T
	Bismuth	T
	Cadmium	T
	Calcium	T
	Chromium	T
	Cobalt	T
	Copper	T
	Lead	T
	Manganese	T
	Molybdenum	T
	Nickel	T
	Titanium	D
	Zinc	T
	Zirconium	D

Small Quantity Site
List of Chemicals and Materials
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Content Code SQ 120/220
(Continued)

TRU ISOTOPIC SOURCE WASTE

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Grease	T
	Nitrile rubber gloves	T
	Paper	T
	Polyethelene	T
	Polypropylene	T
	Polyvinyl chloride	T
	Synthetic rubber	T
	Wood	T
GROUP 102:	EXPLOSIVES	
	Calcium	T
GROUP 105:	REDUCING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Sodium	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Potassium	T
	Sodium oxide	T
	Sodium	T
OTHER INORGANICS		
	Americium oxide	D
	Beryllium windows	T
	Ceramic	D
	Cesium in glass	D
	Filter media (Inorganic)	D
	Magnesium oxide	D
	Glass, labware	D
	Plutonium oxide	D
	Sand	D
	Soil	D
	Silicon oxide	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Vermiculite	D

Refer to Introduction for a description of the designations used in this chemical list.

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Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 121/221

SOLID ORGANIC WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING (Constituents reacted prior to loading in payload containers)	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers)	T
GROUP 3:	ACIDS, ORGANIC (Constituents reacted prior to loading in payload containers)	T
GROUP 4:	ALCOHOLS AND GLYCOLS	T
GROUP 8:	AZO COMPOUNDS, DIAZO COMPOUNDS, AND HYDRAZINES (Constituents reacted prior to loading in payload containers)	T
GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload container	T
GROUP 11:	CYANIDES	T
GROUP 13:	ESTERS	T
GROUP 14:	ETHERS	T
GROUP 15:	FLUORIDES	T
GROUP 16:	HYDROCARBONS, AROMATIC	T
GROUP 17:	HALOGENATED ORGANICS	T
GROUP 18:	ISOCYANATES	T
GROUP 19:	KETONES	T
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS (Constituents reacted prior to loading in payload containers)	T
GROUP 22:	METALS OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	D
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	D
GROUP 25:	NITRIDES	T
GROUP 28:	HYDROCARBON, ALIPHATIC, UNSATURATED	T
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	T
GROUP 30:	PEROXIDES AND HYDROPEROXIDES, ORGANIC (Constituents reacted prior to loading in payload containers)	T

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 121/221
(Continued)

SOLID ORGANIC WASTE

GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl Phosphate	D
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Asphalt	D
	Benelex	D
	Cardboard	D
	Cellulose	D
	Cloth	D
	Fiberglass	M
	Grease	D
	Hydraulic oil	T
	Ion exchange resin	D
	Mineral oil	T
	Molds and Crucibles	D
	Oil	D
	Paper	D
	Plastic	D
	Plexiglas	D
	Polybutadiene	T
	Polyethylene	D
	Polymethyl methacrylate	D
	Polypropylene	D
	Polystyrene	M
	Polyurethane	T
	Polyvinyl chloride	D
	Rags and Cloth	D
	Rubber	D
	Rubber gloves	D
	Rubber gloves (Leaded)	T
	Synthetic rubber	M
	Wood	D
GROUP 103:	POLYMERIZABLE COMPOUNDS (Constituents reacted prior to loading in payload containers)	T
GROUP 104:	OXIDIZING AGENTS, STRONG (Constituents reacted prior to loading in payload containers)	T
GROUP 105:	REDUCING AGENTS, STRONG (Constituents reacted prior to loading in payload containers)	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	T
GROUP 107:	WATER REACTIVE SUBSTANCES (Constituents reacted prior to loading in payload containers)	D
OTHER INORGANICS		D

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 121/221
(Continued)

SOLID ORGANIC WASTE

OTHER ORGANICS	T
OTHER SOLIDIFICATION MATERIALS/ABSORBENT	
Diatomaceous Earth	M
Florco	M
Hydrated Aquaset II	D
Radsorb	M

Refer to Introduction for a description of the designations used in this chemical list.

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Small Quantity Site
List of Chemicals and Materials
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Content Code SQ 122/222

TRU INORGANIC SOLID WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING (Constituents reacted prior to loading in payload containers) Hydroflouric acid	 T1
GROUP 2:	ACIDS, MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers) Chromic acid	 T1
GROUP 3:	ACIDS, ORGANIC (Constituents reacted prior to loading in payload containers) EDTA	 T
GROUP 4:	ALCOHOLS AND GLYCOLS	T
GROUP 8:	AZO COMPOUNDS, DIAZO COMPOUNDS, AND HYDRAZINES (Constituents reacted prior to loading in payload containers)	T
GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers) Calcium oxide	 D
GROUP 11:	CYANIDES	T1
GROUP 13:	ESTERS	T1
GROUP 14:	ETHERS	T
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers) Calcium fluoride Hydrofluoric acid	 D T1
GROUP 16:	HYDROCARBONS, AROMATIC	T
GROUP 17:	HALOGENATED ORGANICS	T
GROUP 18:	ISOCYANATES	T1
GROUP 19:	KETONES	T
GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS (Constituents reacted prior to loading in payload containers) Barium	 T
GROUP 22:	METALS OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS OR SPONGES Aluminum Selenium Thorium Zirconium	 D T T T

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 122/222
(Continued)

TRU INORGANIC SOLID WASTE

GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Cadmium	D
	Chromium	T
	Copper	D
	Graphite (Molds and Crucibles)	D
	Iron	D
	Iron tin (Alloy)	D
	Lead	D
	Low carbon steel	D
	Metal cans	D
	Metal cans (For salt)	D
	Platinum	D
	Selenium	T
	Silver	T
	Stainless steel	D
	Tantalum	D
	Thorium	T
	Tungsten	D
	Uranium	T
	Zinc magnesium (Alloy)	D
	Zirconium	T
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Barium	T
	Barium sulfate	D
	Beryllium	T
	Cadmium	D
	Chromic acid	T1
	Chromium	T
	Copper	D
	Lead	D
	Mercury	M
	Potassium permanganate	T
	Selenium	T
	Silver	T
	Silver nitrate	T1
	Thorium	T
	Zirconium	T
GROUP 25:	NITRIDES	T1
GROUP 28:	HYDROCARBON, ALIPHATIC, UNSATURATED	
	Polypropylene	T
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	T

Small Quantity Site
List of Chemicals and Materials
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Content Code SQ 122/222
(Continued)

TRU INORGANIC SOLID WASTE

GROUP 30:	PEROXIDES AND HYDROPEROXIDES, ORGANIC (Constituents reacted prior to loading in payload containers)	T
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Acrylic paint	T
	Bakelite	T
	Benelex	T
	Carbon (Spent, Activated)	D
	Grease	T
	Mineral oil	T
	Naphtha	T
	Oil	T
	Paper	T
	Plexiglas	T
	Polyethylene (Packaging material)	M
	Polypropylene	T
	Polystyrene	T
	Polyurethane	T
	Polyvinyl chloride (Packaging material)	M
	PVC solvent cement	T
	Resins	T
	Rubber gloves	T
	Synthetic rubber	T
	Waxes	T
	Wood	T
GROUP 103:	POLYMERIZABLE COMPOUNDS (Constituents reacted prior to loading in payload containers)	T
GROUP 104:	OXIDIZING AGENTS, STRONG (Constituents reacted prior to loading in payload containers)	
	Aluminum nitrate	T
	Aluminum nitrate nanohydrate	T
	Bromine	T
	Chromic acid	T1
	Hydrogen peroxide	T
	Potassium permanganate	T
	Silver nitrate	T1
	Sodium nitrate	T
	Sodium nitrite	T

Small Quantity Site
List of Chemicals and Materials
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Content Code SQ 122/222
(Continued)

TRU INORGANIC SOLID WASTE

GROUP 105:	REDUCING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers)	
	Ferrous sulfamate	T
	Hydroxyl amine	T
	Hydroxyl amine nitrate	T
	Sodium borohydride	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T
	Water	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers)	
	Aluminum chloride	T
	Barium	T
	Calcium oxide	D
OTHER INORGANICS		
	Ash	T
	Alumina/Silica blanket	T
	Borated water (Crystallized)	T
	Calcium chloride	D
	Cesium chloride	D
	Clay (Bentonite)	D
	Fiberglass	M
	Firebrick	D
	Glass, labware	D
	Glass, raschig rings	D
	Grit	T
	Insulation	D
	Magnesium chloride	D
	Ceramic (Molds and Crucibles)	D
	Potassium chloride	D
	Salt (Fused chloride)	D
	Sand	D
	Slag	D
	Sodium chloride	D
	Soil	D
	Soot	T
OTHER ORGANICS		
	Bh-38, complexing agent	T
	Fluorinert	T
	Foaming Insurance, complexing agent	T
	MAGNAFLUX, complexing agent	T

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 122/222
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TRU INORGANIC SOLID WASTE

OTHER SOLIDIFICATION MATERIALS/ABSORBENT	
Celite	D
Concrete	D
Diatomaceous Earth	M
Oil-Dri	D
Portland Cement (Hydrated)	T
Radsorb	M
Soda ash	D
Vermiculite	D

Refer to Introduction for a description of the designations used in this chemical list.

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Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 125/225

SOLID ORGANIC AND INORGANIC WASTE

GROUP 1:	ACIDS MINERAL, NON-OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Hydrochloric acid	T2
	Hydrofluoric acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS MINERAL, OXIDIZING (Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T2
	Perchloric acid	T2
	Sulfuric acid	T
GROUP 3:	ACIDS, ORGANIC (Constituents reacted prior to loading in payload containers.)	
	Oxalic acid	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T2
	Ethanol	T1
	Isopropanol	T
	Methanol	T2
GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers.)	
	Calcium oxide	T1
	MX-12 (Caustic cleaner)	T
	Oakite (Caustic cleaner)	T
	Potassium hydroxide (Big K)	T
	Sodium hydroxide	T2
	Turco Products (Alkaline cleaner)	T
GROUP 15:	FOURIDES, INORGANIC (Constituents reacted prior to loading in payload containers.)	
	Ammonium fluoride	T
	Calcium fluoride	T1
	Hydrofluoric acid	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Ethyl benzene	T2
	Toluene	T2
	Xylene	T2

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 125/225
(Continued)

SOLID ORGANIC AND INORGANIC WASTE

GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T
	1,1,2 Trichloro-1,2,2-trifluoroethane	T1
	Bromoform	T2
	Carbon tetrachloride	T1
	Dichloroethane	T2
	Freon TF	T
	Methylene chloride	T1
	Trichloroethylene	T
GROUP 19:	KETONES	
	Acetone	T
GROUP 21:	METALS,ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS,VAPORS, OR SPONGES	
	Nickel	T2
	Selenium	T1
GROUP 23:	METALS, OTHER ELEMENTAL, AND ALLOY, AS SHEETS, RODS, MOLDINGS, DROPS ETC.	
	Aluminum	D
	Brass	D
	Cadmium	T1
	Carbon Steel	D
	Chromium	T2
	Copper	D
	Graphite (Molds and Crucibles)	T
	Iron	D
	Iron/Tin (Alloy)	M
	Lead	D
	Metal cans	D
	Selenium	T1
	Stainless Steel	D
	Tantalum	D
	Titanium	D
	Tungsten	D

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 125/225
(Continued)

SOLID ORGANIC AND INORGANIC WASTE

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T1
	Beryllium	T1
	Cadmium	T1
	Calcium	T
	Chromium	T2
	Lead	T1
	Mercury	T1
	Nickel	T2
	Plutonium oxide (Pieces)	D
	Selenium	T1
	Silver	T1
	Uranium oxide (Pieces)	D
GROUP 27:	NITRO COMPOUNDS	
	(Constituents reacted prior to loading in payload containers.)	
	Nitrocellulose	T2
	Urea nitrate	T2
GROUP 29:	HYDROCARBON, ALIPHAITC, SATURATED	
	Oils	D
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	M
	Trioctyl phosphine oxide	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANIOUS	
	Cellulose	M
	Celotex (Packaging material)	D
	Cloth	D
	Filters	D
	Cutting oil	T
	Hydraulic oil	T
	Ion exchange resin	D
	Mineral oil	T
	Oil	T
	Paint (Chips, ALARA Paint)	D
	Paper	D
	Polyethylene (Packaging material)	D
	Polypropylene (Ful-Flo Filters)	T
	Polyvinyl chloride (Packaging material)	D
	Resins	D
	Rubber gloves	D
	Rubber gloves (Leaded)	T1
	Synthetic rubber	D
	Spray lubricants	T
	Wood	T2

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 125/225
(Continued)

SOLID ORGANIC AND INORGANIC WASTE

GROUP 102:	EXPLOSIVES	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium nitrate	T
	Calcium	T
	Nitrocellulose	T2
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrogen peroxide	T2
	Other nitrate salts	T
GROUP 105:	REDUCING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Hydroxyl amine	T2
GROUP 106:	WATER AND MIXTURES CONTIANING WATER	
	Aqueous solutions and mixtures	T1
	Water	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Calcium oxide	T1

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 125/225
(Continued)

SOLID ORGANIC AND INORGANIC WASTE

OTHER INORGANICS	
Alconox	T
Aluminum nitrate	T
Ash	M
Ceramic (Molds and Crucibles)	T
Cement	T
Concreted	T
Concrete particulate	D
Defoaming agents	T
Ferrous sulfamate	T
Firebrick	D
Fogproof	T
Glass	D
Grit	D
HEPA Filters	T
Insulation	T2
Metal-X	T
Other filters	T1
Radiac wash	T
Salt (Calcium fluoride and calcium chloride)	T1
Sand	D
Slag	D
Soot	D
Zep Spray	T
OTHER ORGANICS	
Big Orange Cleaner	T
DOWANOL	T
Windex	T
OTHER SOLIDIFICATION MATERIALS/ABSORBENTS	
Absorbent polymers	T
Aquaset/Petroset	D
Cement (Portland and Magnesia)	D
Diatomaceous Earth	T
Envirostone	D
Fly ash	T
Oxalate salts	T
Surfactants	T1
Vermiculite	T

Refer to Introduction for a description of the designations used in this chemical list.

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Small Quantity Site
List of Chemicals and Materials
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Content Code SQ 126/226

SOLIDIFIED ORGANIC PROCESS SOLIDS

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted to loading in payload containers.)	
	Hydrochloric acid	T2
	Hydrofluoric acid	T
	Phosphoric acid	T2
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Nitric acid	T2
	Perchloric acid	T2
	Sulfuric acid (<70%)	T2
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Oxalic acid	T2
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T2
	Ethanol	T1
	Isopropanol	T
	Methanol	T2
GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium oxide	T1
	Potassium hydroxide	T2
	Sodium hydroxide	T2
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium fluoride	T
	Calcium fluoride	T1
	Hydrofluoric acid	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Ethyl benzene	T2
	Toluene	T2
	Xylene	T2
GROUP 17:	HALOGENATED ORGANICS	
	1,1,1-Trichloroethane	T
	1,1,2 Trichloro-1,2,2-trifluoroethane	T1
	Bromoform	T2
	Carbon tetrachloride	T1
	Dichloroethane	T2
	Freon TF	T
	Methylene chloride	T1
	Trichloroethylene	T

Small Quantity Site
List of Chemicals and Materials
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SOLIDIFIED ORGANIC PROCESS SOLIDS

GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Nickel	T2
	Selenium	T1
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	M
	Cadmium	T1
	Chromium	T2
	Graphite (Molds and Crucibles)	T
	Iron	T1
	Iron/Tin (Alloy)	M
	Lead	T2
	Metal cans	D
	Selenium	T1
	Stainless Steel	T1
	Steel	M
	Tantalum	T2
GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Arsenic	T1
	Beryllium	T1
	Cadmium	T1
	Calcium	T
	Chromium	T2
	Lead	T1
	Mercury	T1
	Nickel	T2
	Selenium	T1
	Silver	T1
GROUP 27:	NITRO COMPOUNDS	
	(Constituents reacted prior to loading in payload containers.)	
	Nitrocellulose	T2
	Urea nitrate	T2
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Oils	D
GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tributyl phosphate	M
	Trioctyl phosphine oxide	T

Small Quantity Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SQ 126/226
(Continued)

SOLIDIFIED ORGANIC PROCESS SOLIDS

GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Cellulose	M
	Celotex (Packaging material)	D
	Ion exchange resin	D
	Oil	M
	Paint (Chips, ALARA Paint)	M
	Polyethylene	D
	Polypropylene (Ful-Flo Filters)	T
	Polyvinyl chloride	D
	Resins	D
	Rubber gloves	D
	Rubber gloves (Leaded)	T1
	Synthetic rubber	D
	Wood	T2
GROUP 102:	EXPLOSIVES	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium nitrate	T
	Calcium	T
	Nitrocellulose	T2
	Urea nitrate	T2
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrogen peroxide	T2
	Other nitrate salts	T
	Sodium nitrate	M
	Urea nitrate	T2
GROUP 105:	REDUCING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Hydroxyl amine	T2
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T1
	Water	T
GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted to loading in payload containers.)	
	Calcium	T
	Calcium oxide	T1
	Sulfuric acid	T

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List of Chemicals and Materials
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Content Code SQ 126/226
(Continued)

SOLIDIFIED ORGANIC PROCESS SOLIDS

OTHER INORGANICS	
Aluminum nitrate	T
Ash	M
Ceramic (Molds and Crucibles)	T
Ferrous sulfamate	T
Firebrick	D
Glass, labware	T
Grit	D
HEPA Filters	T
Insulation	T2
Other filters	T1
Salt (Calcium fluoride and calcium chloride)	T1
Sand	D
Slag	D
Soot	D
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Absorbent polymers	T
Aquaset/Petroset	D
Cement (Portland and Magnesia)	D
Envirostone	D
Flocculating agents	T
Oil-Dri	D
Oxalate salts	T
Surfactants	T1
Vermiculite	D

Refer to Introduction for a description of the designations used in this chemical list.

Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 117/217

TRU METAL PIPE WASTE

GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers.)	
	Aluminum fluoride	M
	Sodium fluoride	M
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Stainless Steel	D
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Polyethylene (Contamination protection overwrap)	T
	Polyvinyl chloride (Contamination protection overwrap)	T
	Synthetic rubber (O-Ring)	T
OTHER INORGANICS		
	Alumina (Al_2O_3)	D

Refer to Introduction for a description of the designations used in this chemical list.

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Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 122/222

TRU NONCOMBUSTIBLE WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Boric acid	T
	Chlorosulfonic acid (Reacted)	T
	Fluoroboric acid	T
	Fluorosilicic acid	T
	Hydrobromic acid	T
	Hydrochloric acid	T
	Hydrofluoric acid	T
	Hydroiodic acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Chromic acid	T
	Nitric acid	T
	Sulfonic acid	T
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T1
	Ascorbic acid	T
	EDTA	T
	Formic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T
	Ethanol	T
	Glycerin	T
	Isopropanol	T
	Methanol	T
GROUP 8:	AZO COMPOUNDS, DIAZO COMPOUNDS, AND HYDRAZINES	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrazine	T
	Hydrazine mononitrate	T

Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 122/222
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 10:	CAUSTICS	
	(Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T
	Barium hydroxide	T
	Barium oxide	T
	Beryllium hydroxide	T
	Calcium hydroxide	T
	Calcium oxide	T
	Potassium hydroxide	T
	Sodium carbonate	T
	Sodium hydroxide	T
	Sodium hypochlorite	T
GROUP 14:	ETHERS	
	Ethyl ether	T
GROUP 15:	FLUORIDES, INORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Aluminum fluoride	T
	Ammonium bifluoride	T
	Ammonium fluoride	T
	Barium fluoride	T
	Calcium fluoride	T
	Fluoroboric acid	T
	Fluorosilicic acid	T
	Hydrofluoric acid	T
	Magnesium fluoride	T
	Potassium fluoride	T
	Sodium fluoride	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Toluene	T
	Xylene	T
GROUP 17:	HALOGENATED ORGANICS	
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Chloroform	T
GROUP 19:	KETONES	
	Acetone	T
	Methyl isobutyl ketone	T
	Thenoyl trifluoroacetone (TTA)	T

Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 122/222
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS (Constituents reacted prior to loading in payload containers.)	
	Barium	T
	Calcium	T
	Magnesium	T
	Potassium	T
	Sodium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Aluminum	T
	Magnesium	T
	Mercury (Vapor)	T
	Nickel	T
	Thorium	T
	Titanium	T
	Uranium	T
	Zirconium	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Cadmium	D
	Chromium	T
	Copper	M
	Gold	T
	Graphite	M
	Iron	D
	Lead	D
	Molds and Crucibles, graphite	M
	Platinum	M
	Silver	T
	Stainless Steel	D
	Tantalum	T
	Thorium	T
	Titanium	T
	Tungsten	M
	Uranium	T
	Zinc	T
	Zirconium	T

Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 122/222
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Acrylead	T
	Barium	T
	Barium chloride	T
	Barium fluoride	T
	Barium hydroxide	T
	Barium nitrate	T
	Barium oxide	T
	Barium sulfate	M
	Beryllium	T
	Beryllium hydroxide	T
	Boron carbide	T1
	Cadmium	D
	Calcium	T
	Chromic acid	T
	Chromium	T
	Copper	M
	Lead	D
	Lead nitrate	T
	Lead oxide	T
	Magnesium oxide	T
	Mercuric nitrate	T
	Mercury	T
	Nickel	T
	Nickel nitrate	T
	Potassium dichromate	T
	Silver nitrate	T
	Sodium chromate	T
	Sodium dichromate	T
	Sodium tetraborate	T
	Strontium nitrate	T
	Thorium	T
	Titanium	T
	Uranium sulfide	T
	Uranyl nitrate	T
	Zinc	T
	Zinc nitrate	T
	Zirconium	T
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Cyclohexane	T
	Decane	T
	Hexane	T
	Nonane	T
	Pentane	T
	Petroleum ether	T

Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 122/222
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tri-n-octyl phosphine oxide (TOPO)	T
	Tributyl phosphate	T
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Acrylic paint	T
	Carbon (Spent, Activated)	D
	Grease	T
	Kerosene	T
	Methyl acetone	T
	Naphtha	T
	PVC solvent cement	T
GROUP 102:	EXPLOSIVES	
	Calcium	T
GROUP 103:	POLYMERIZABLE COMPOUNDS	
	(Constituents reacted prior to loading in payload containers.)	
	Epoxy	T
	Water-extended polyester	T
GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Aluminum nitrate	T1
	Aluminum nitrate nanohydrate	T
	Barium nitrate	T
	Bromine	T
	Chromic acid	T
	Hydrogen peroxide	T
	Hydroxyl amine nitrate	T
	Lead nitrate	T
	Mercuric nitrate	T
	Nickel nitrate	T
	Potassium dichromate	T
	Potassium permanganate	T
	Sodium dichromate	T
	Sodium hypochlorite	T
	Sodium nitrate	T
	Sodium nitrite	T
	Sodium peroxide	T
	Strontium nitrate	T
	Uranyl nitrate	T
	Zinc nitrate	T

Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 122/222
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 105:	REDUCING AGENTS, STRONG (Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Ferrous sulfamate	T
	Hydrazine	T
	Hydroxyl amine	T
	Sodium	T
	Sodium borohydride	T
	Uranium sulfide	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T
	Water	T
GROUP 107:	WATER REACTIVE SUBSTANCES (Constituents reacted prior to loading in payload containers.)	
	Aluminum chloride	T
	Aluminum flouride	T
	Barium	T
	Barium oxide	T
	Calcium	T
	Calcium oxide	T
	Hydrobromic acid	T
	Potassium	T
	Sodium	T
	Sodium peroxide	T
	Sulfuric acid	T
OTHER INORGANICS		
	Alumina/Silica blanket	T
	Borated water (Crystallized)	T
	Glass, labware	D
	Glass, raschig rings	M
	Insulation	M
	Ceramic (Molds and Crucibles)	D
	Sand	M
	Slag	T
	Soil	M
OTHER ORGANICS		
	BH-38, complexing agent	T
	Fluorinert	T
	Foaming Insurance, complexing agent	T1
	MAGNAFLUX, complexing agent	T1

Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 122/222
(Continued)

TRU COMBUSTIBLE WASTE

OTHER SOLIDIFICATION MATERIAL/ABSORBENTS	
Celite	M
Concrete	M
Oil-Dri	D
Soda ash	M
Vermiculite	D

Refer to Introduction for a description of the designations used in this chemical list.

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Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 125/225

TRU COMBUSTIBLE WASTE

GROUP 1:	ACIDS, MINERAL, NON-OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Boric acid	T
	Chlorosulfonic acid (Reacted)	T
	Fluoroboric acid	T
	Fluorosilicic acid	T
	Hydrobromic acid	T
	Hydrochloric acid	T
	Hydrofluoric acid	T
	Hydroiodic acid	T
	Phosphoric acid	T
GROUP 2:	ACIDS, MINERAL, OXIDIZING	
	(Constituents reacted prior to loading in payload containers.)	
	Chromic acid	T
	Nitric acid	T
	Sulfonic acid	T
	Sulfuric acid (<70%)	T
GROUP 3:	ACIDS, ORGANIC	
	(Constituents reacted prior to loading in payload containers.)	
	Acetic acid	T1
	Ascorbic acid	T
	EDTA	T
	Formic acid	T
	Oxalic acid	T
GROUP 4:	ALCOHOLS AND GLYCOLS	
	Butanol	T
	Ethanol	T
	Glycerin	T
	Isopropanol	T
	Methanol	T
GROUP 8:	AZO COMPOUNDS, DIAZO COMPOUNDS, AND HYDRAZINES	
	(Constituents reacted prior to loading in payload containers.)	
	Hydrazine	T
	Hydrazine mononitrate	T

Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 125/225
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 10:	CAUSTICS (Constituents reacted prior to loading in payload containers.)	
	Ammonium hydroxide	T
	Barium hydroxide	T
	Barium oxide	T
	Beryllium hydroxide	T
	Calcium hydroxide	T
	Calcium oxide	T
	Potassium hydroxide	T
	Sodium carbonate	T
	Sodium hydroxide	T
	Sodium hypochlorite	T
GROUP 14:	ETHERS	
	Ethyl ether	T
GROUP 15:	FLUORIDES, INORGANIC (Constituents reacted prior to loading in payload containers.)	
	Aluminum fluoride	T
	Ammonium bifluoride	T
	Ammonium fluoride	T
	Barium fluoride	T
	Calcium fluoride	T
	Fluoroboric acid	T
	Fluorosilicic acid	T
	Hydrofluoric acid	T
	Magnesium fluoride	T
	Potassium fluoride	T
	Sodium fluoride	T
GROUP 16:	HYDROCARBONS, AROMATIC	
	Toluene	T
	Xylene	T
GROUP 17:	HALOGENATED ORGANICS	
	1,1,2-Trichloro-1,2,2-trifluoroethane	T
	Carbon tetrachloride	T
	Chloroform	T
GROUP 19:	KETONES	
	Acetone	T
	Methyl isobutyl ketone	T
	Thenoyl trifluoroacetone (TTA)	T

Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 125/225
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 21:	METALS, ALKALI AND ALKALINE EARTH, ELEMENTAL AND ALLOYS (Constituents reacted prior to loading in payload containers.)	
	Barium	T
	Batteries	T
	Calcium	T
	Magnesium	T
	Potassium	T
	Sodium	T
GROUP 22:	METALS, OTHER ELEMENTAL AND ALLOYS IN THE FORM OF POWDERS, VAPORS, OR SPONGES	
	Aluminum	T
	Magnesium	T
	Mercury (Vapor)	T
	Nickel	T
	Thorium	T
	Titanium	T
	Uranium	T
	Zirconium	T
GROUP 23:	METALS, OTHER ELEMENTAL AND ALLOYS, AS SHEETS, RODS, MOLDINGS, DROPS, ETC.	
	Aluminum	D
	Cadmium	D
	Chromium	T
	Copper	M
	Gold	T
	Graphite	M
	Iron	D
	Lead	D
	Molds and Crucibles, graphite	M
	Platinum	M
	Silver	T
	Stainless Steel	D
	Tantalum	T
	Thorium	T
	Titanium	T
	Tungsten	M
	Uranium	T
	Zinc	T
	Zirconium	T

Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 125/225
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 24:	METALS AND METAL COMPOUNDS, TOXIC	
	Acrylead	T
	Barium	T
	Barium chloride	T
	Barium fluoride	T
	Barium hydroxide	T
	Barium nitrate	T
	Barium oxide	T
	Barium sulfate	M
	Beryllium	T
	Beryllium hydroxide	T
	Boron carbide	T1
	Cadmium	D
	Calcium	T
	Chromic acid	T
	Chromium	T
	Copper	M
	Lead	D
	Lead nitrate	T
	Lead oxide	T
	Magnesium oxide	T
	Mercuric nitrate	T
	Mercury	T
	Nickel	T
	Nickel nitrate	T
	Potassium dichromate	T
	Silver nitrate	T
	Sodium chromate	T
	Sodium dichromate	T
	Sodium tetraborate	T
	Strontium nitrate	T
	Thorium	T
	Titanium	T
	Uranium sulfide	T
	Uranyl nitrate	T
	Zinc	T
	Zinc nitrate	T
	Zirconium	T
GROUP 29:	HYDROCARBON, ALIPHATIC, SATURATED	
	Cyclohexane	T
	Decane	T
	Hexane	T
	Nonane	T
	Pentane	T
	Petroleum ether	T

Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 125/225
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 32:	ORGANOPHOSPHATES, PHOSPHOTHIOATES AND PHOSPHODITHIOATES	
	Tri-n-octyl phosphine oxide (TOPO)	T
	Tributyl phosphate	M
GROUP 101:	COMBUSTIBLE AND FLAMMABLE MATERIALS, MISCELLANEOUS	
	Acrylic paint	T
	ALARA Paint	M
	Asphalt	M
	Bakelite	D
	Benelex	D
	Carbon (Spent, Activated)	D
	Cellulose	D
	Grease	T
	Ion exchange resin	D
	Kerosene	T
	Methyl acetone	T
	Naphtha	T
	Oil	D
	Paper	D
	Plexiglas	D
	Polyethylene	D
	Polypropylene	D
	Polystyrene	D
	Polyurethane	D
	Polyvinyl chloride	D
	PVC solvent cement	T
	Rubber gloves	D
	Rubber gloves (Leaded)	D
	Synthetic rubber	D
	Teflon	M
	Waxes	M
	Wood	D
GROUP 102:	EXPLOSIVES	
	Calcium	T
GROUP 103:	POLYMERIZABLE COMPOUNDS (Constituents reacted prior to loading in payload containers.)	
	Epoxy	T
	Water-extended polyester	T

Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 125/225
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 104:	OXIDIZING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Aluminum nitrate	T1
	Aluminum nitrate nanohydrate	T
	Barium nitrate	T
	Bromine	T
	Chromic acid	T
	Hydrogen peroxide	T
	Hydroxyl amine nitrate	T
	Lead nitrate	T
	Mercuric nitrate	T
	Nickel nitrate	T
	Potassium dichromate	T
	Potassium permanganate	T
	Sodium dichromate	T
	Sodium hypochlorite	T
	Sodium nitrate	T
	Sodium nitrite	T
	Sodium peroxide	T
	Strontium nitrate	T
	Uranyl nitrate	T
	Zinc nitrate	T
GROUP 105:	REDUCING AGENTS, STRONG	
	(Constituents reacted prior to loading in payload containers.)	
	Calcium	T
	Ferrous sulfamate	T
	Hydrazine	T
	Hydroxyl amine	T
	Sodium	T
	Sodium borohydride	T
	Uranium sulfide	T
GROUP 106:	WATER AND MIXTURES CONTAINING WATER	
	Aqueous solutions and mixtures	T
	Water	T

Savannah River Site
List of Chemicals and Materials
in TRU Waste Content Codes

Content Code SR 125/225
(Continued)

TRU COMBUSTIBLE WASTE

GROUP 107:	WATER REACTIVE SUBSTANCES	
	(Constituents reacted prior to loading in payload containers.)	
	Aluminum chloride	T
	Aluminum flouride	T
	Barium	T
	Barium oxide	T
	Calcium	T
	Calcium oxide	T
	Hydrobromic acid	T
	Potassium	T
	Sodium	T
	Sodium peroxide	T
	Sulfuric acid	T
OTHER INORGANICS		
	Alumina/Silica blanket	T
	Borated water (Crystallized)	T
	Firebrick	D
	Glass, labware	D
	Glass, raschig rings	M
	HEPA Filters (Or filter media)	D
	Insulation	M
	Molds and Crucibles, ceramic	D
	Other filters	D
	Sand	M
	Slag	T
	Soil	M
OTHER ORGANICS		
	BH-38, complexing agent	T
	Fluorinert	T
	Foaming Insurance, complexing agent	T1
	Lexan	M
	MAGNAFLUX, complexing agent	T1
	Turco 4320, complexing agent	T
OTHER SOLIDIFICATION MATERIAL/ABSORBENTS		
	Acrylic acrylate resin	D
	Attapulgite clay	D
	Celite	M
	Concrete	M
	Oil-Dri	D
	Soda ash	M
	Surfactants (Nonphosphated anionic detergent)	D
	Vermiculite	D

Refer to Introduction for a description of the designations used in this chemical list.

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Appendix B

List of Additional Flammable Volatile Organic Compounds Evaluated by the CH-TRAMPAC Methodology

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Appendix B

The following is a list of volatile organic compounds (VOCs) that have been evaluated for shipment in the TRUPACT-II and HalfPACT shipping packages. These VOCs are in addition to those listed in Table 5.2-2 of the Contact-Handled Transuranic Waste Authorized Methods for Payload Control (CH-TRAMPAC), Revision 2. These VOCs are not site- or content code-specific, but are in addition to the authorized list.

Additional Flammable VOC	Synonyms	CAS No.
1,4-Dioxane	Diethylene dioxide; diethylene ether	123-91-1
1-Butene	Butylene	106-98-9
1-Butyl Acetate	n-Butyl acetate; Butyl acetate; Acetic acid, butyl ester	123-86-4
1-Chlorobutane	n-Butyl chloride	109-69-3
1-Nitropropane	Propane, 1-ntitro-; 1-Nitropan; N-Nitropropane	108-03-2
1-Propanol, 2-Methyl	Isobutyl alcohol; Isobutanol	78-83-1
1,1,3,4-Tetrachlorohexafluorobutane	Butane, 1,1,3,4-tetrachloro-1,2,2,3,4,4-hexafluoro-	423-38-1
1,2,3-Trimethylbenzene	Benzene, 1,2,3-trimethyl-; Hemimellitene	526-73-8
1,3-Dimethylcyclohexane	Cyclohexane, cis-1,3-dimethyl	638-04-0
2-Hydroxypropanoic Acid	Lactic acid; Paralactic acid; Propel; (s)-2-Hydroxypropanoic acid	79-33-4
2-Methyl-1-Nitropropane	1-Nitro-2-methylpropane; 2 Methyl 3-nitropropane; Propane, 2-methyl-1-nitro-	625-74-1
2-Methylheptane	Methylheptane	592-27-8
2-Methylhexane	Isoheptane; Hexane, 2-methyl-	591-76-4
2-Methylpentane	Isohexane; Dimethylpropylmethane	107-83-5
2-Methoxyethanol	Methoxyethanol; Monomethyl glycol; 2-Methoxy-1-ethanol	109-86-4
2-Propanol	Isopropanol; Isopropyl Alcohol	67-63-0
2-Propanol, 1-Methoxy	2-Methoxy-1-methylethanol; 1-Methoxy-2-propanol	107-98-2
2-Propanol, 2-Methyl	tert-Butyl alcohol; tert-butanol	75-65-0
2,2-Dimethylhexane	—	590-73-8
2,2,3-Trimethylbutane	Butane, 2,2,3-trimethyl-; Triptan; Triptane	464-06-2
2,2,4-Trimethylpentane	Isooctane, Isobutyltrimethylmethane	540-84-1
2,4-Dimethyl-heptane	Heptane,2,4-dimethyl-	2213-23-2
2,4-Dimethyl-1-heptene	1-Heptene, 2,4-dimethyl-	19549-87-2
2,5-Dimethylheptane	Heptane, 2,5-dimethyl	2216-30-0
3-Hydroxytetrahydrofuran	3-Furanol, tetrahydro-; Tetrahydrofuran, 3-hydroxy-	453-20-3
3-Methyl-heptane	3-Methylheptane; 2-ethylhexane	589-81-1
3-Methylhexane	2-Ethylpentane; Hexane, 3-methyl-	589-34-4
3-Methyloctane	Octane, 3-methyl; Isononane	2216-33-3

Additional Flammable VOC	Synonyms	CAS No.
3-Methylpentane	Pentane, 3-methyl-	96-14-0
4-Ethylheptane	Heptane, 4-ethyl-	2216-32-2
DL-2,3-Butanediol	2,3-Butanediol	6982-25-8
Trans-1,2-Dichloroethylene	1,2-Dichloroethene; Acetylene dichloride; symmetrical Dichloroethylene	156-60-5
Trans-1,4-Dimethylcyclohexane	Cyclohexane trans-1,4-dimethyl; Carbamic acid, 1-phonylothyl-ethyl ester	2207-04-7
Acetic acid, 2-Methylpropyl ester	Isobutyl acetate	110-19-0
Carbon Disulfide	Carbon Disulphide; Carbon Bisulfide; Carbon Sulfide	75-15-0
Cyclobutylamine	Cyclobutanamine	2516-34-9
Cyclopropane	Trimethylene; Cyclopropnane	75-19-4
Decafluorobutane	Butane, decafluoro-; Perfluorobutane; Perfluoro-n-butane	355-25-9
Decane	n-Decane ; n-C10H22 ; UN 2247	124-18-5
Ethyl Acetate	Acetic acid; Ethyl ester; Acetic ester; Ethyl acetate ester	141-78-6
Ethyl Alcohol	Ethanol	64-17-5
Hexafluoropropene	1-Propene; Perfluoro-1-propene; Propene, hexafluoro-	116-15-4
Hexamethyldisiloxane	HMDSO; Farchan Prod. No. 157780	107-46-0
Hexane	n-Hexane; Hexyl Hydride	110-54-3
Isopropyl Acetate	Acetic acid, 1-methylethyl ester; 1-Methylethyl acetate; 2-Acetoxypropane; 2-Propyl acetate; 2-Propyl ethanoate	108-21-4
Methane, nitro-	Nitromethane; Nitrocarbol; CH3NO2; Nitrometan; UN 1261; Nitrofuel; Nitroparaffin; NM; NM-55	75-52-5
Methyl Acetate	Acetic Acid, Methyl Ester; Methyl Ethanoate; MeAc; MAC	79-20-9
Methyl Chloride	Chloromethane	74-87-3
Methyl Cyclohexane	Cyclohexylmethane; Hexahydrotoluene	108-87-2
Methyl Formate	Formic acid, methyl ester; Methyl methanoate	107-31-3
Methylcyclopentane	Cyclopentane, methyl-	96-37-7
Nonane	n-Nonane; Shellsol 140; n-C9H20; UN 1920	111-84-2
Nonane, 4-methyl-	4-Methylnonane(DL); 4-Methylnonane; n-C3H7CH(CH3)(CH2)4CH3	17301-94-9
Octane	n-Octane; n-C8H18; Oktan; Oktanene; Ottani; UN 1262	111-65-9
Oxirane, (1-methylethyl-)	Isopropylethylene oxide; Isopropyloxirane; 3-Methylbutene-1,2-oxide	1438-14-8

Additional Flammable VOC	Synonyms	CAS No.
Propane, 1,2-dichloro-	Propylene chloride; Propylene dichloride; 1,2-Dichloropropane;CH3CHClCH2Cl; α,β-dichloropropane; α,β -Propylene dichloride; Bichlorure de propylene; Chlorinated C3 hydrocarbons; D-d Mixture; Dichloropropane; Dwuchloropropan; ENT 15,406; Nemex; NCI-C55141; Vidden D; RCRA waste number U083; Dichloropropanes	78-87-5
Tetrahydrofuran	Furanidine; Tetramethylene oxide; Furan, tetrahydro-	109-99-9
Trimethylamine	N,N-Dimethylmethanamine; TMA	75-50-3

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Appendix C

Drum Age Criteria Evaluated by the CH-TRAMPAC Methodology

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Appendix C

The additional packaging configurations and/or modifications to existing packaging configurations are authorized after evaluation by the WIPP CH-TRU Payload Engineer per Section 5.2.4.2 of the CH-TRAMPAC.

Packaging Configurations

Packaging Configuration	Waste Types II and III	Waste Types I and IV
Packaging Configuration 6 (SWBs and TDOPs)	SWB or TDOP with any combination of inner and/or liner bags with up to 6 layers of packaging	
Packaging Configuration 8 (85- and 100-gallon drums)	Up to 4 inner bags and 2 liner bags, no rigid liner, and filtered inner lid	

Packaging-Specific DAC_3 Values (in Days) for Waste Types II and III and Waste Types I and IV

Packaging Configuration 8	
Drum Filter Minimum Hydrogen Diffusivity (m/s/mf)	**Inner Lid Filter Vent Minimum Hydrogen Diffusivity (m/s/mf)**
	7.4×10^{-6}
3.7×10^{-6}	21

m/s/mf = moles per second per mole fraction.

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