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ORNL/TM-6981/V3

Materials Safety Data Sheets
The Basis for Control of Toxic Chemicals
Volume 3

MASTER

E. E. Ketchen
W. E. Porter

OAK RIDGE NATIONAL LABORATORY
OPERATED BY UNION CARBIDE CORPORATION • FOR THE DEPARTMENT OF ENERGY

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(Rev. Dec. 1979)

ORNL/TM-6981/V3

MASTER

Contract No. W-7405-eng-26

HEALTH DIVISION

Industrial Hygiene Department

MATERIAL SAFETY DATA SHEETS

THE BASIS FOR CONTROL OF TOXIC CHEMICALS

VOLUME 3

E. E. Ketchen
W. E. Porter

Date Published: September 1979

OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee 37830
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UNION CARBIDE CORPORATION
for the
Department of Energy

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FOREWORD

The Material Safety Data Sheets contained in this volume are the basis for the Toxic Chemical Control Program developed by the Industrial Hygiene Department, Health Division, ORNL. The three volumes are the update and expansion of ORNL/TM-5721 and ORNL/TM-5722 "Material Safety Data Sheets The Basis for Control of Toxic Chemicals", Volume I and Volume II. As such, they are a valuable adjunct to the data cards issued with specific chemicals. The chemicals are identified by name, stores catalog number where appropriate, and sequence numbers from the NIOSH Registry of Toxic Effects of Chemical Substances, 1977 Edition, if available.

The data sheets were developed and compiled to aid in apprising the employees of hazards peculiar to the handling and/or use of specific toxic chemicals. Space limitation necessitate the use of descriptive medical terms and toxicological abbreviations. A glossary and an abbreviation list were developed to define some of those sometimes unfamiliar terms and abbreviations. Questions concerning these data sheets should be referred to the Industrial Hygiene Department.

The three volumes are being printed in a looseleaf form to accommodate additional data sheets and updated sheets without the re-issue of new volumes. The page numbers are keyed to the catalog number in the chemical stores at ORNL.

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(Rev. Dec. 1979)

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(Continuation of ORNL/TM-6981/V2)

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Albumin	A water-soluble protein excreted in urine
Anemia	A condition in which the blood is deficient in hemoglobin and/or numbers of red cells compared with normal blood
Anesthesia	Loss of feeling or sensation, especially the loss of tactile sensibility
Anorexia	Lack or loss of the appetite for food
Anosmia	Absence of the sense of smell
Anuria	Total suppression of urinary output by the kidney
Apathy	Lack of feeling or emotion, indifference
Arthralgia	Neuralgia or pain in a joint
Asbestosis	Lung disease caused by prolonged inhaling of asbestos
Asphyxia	Suffocation
Bronchiolitis	Capillary bronchitis
Bronchitis	Inflammation of the bronchial tubes
Bronchopneumonia	Inflammation of the lungs following infection of the upper respiratory tract, infectious fevers, or debilitating diseases
Bronchospasms	Bronchial spasm
Carcinoma	A malignant new growth made up of epithelial cells, which give rise to metastases
Cataract	An opacity of the crystalline eye lens or its capsule
Cirrhosis	A disease of the liver marked by the progressive destruction of liver cells
Conjunctivitis	Inflammation of the conjunctiva, the delicate membrane that lines the eyelids and covers the eyeballs

Convulsion	A violent contraction of the voluntary muscles
Cornea	Transparent structure of the external layer of the eyeball
Cyanosis	Blueness of the skin caused by insufficient oxygenation of the blood
Delirium	A mental disturbance marked by illusion, hallucinations, physical restlessness, and incoherence
Dermatitis	Inflammation of the skin
Dyspnea	Difficult or labored breathing
Emphysema	A swelling or inflation due to presence of air in the interstices of the connective tissues of the lungs
Epigastric	Pertaining to the belly or (epigastrium)
Erosion	An eating or gnawing away
Euphoria	Exaggerated sense of well-being
Gangrene	Anemic necrosis of tissue
Gastroenteritis	Inflammation of the stomach and intestines
Goiters	Enlargement of the thyroid gland
Hallucinations	A sense perception not founded upon objective reality
Hematemesis	Vomiting of blood
Hematuria	Discharge of blood in the urine
Hemoglobinuria	Presence of hemoglobin in the urine
Hemolytic Anemia	Anemia due to active destruction of red cells
Hepatitis	Inflammation of the liver
Hyperactivity	Overactivity

Hyperemia	Excess of blood in any part of the body
Hyperpnea	Abnormal exaggeration of the respiratory movements
Hypotension	Abnormally low blood pressure
Hypothermia	Abnormally low temperature
Inebriation	The condition of being drunk
Ingestion	The act of taking food, medicines, etc. into the body by mouth
Insomnia	Inability to sleep
Intoxication	The condition produced by excessive use of alcohol; also, the state of being poisoned
Lacrimation	The secretion and discharge of tears
Laryngitis	Sore throat, hoarseness, and cough due to inflammation of the larynx
Lassitude	Weakness, exhaustion
Lethargy	A condition of drowsiness of mental origin
Leukopenia	Reduction of white cells in the blood
Malaise	Uneasiness, discomfort, and distress
Malignant tumors	Tumors that tend to become progressively worse and result in death
Mottling	A condition of a tissue spotted with patches of color
Myalgia	Pain in a muscle or muscles
Narcosis	A state of profound unconsciousness produced by a drug
Narcotic	Having the effect of producing sleep or stupor and at the same time relieving pain (adj.)

Nausea	Tending to vomit, feeling of sickness at the stomach
Necrosis	Death of a circumscribed portion of tissue
Nephritis	Inflammation of the kidney (hemorrhagic)
Neuritis	Inflammation of a nerve
Neurotoxic	Poisonous or destructive to nerve tissue
Oliguria	Reduced daily output of urine
Opacity	The condition of being opaque
Opaque	Impervious to light rays
Pallor	Paleness
Palpitation	Unduly rapid beating of the heart
Papilledema	Edema of the optic papilla
Paralysis	Loss or impairment due to lesion of muscular mechanism
Petechia	A small area of discoloration formed by the effusion of blood
Pharyngitis	Inflammation of the pharynx
Pneumonitis	Localized inflammation of the lung
Polyneuritis	Inflammation of many nerves at once
Prostration	Extreme exhaustion or powerlessness
Psychic disturbances	Mental disturbances
Pulmonary edema	Fluid in the lungs
Pulmonary fibrosis	Fibrous tissues in the lungs
Pyorrhea	A discharge of pus, particularly from the gums
Retching	A strong involuntary effort to vomit
Salivation	An excessive discharge of saliva

Somnolence	Sleepiness
Stomatitis	Inflammation of the mouth
Stupor	Partial or nearly complete unconsciousness
Thiocyanate Intoxication	Characterized by central nervous system stimulation and depression, and muscular incoordination
Tinnitus	Ringling in the ears
Ulceration	The formation of an ulcer
Vertigo	A sensation as if the external world were revolving around the patient or if he were revolving in space; the term is sometimes erroneously used as a synonym for dizziness

2. KEY TO ABBREVIATIONS

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KEY TO ABBREVIATIONS

cc	cubic centimeter
CNS	central nervous system effects
gm	gram
H	hour
IRR	irritant effects
kg	kilogram (one thousand grams)
LC50	lethal concentration 50 percent kill
LCLo	lowest published lethal concentration
LD50	lethal dose 50 percent kill
LDLo	lowest published lethal dose
C.M.	cubic meter
mg	milligram (one thousandth of a gram; 10^{-3} gm)
ml	milliliter
ppm	parts per million (v/v)
TCLo	lowest published toxic concentration
TDLo	lowest published toxic dose
TLV	threshold limit value
TWA	time-weighted average
W	week
Y	year

3. MATERIAL SAFETY DATA SHEETS

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PRODUCT DESIGNATION

03-263-0606

A,G - Dibromohydrin Glycerol

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
---------------------	-------------------------

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
-------------------------	-----------------

CHEMICAL NAME AND SYNONYMS	FORMULA
----------------------------	---------

1,3 Dibromo 2 Propanol

 $\text{BrCH}_2\text{CHOHCH}_2\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 217.91

BOILING POINT 219°C	° F.	VAPOR PRESSURE at 90°C	mm Hg. 10
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 2.12		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR yellow liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

A,G - Dibromohydrin Glycerol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE

Severe gastrointestinal irritation, eye & nasal irritation,

nausea, vomiting, dizziness.

EFFECTS OF CHRONIC EXPOSURE

Nausea, vomiting, abdominal pain.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;

inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INGCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

263-0606B

PRODUCT DESIGNATION

03-267-1707
Heptoyl Chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Heptoyl Chloride	FORMULA $\text{CH}_3(\text{CH}_2)_5\text{COCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 148.03

BOILING POINT 175°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.96		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O decomposes		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

Reacts with steam or water to produce HCl.

PRODUCT DESIGNATION
Heptoyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL None available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION SKIN AND EYE
inhalation, ingestion IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE Irritation of eyes and respiratory system; severe attack on
digestive tract; eye and skin burns.

EFFECTS OF CHRONIC EXPOSURE
Bronchial irritation, erosion of teeth.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - drink water, milk of magnesia, get
medical aid; inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)
Reacts violently with water or alcohol.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT rubber apron	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

267-1707B

CAS:000067721

K140250

PRODUCT DESIGNATION

03-267-2407
HexachloroethaneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Carbon Hexachloride

FORMULA

 C_2Cl_6

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human LDLO -	50 mg/kg					
LDLO intravenous - dog	325 mg/kg					
LDLO subcutaneous - rabbit	- 4000 mg/kg.					

SECTION III PHYSICAL DATA

MW - 236.76

BOILING POINT

186°C

° F.

VAPOR PRESSURE

at 33°C

mm Hg.

1

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

2.09

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

insoluble

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

colorless crystals with camphor-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

none available

FLAMMABLE
(EXPLOSIVE)

UPPER

METHOD USED

LIMITS

LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Hexachloroethane

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 1 PPM, 10 mg/C.M. skin

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

moderate

REVELANT SYMPTOMS OF EXPOSURE

Eyes, skin, mucous membrane and lung irritation;

narcotic in high concentrations.

EFFECTS OF CHRONIC EXPOSURE

Liver injury

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;

inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Avoid alkalies and metals.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

rubber apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

267-2407B

PRODUCT DESIGNATION

03-267-3207
03-267-3255
03-267-3257
Hexane

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Normal hexane

$$\begin{array}{r} \text{C H} \\ \hline 6 \quad 14 \end{array}$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO inhalation - human	1000 PPM - CNS					
LCLO - inhalation - mouse	1800					

SECTION III PHYSICAL DATA MW - 86.17

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
69°C		25°C.	150
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-96°C		2.97	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.660			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
none			
APPEARANCE AND ODOR			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 7.5%
-7°F METHOD USED		LOWER 1.1%

EXTINGUISHING MEDIA

carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Hexane

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 100 PPM, 360 mg/C.M.

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Dizziness, convulsions, coma, chemical pneumonia,

eye and skin irritation.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, give oxygen as needed; if swallowed - get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towel, evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

safety glasses

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with chemical filter

OTHER PROTECTIVE EQUIPMENT

Coveralls

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, well-ventilated area.

OTHER PRECAUTIONS

SIGNATURE

DATE

267-3207B

PRODUCT DESIGNATION

03-267-5507

Hydrazine Dihydrochloride

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA
Hydrazine Dihydrochloride	$N_2H_4 \cdot 2HCl$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 104.98

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
198°C		EVAPORATION RATE (_____ = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		VOLATILE	% Vol. % Wt.
1.42			
SOLUBILITY IN WATER Pts/100 pts H ₂ O			
soluble			
APPEARANCE AND ODOR			
white crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		LOWER
METHOD USED		
EXTINGUISHING MEDIA Flood with water; dry chemical and carbon dioxide may be used to extinguish fire.		
SPECIAL FIRE FIGHTING PROCEDURES		
Wear full protective clothing.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Hydrazine Dihydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC
no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE Ingestion - vomiting and convulsions; inhalation -
vomiting, respiratory distress, convulsions, eye damage.EFFECTS OF CHRONIC EXPOSURE Liver damage, hemolytic anemia and convulsive seizures, lung
and kidney damage, allergic reaction.EMERGENCY AND FIRST AID PROCEDURES If swallowed - drink water, get medical aid; inhalation -
artificial respiration, oxygen; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

avoid oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside storage preferred; store in standard flammable liquids storage cabinet.
Keep separate from oxidizing materials.

OTHER PRECAUTIONS

SIGNATURE

DATE

267-5507B

PRODUCT DESIGNATION

Hydrazine hydrate
03-267-5787

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Hydrazine hydrate

 $N_2H_4 \cdot H_2O$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			129		Rat	
#1 LD ₅₀ intravenous - rat 25 mg/kg.			83		Mouse	
			55		Rabbit	
			40		Guinea Pig	

SECTION III PHYSICAL DATA MW 50.88

BOILING POINT 113.5°C	° F.	VAPOR PRESSURE 39.5 at 118.5°C	mm Hg.
MELTING POINT -51.7°C	° F.	VAPOR DENSITY (Air = 1) 1 at 100°F	
SPECIFIC GRAVITY (H ₂ O = 1) 1.03		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER ∞ Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

colorless - ammonical and fishy odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 126°C	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 100%
METHOD USED O.C.		LOWER 4.7%

EXTINGUISHING MEDIA

Water, dry chemicals and CO₂, alcohol foam -

SPECIAL FIRE FIGHTING PROCEDURES

Water spray to disperse vapors. Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Spontaneous ignition with oxidants such as nitric acid and hydrogen peroxide.

PRODUCT DESIGNATION
Hydrazine hydrate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL TLV - 1 PPM, 1.3 mg/C.M. CARCINOGENIC yes

PRINCIPLE ROUTES OF ABSORPTION Ingestion, inhalation, skin absorption SKIN AND EYE IRRITATION Severe on liquid contact

RELEVANT SYMPTOMS OF EXPOSURE Inhalation - vomiting, respiratory distress and convulsions; direct skin contact - burns; ingestion - vomiting and convulsions, eye damage.

EFFECTS OF CHRONIC EXPOSURE Lung and kidney damage, allergic reaction, Liver damage, hemolytic anemia and convulsive seizures.

EMERGENCY AND FIRST AID PROCEDURES

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY Heat and strong oxidizing agents.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID) Spontaneous ignition with strong oxidants such as nitric acid or H_2O_2 .

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Use water spray to disperse vapors.

WASTE DISPOSAL METHOD Dilute to non-inflammable mixture.

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST Use in hood	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Face shield
MECHANICAL (GENERAL)	GLOVES Rubber gloves
SPECIAL	RESPIRATOR With appropriate filter

OTHER PROTECTIVE EQUIPMENT Full protective clothing recommended.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Maintain under nitrogen atmosphere.

OTHER PRECAUTIONS Keep away from strong oxidizing agents.

SIGNATURE	DATE
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267-5787B

CAS:010034932

MV96250

PRODUCT DESIGNATION

Hydrazine Sulfate
03-267-5947

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Hydrazine sulfate

FORMULA

 $N_2H_4 \cdot H_2SO_4$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human TDLO 201	mg/C.M.		601		rat	
lowest published - lethal dose						
subcutaneous - rat 250	mg/kg					
intraperitoneal - mouse 250	mg/kg.					

SECTION III PHYSICAL DATA

BOILING POINT -	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 254° C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.378		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O very soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless crystal			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water, dry chemical and CO ₂		

SPECIAL FIRE FIGHTING PROCEDURES Water spray to disperse hydrazine vapor - wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

May react vigorously with strong oxidizing agents.

PRODUCT DESIGNATION

Hydrazine sulfate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC carcinogenic

PRINCIPLE ROUTES OF ABSORPTION

ingestion, skin

SKIN AND EYE

IRRITATION severe on direct contact

RELEVANT SYMPTOMS OF EXPOSURE Burns - from direct skin contact.

Ingestion - vomiting and convulsions, eye damage, respiratory distress.

EFFECTS OF CHRONIC EXPOSURE Lung and kidney damage, allergic reaction

Liver damage, hemolytic, anemia and convulsive seizures.

EMERGENCY AND FIRST AID PROCEDURES Skin contact - drench with water; if swallowed - wash mouth, give water to drink, get medical aid; inhalation - oxygen or artificial respiration as necessary.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

Heat and strong oxidizing agents.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Reacts vigorously with strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

flush with water

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Face shield

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Rubber apron, full face shield.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

Keep away from strong oxidizing agents

SIGNATURE

DATE

267-5947B

PRODUCT DESIGNATION

03-267-6737

Hydroquinone

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

P dihydroxy benzene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1, 4 Benzene diol

FORMULA

 $C_6H_4(OH)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			320		rat	
#1 lowest published toxic dose			400		mouse	
skin - mouse 800 mg/kg.			200		dog	
Lowest published lethal dose			70		cat	
oral - human 29 mg/kg			550		guinea pig	
			300		pigeon	

SECTION III PHYSICAL DATA MW - 110.11

BOILING POINT 286°C	° F.	VAPOR PRESSURE at 132°C	1 mm Hg.
MELTING POINT 171°C	° F.	VAPOR DENSITY (Air = 1)	3.81
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.358			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
6			

APPEARANCE AND ODOR

colorless crystal salt

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 329°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED CC		LOWER

EXTINGUISHING MEDIA

Water, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Hydroquinone

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL TLV 2 mg/C.M. CARCINOGENIC neoplastic

PRINCIPLE ROUTES OF ABSORPTION Ingestion, skin, inhalation of dust SKIN AND EYE IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Nausea, dizziness, increased respiration, headache, cyanosis, delirium and collapse, depigmentation of eyes and skin.

EFFECTS OF CHRONIC EXPOSURE Eye damage, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - induce vomiting, gastric lavage, medical aid; wash from eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Brush onto paper, burn paper on iron pan in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE safety goggles
MECHANICAL (GENERAL)	GLOVES rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Keep tightly closed, store in place away from sunlight.

OTHER PRECAUTIONS

SIGNATURE	DATE
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267-6737B

CAS:000095874

ZE57750

PRODUCT DESIGNATION

03-267-8207

2 Hydroxy 1,4 - Dimethylbenzene

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2,5 Xylenol

FORMULA

 $\text{HO}(\text{C}_6\text{H}_3)(\text{CH}_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			444		rat	
			383		mouse	
			938		rabbit	

SECTION III PHYSICAL DATA MW - 122.16

BOILING POINT 212°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 76°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O slightly soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR white crystal		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

2 Hydroxy 1,4 Dimethylbenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

yes

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Headache, dizziness, nausea, vomiting, stomach pain, exhaustion; skin & eye irritation.

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - drink epsom salt solution, get medical aid; inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

MECHANICAL (GENERAL)

goggles
gloves

SPECIAL

rubber
RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

267-8207B

CAS:000095658

ZE63000

PRODUCT DESIGNATION

03-267-8307

4 Hydroxy - 1,2 - Dimethyl benzene

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

3,4 - Xylenol

FORMULA

 $\text{HO}(\text{C}_6\text{H}_3)(\text{CH}_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			400		mouse	
			800		rabbit	
Lowest published toxic dose						
skin - mouse 90 mg/kg						

SECTION III PHYSICAL DATA MW - 122.16

BOILING POINT 225 °F.	VAPOR PRESSURE mm Hg.
MELTING POINT 65 °C °F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.02	EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O slightly soluble	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR white crystal	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

4 Hydroxy - 1,2 - Dimethylbenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available

CARCINOGENIC yes

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Headache, dizziness, nausea, vomiting, stomach pain, exhaustion;
skin & eye irritation.

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - drink epsom salt solution, get medical
aid; inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

267-8307B

PRODUCT DESIGNATION

03-267-8407

4 Hydroxy - 1,3 - Dimethylbenzene

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2,4 - Xylenol

FORMULA

 $\text{HO}(\text{C}_6\text{H}_3)(\text{CH}_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose			3200	1040	Rat	
Intraperitoneal - mouse	150 mg/kg		809		Mouse	

SECTION III PHYSICAL DATA MW - 122.16

BOILING POINT 212°C	° F.	VAPOR PRESSURE at 120°C	mm Hg.
			20
MELTING POINT 26°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.04			
SOLUBILITY IN WATER Pts./100 pts H ₂ O		VOLATILE	% Vol, % Wt.
slightly soluble			
APPEARANCE AND ODOR			
yellow-brown liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

4 Hydroxy - 1,3 - Dimethylbenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC
yes

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Headache, dizziness, nausea, vomiting, stomach pain,
exhaustion; skin & eye irritation.

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - drink epsom salt solution, get medical aid;
inhalation - rest; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
goggles

MECHANICAL (GENERAL)

GLOVES
rubber

SPECIAL

RESPIRATOR
self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

267-8407B

CAS:000090437

DV57750

PRODUCT DESIGNATION

03-267-8647

O - Hydroxydiphenyl

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 hydroxybiphenyl

FORMULA

 $C_6H_5(C_6H_4)OH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO oral - human	500 mg/kg		2700		Rat	

SECTION III PHYSICAL DATA MW - 170.20

BOILING POINT 286°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 57°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR white solid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA carbon dioxide or dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES water may cause frothing.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

O-Hydroxydiphenyl

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE Nausea, vomiting, central nervous system depression.

EFFECTS OF CHRONIC EXPOSURE

Irritation and lesions of respiratory system.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - get medical aid, gastric lavage;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Polyvinyl alcohol
RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

267-8647B

CAS:000092693

DV58500

PRODUCT DESIGNATION

03-267-8677

P - Hydroxydiphenyl

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

4 hydroxybiphenyl

FORMULA

 $C_{12}H_{10}(C_6H_5)_2OH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO subcutaneous - mouse	1000 mg/kg		none	available		

SECTION III PHYSICAL DATA

BOILING POINT 306°C	° F.	VAPOR PRESSURE	mm Hg.	
MELTING POINT 165°C	° F.	VAPOR DENSITY (Air = 1)		
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)		
SOLUBILITY IN WATER Pts/100 pts H ₂ O slightly soluble		VOLATILE	% Vol.	% Wt.
APPEARANCE AND ODOR white solid				

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA carbon dioxide or dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES water may cause frothing.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
P-Hydroxydiphenyl

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none available

CARCINOGENIC neoplastic

PRINCIPLE ROUTES OF ABSORPTION
inhalation, ingestion

SKIN AND EYE
IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE
Nausea, vomiting, central nervous system depression.

EFFECTS OF CHRONIC EXPOSURE
Irritation and lesions of respiratory system.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - get medical aid, gastric lavage; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

polyvinyl alcohol

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

267-8677B

CA-000148243

VC42000

PRODUCT DESIGNATION

03-267-9857
03-267-9837
8-Hydroxyquinoline

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

8 Quinolinol

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

8-Hydroxyquinoline

FORMULA

 C_9H_7ON

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human LDLO 500	mg/kg		1200		Rat	

SECTION III PHYSICAL DATA MW - 145.10

BOILING POINT 267° C.	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 76° C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Nearly insoluble		VOLATILE % Vol	% Wt.
APPEARANCE AND ODOR White crystal or powder.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition, it emits highly toxic fumes of oxides of nitrogen.

PRODUCT DESIGNATION

8 Hydroxyquinoline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Stimulation of central nervous system, digestive system irritation,
eye irritation.

EFFECTS OF CHRONIC EXPOSURE

May form cancerous tumors.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - rest;
wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With organic filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

267-9857B

PRODUCT DESIGNATION

03-278-0308
IndeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Indonaphthene

FORMULA

 $C_{10}H_8$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			See note			
Note:						
Lowest published lethal dose						
subcutaneous - rat 100 mg/kg.						

SECTION III PHYSICAL DATA MW - 116.15

BOILING POINT 182°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -2°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.99		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts. H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water spray carbon dioxide, dry chemical or alcohol foam.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Indene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 10 PPM, 45 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

slight

REVELANT SYMPTOMS OF EXPOSURE

Irritation of mucous membranes and lungs,

pulmonary edema.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INGCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

278-0308B

CAS-000540374

BY38500

PRODUCT DESIGNATION

03-278-1308
P-IodoanilineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Iodoaniline

FORMULA

 $\text{IC}_6\text{H}_4\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			100		Bird	

SECTION III PHYSICAL DATA MW - 219.03

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
68°C.			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Slightly soluble			
APPEARANCE AND ODOR			
Yellow crystal			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water spray, carbon dioxide, alcohol foam.

SPECIAL FIRE FIGHTING PROCEDURES

Self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Vapor may form explosive mixture with air.

PRODUCT DESIGNATION
P Iodoaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Low

REVELANT SYMPTOMS OF EXPOSURE Cyanosis, headache, blood pressure drop, lethargy, jaundice, anemia, pain in joints, fainting.

EFFECTS OF CHRONIC EXPOSURE Weight loss, anemia, weakness, irritability, possible liver damage, inflammation of kidneys, ringing in ear.

EMERGENCY AND FIRST AID PROCEDURES Remove from exposure; wash skin and eyes

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Sodium and potassium peroxides, ozone, perchloric acid.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear protective clothing during clean-up.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in flammable liquids cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

278-1308B

PRODUCT DESIGNATION

03-278-1808
IodobenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Phenyl iodide	FORMULA C_6H_5I

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 204.02

BOILING POINT 188.5 °F.	VAPOR PRESSURE at 71°C	12 mm Hg.
MELTING POINT -31.3 °F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.82	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble	VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA water, foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Iodobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

inhalation, ingestion, skin

IRRITATION

severe

REVELANT SYMPTOMS OF EXPOSURE Cyanosis, deep and rapid respiration, irregular pulse,
drowsiness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Lung, liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical
aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl alcohol

SPECIAL

RESPIRATOR

Self-contained breathing apparatus.

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

278-1808B

PRODUCT DESIGNATION

03-278-2308
O-Iodobenzoyl Chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2 Iodobenzoyl Chloride	FORMULA $\text{IC}_6\text{H}_4\text{COCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 266.98

BOILING POINT ° F.	VAPOR PRESSURE at 159°C	mm Hg. 29
MELTING POINT 31°C	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Decomposes	VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Crystalline		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water spray, foam, carbon dioxide or dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES Full protective clothing.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

O-Iodobenzoyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Irritation of respiratory system, skin & eye burns,
mouth and digestive tract burns.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES If swallowed - drink water, milk of magnesia, get medical
aid; inhalation - rest, oxygen, artificial respiration; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

When heated, phosgene is produced.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry, well-ventilated location.

OTHER PRECAUTIONS

SIGNATURE

DATE

278-2308B

PRODUCT DESIGNATION

03-278-2708
2 Iodo - 1, 3 - Dimethylbenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Iodo-M-Xylene 2	FORMULA $I C_6H_3(CH_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 232.07

BOILING POINT 230°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR clear liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical. Water spray may be used to reduce rate of burning.		
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
2 Iodo - 1,3 - Dimethylbenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none available

CARCINOGENIC
no

PRINCIPLE ROUTES OF ABSORPTION
inhalation, ingestion

SKIN AND EYE
IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE Irritation of respiratory tract, disturbance of vision,
dizziness, nausea, collapse, coma; burning of skin and eyes.

EFFECTS OF CHRONIC EXPOSURE
Dermatitis, blood and liver damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, get medical aid; ingestion - give
saline cathartics and demulcents, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR
Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside storage preferred; inside storage flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

278-2708B

PRODUCT DESIGNATION

03-278-2808

2 - Iodo - 1,4 - Dimethylbenzene

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Iodo - P - Xylene 2

FORMULA

 $\text{IC}_6\text{H}_3(\text{CH}_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 232.07

BOILING POINT 230°C	° F.	VAPOR PRESSURE at 114°C	mm Hg. 20
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.62		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR clear liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical. Water spray may be used to reduce rate of burning.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

2 Iodo - 1,4 - Dimethylbenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE

Irritation of respiratory tract, disturbance of vision, dizziness, nausea, collapse, coma; burning of skin & eyes.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, blood and liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, get medical aid; ingestion - give saline water cathartics and demulcents, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Rubber

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside storage preferred; inside storage flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

278-2808B

PRODUCT DESIGNATION

03-278-2908

4 - Iodo-1,3-Dimethylbenzene

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Iodo-M-Xylene 4	FORMULA $\text{IC}_6\text{H}_3(\text{CH}_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 232.07

BOILING POINT not available	° F.	VAPOR PRESSURE at 113°C	mm Hg. 20
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR clear liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical. Water spray may be used to reduce rate of burning.		
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

4-Iodo-1,3-Dimethylbenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE

Irritation of respiratory tract; disturbance of vision, dizziness, nausea, collapse, coma; burning of skin & eyes.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, blood & liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, get medical aid; if swallowed - give saline water cathartics and demulcents, get medical aid; wash skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside storage preferred; inside storage flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

278-2908B

PRODUCT DESIGNATION

03-278-3308
O-Iododiphenyl

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

O-Iododiphenyl

 $\text{C}_{12}\text{H}_9\text{I}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

BOILING POINT 192°C at 36 mm	° F.	VAPOR PRESSURE at 175°C	MW - 280.11	16 mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)		
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)		
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol.	% Wt.

APPEARANCE AND ODOR

colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

water, foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

O-Iododiphenyl

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

Acne, irritation of respiratory passages.

EFFECTS OF CHRONIC EXPOSURE

Liver damage

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

278-3308B

PRODUCT DESIGNATION

03-278-3408
P-Iododiphenyl

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Iododiphenyl

FORMULA

$$\text{I} \text{C}_6\text{H}_4 \text{C}_6\text{H}_5$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 280.11

BOILING POINT 320°C	° F.	VAPOR PRESSURE at 183	mm Hg.
MELTING POINT 113°C	° F.	VAPOR DENSITY (Air = 1)	11
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless crystal			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

water, foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
P-Iododiphenyl	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
none available	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
inhalation, ingestion, skin	IRRITATION moderate
RELEVANT SYMPTOMS OF EXPOSURE	
Acne, irritation of respiratory passages.	
EFFECTS OF CHRONIC EXPOSURE	
Liver damage	
EMERGENCY AND FIRST AID PROCEDURES	
If swallowed - give emetic, get medical aid; inhalation - rest; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	goggles
MECHANICAL (GENERAL)	GLOVES
	rubber
SPECIAL	RESPIRATOR
	self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

278-3408B

CAS:000533584

SL-55000

PRODUCT DESIGNATION

03-278-4308
O-IodophenolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

O-Iodophenol

FORMULA

I C₆H₄OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose						
subcutaneous - rat - 4000 mg/kg						

SECTION III PHYSICAL DATA MW - 220.01

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
		186°C.	160
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
40°C.			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.88			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Soluble in hot water			
APPEARANCE AND ODOR			
Needle-like crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Dry chemical, alcohol foam, carbon dioxide

SPECIAL FIRE FIGHTING PROCEDURES

Self-contained

UNUSUAL FIRE AND EXPLOSION HAZARDS

May liberate iodine fumes on heating.

PRODUCT DESIGNATION
O-Iodophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC NO

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Eye, skin and mucous membrane irritation, dermatitis, cyanosis.

EFFECTS OF CHRONIC EXPOSURE

Liver damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; wash skin & eyes; if swallowed - give emetic, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Pour sand to soda ash 9:1 mixture on spill and sweep into box for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Butyl Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry place.

OTHER PRECAUTIONS

SIGNATURE

DATE

278-4308B

PRODUCT DESIGNATION

03-278-4708
M-Iodotoluene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS M-Tolyl Iodide	FORMULA $\text{IC}_6\text{H}_4\text{CH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 218.05

BOILING POINT 213°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.70		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR clear liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA alcohol foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION M-Iodotoluene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL none available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion	SKIN AND EYE IRRITATION severe
RELEVANT SYMPTOMS OF EXPOSURE Eye and respiratory system irritation; severe irritation of digestive tract if swallowed.	
EFFECTS OF CHRONIC EXPOSURE --	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE goggles
MECHANICAL (GENERAL)	GLOVES rubber
SPECIAL	RESPIRATOR with proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

278-4708B

PRODUCT DESIGNATION

03-278-4908
P-Iodotoluene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P-Tolyl Iodide	FORMULA $\text{IC}_6\text{H}_4\text{CH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

BOILING POINT 212°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 36°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.68		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR white crystals		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
P-Iodotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL None available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion SKIN AND EYE IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE Eye and respiratory system irritation, severe irritation of digestive tract if swallowed.

EFFECTS OF CHRONIC EXPOSURE --

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE	DATE
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278-4908B

CAS:000078591

GW77000

PRODUCT DESIGNATION

03-278-5808
IsophoroneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Isoacetopherone

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Trimethyl-3 Cyclohexene-5-one

FORMULA

COCHC(CH3)CH2C(CH3)2CH2

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			2330		rat	
TCLO inhalation human	25 PPM			1500	rabbit	

SECTION III PHYSICAL DATA MW - 138.20

BOILING POINT 215°C	° F.	VAPOR PRESSURE at 38°C	mm Hg. 1
MELTING POINT -8°C.	° F.	VAPOR DENSITY (Air = 1) 4.77	
SPECIFIC GRAVITY (H ₂ O = 1) 0.93		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O slightly soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR water white liquid, peppermint-like odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 205 ⁰ F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 3.8%
METHOD USED O.C.		LOWER 0.8%
EXTINGUISHING MEDIA Foam; carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
Isophorone	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
TLV - 5 PPM, 25 mg/C.M. NO	
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Ingestion, inhalation	IRRITATION moderate to severe
RELEVANT SYMPTOMS OF EXPOSURE Eye, nose and throat irritation, nausea, headache, dizziness, faintness, inebriation.	
EFFECTS OF CHRONIC EXPOSURE	
Kidney poison.	
EMERGENCY AND FIRST AID PROCEDURES	
If swallowed - give emetic, get medical aid; inhalation - give oxygen as needed; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
Can react with oxidizing materials.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Absorb on paper towel; evaporate in hood.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
Coveralls	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

278-5808B

PRODUCT DESIGNATION

03-296-2919
2,4 Lutidine

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2,4 Dimethyl Pyridine	FORMULA $C_5H_7N(CH_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			200		rat	

SECTION III PHYSICAL DATA MW - 107.15

BOILING POINT 157°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.95		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 20		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR clear liquid - fish-like odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
2,4 Lutidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION SKIN AND EYE
inhalation, ingestion, skin IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE
Narcosis, headache, nausea, giddiness, vomiting.

EFFECTS OF CHRONIC EXPOSURE Occasional vomiting and diarrhea; weight loss and anemia;
ocular and facial paralysis.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid;
inhalation - artificial respiration and oxygen as necessary; wash from
skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)
May react with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST Use in hood	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE goggles
MECHANICAL (GENERAL)	GLOVES rubber
SPECIAL	RESPIRATOR self-contained
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Outside storage preferred, store inside in a flammable liquids
storage cabinet.

OTHER PRECAUTIONS

SIGNATURE DATE

278-2919B

PRODUCT DESIGNATION

03-305-2601
Mesityl oxideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Isopropylideneacetone

FORMULA

 $(CH_3)_2CCHCOCH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Inhalation - human TCLO	25 ppm	irritation	1120 1000	5990	Rat Rabbit	
Intraperitoneal - mouse	LD 50 354 mg/kg					
Lowest published lethal concentration in air						
inhalation - rat 1000 PPM						

SECTION III PHYSICAL DATA

MW 98.14

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

130°C

at 26°C

10

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

-59°C

3.38

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

0.85

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

Slightly soluble

APPEARANCE AND ODOR

Colorless oily liquid, honeylike odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

90°F

FLAMMABLE
(EXPLOSIVE)

UPPER

METHOD USED

C.C.

LIMITS

LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical. Water may be ineffective.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Mesityl oxide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 25 PPM, 100 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Dermatitis, corneal injury, respiratory irritation,
lowering of respiratory and heart rate, loss of reflexes, coma.

EFFECTS OF CHRONIC EXPOSURE

Kidney, liver and lung damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - give oxygen as needed; if swallowed -
give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towel; evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in well ventilated area. Isolate from oxidizing materials.

OTHER PRECAUTIONS

SIGNATURE

DATE

305-2601B

CAS:000108678

OX68250

PRODUCT DESIGNATION

03-305-2701
MesityleneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,3,5 Trimethylbenzene

FORMULA

 $(CH_3)_3C_6H_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO inhalation - human	10 PPM - CNS					
LDLO intraperitoneal - rat	1500 mg/kg					
LCLO inhalation - rat	2400 ppm/24 hr.					

SECTION III PHYSICAL DATA MW - 120.19

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
165°C		at 20°C	1.86
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-53°C		1.01	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.86			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
slightly soluble			
APPEARANCE AND ODOR			
liquid, peculiar odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
122°F		
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Mesitylene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 25 ppm - 120 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Chemical pneumonia, central nervous system depression, frequent bleeding.

EFFECTS OF CHRONIC EXPOSURE Central nervous system depression, nervousness, tension, anxiety, asthmatic bronchitis.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - oxygen as needed; if swallowed - get medical aid, gastric lavage; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels, evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

305-2701B

CAS:000079209

A191000

PRODUCT DESIGNATION

03-305-5631
03-305-5671
Methyl Acetate

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Methyl Acetic Ester

FORMULA

CH₃COOCH₃

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Inhalation - human TCLO	1500 mg/C.M.	irritant				
			3700		Rabbit	
LDLO subcutaneous - guinea pig,	3000 mg/kg					
LDLO oral - rat	4800 mg/kg					
TCLO inhalation - mouse	80 mg/C.M.					
TCLO inhalation - cat	67 mg/C.M.					

SECTION III PHYSICAL DATA

BOILING POINT	° F.	VAPOR PRESSURE	
58 ⁰ C		at 9 ⁰ C	100 mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-99 ⁰ C		2.55	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.92			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
33			

APPEARANCE AND ODOR

colorless liquid, fruity odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
15 ⁰ F		16%
METHOD USED		LOWER
C.C.		3.1%

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
Methyl acetate	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	200 PPM, 610 mg/C.M.
	CARCINOGENIC <u>no</u>
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Ingestion, inhalation, skin	IRRITATION <u>severe</u>
RELEVANT SYMPTOMS OF EXPOSURE	Irritation of eyes and upper respiratory system, dizziness and depression, palpitation of heart.
EFFECTS OF CHRONIC EXPOSURE	--
EMERGENCY AND FIRST AID PROCEDURES	If swallowed - give emetic, get medical aid; inhalation - rest; wash eyes and skin.
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Absorb on paper towels; evaporate in hood.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Neoprene
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Store in closed container in well-ventilated area.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

305-5631B

CAS:000096333

AT28000

PRODUCT DESIGNATION

03-305-6101
Methyl AcrylateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Methyl Acrylate

 $\text{CH}_2=\text{CHCOOCH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO inhalation - human	75 ppm irritant		300		rat	
				1300	rabbit	

SECTION III PHYSICAL DATA MW - 86.10

BOILING POINT 80°C	° F.	VAPOR PRESSURE at 28°C	mm Hg. 100
MELTING POINT -75°C	° F.	VAPOR DENSITY (Air = 1) 2.97	
SPECIFIC GRAVITY (H ₂ O = 1) 0.95		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER 100 pts H ₂ O Slightly soluble		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless liquid, acrid odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 27°C	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical, foam.

SPECIAL FIRE FIGHTING PROCEDURES

Water spray may be ineffective. Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Heat may cause polymerization and rapid expansion.

PRODUCT DESIGNATION	
Methyl Acrylate	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
10 PPM, 35 mg/C.M. (Skin)	No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion	IRRITATION Severe
RELEVANT SYMPTOMS OF EXPOSURE	
Eyes, nose & throat irritation, headache, skin eruptions.	
EFFECTS OF CHRONIC EXPOSURE	
Lung, liver and kidney damage.	
EMERGENCY AND FIRST AID PROCEDURES	
If swallowed - give emetic; get medical aid; inhalation - artificial respiration and oxygen as needed. Wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
Heat	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Absorb on paper towels; evaporate in hood.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
	GLOVES
SPECIAL	Neoprene rubber
	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	Self-contained
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Outside or detached storage preferred; inside - standard flammable liquids cabinet.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

305-6101B

PF63000

MATERIAL SAFETY DATA SHEET

Methylamine
(25% in H₂O)
03-305-7601

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Methyl Amine	FORMULA CH ₃ NH ₃

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Note: Lowest published lethal dose; subcutaneous - mouse 2500 mg/kg						

BOILING POINT -6.5°C	° F.	VAPOR PRESSURE at 25°C	2 atm.	mm Hg
MELTING POINT -92.5°C	° F.	VAPOR DENSITY (Air = 1) 1.07		
SPECIFIC GRAVITY (H ₂ O = 1) 0.769 (-70/4)		EVAPORATION RATE (_____ = 1)		
SOLUBILITY IN WATER Pts/100 pts H ₂ O Very soluble		VOLATILE	% Vol.	% Wt.

FLASH POINT 0° F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 20.7%
METHOD USED Closed Cup		LOWER 4.9%

EXTINGUISHING MEDIA
water spray, carbon dioxide, dry chemical and "alcohol" foam.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Contact with mercury can produce explosion. May flash back.

PRODUCT DESIGNATION
Methylamine (25% in H₂O)

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 10 ppm, 12 mg/C.M.

CARCINOGENIC
No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation of vapor

SKIN AND EYE

IRRITATION Moderate to severe

RELEVANT SYMPTOMS OF EXPOSURE Vapor is an irritant to respiratory system and eyes, may affect central nervous system, coughing, choking.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES Remove patient from exposure; if on skin or eyes, drench or irrigate thoroughly with water, rest, keep warm, apply artificial respiration if necessary; obtain medical attention.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Mercury

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Spread sodium bisulfate on spill and sprinkle with water. Drain into sewer.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles or safety glasses

MECHANICAL (GENERAL)

GLOVES
Rubber (butyl)

SPECIAL

RESPIRATOR
w/appropriate filter

OTHER PROTECTIVE EQUIPMENT

Full-face shield, protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Should be stored in standard flammable liquids storage room or cabinet. Keep away from mercury.

OTHER PRECAUTIONS

SIGNATURE

DATE

305-7601B

Methylamine Hydrochloride
03-305-7701

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Methyl ammonium chloride

$$\text{CH}_3\text{NH}_2\text{HCl}$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Note: Lowest published lethal dose; skin - rat 800 mg/kg						

SECTION III PHYSICAL DATA Mol. Wt. 67.52

BOILING POINT

0 F

VAPOR PRESSURE at 230°C	1.0 mm Hg
----------------------------	-----------

15 mm Hg.

MELTING POINT

0 F

VAPOR DENSITY (Air = 1)	
-------------------------	--

228°C

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (	= 1)
--------------------	------

1.23

SOLUBILITY IN WATER	Pts/100 pts H ₂ O
---------------------	------------------------------

VOLATILE

% Vol.

% Wt.

Very soluble

APPEARANCE AND ODOR

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

Estimated 200°C

METHOD USED

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

EXTINGUISHING MEDIA

Water spray, alcohol foam, CO₂, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Methylamine Hydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Ingestion, inhalation of dust

SKIN AND EYE

IRRITATION Mild

RELEVANT SYMPTOMS OF EXPOSURE Cardiac stimulation, eye irritation, pulmonary edema, headache, faintness and anxiety.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, keep warm, get medical attention; if swallowed - wash mouth with water, give plenty of water to drink; wash skin and eyes with water.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Safety glasses

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR
w/appropriate filter

OTHER PROTECTIVE EQUIPMENT

Face shield

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

305-7701B

CAS:000110430

MJ50750

PRODUCT DESIGNATION

03-305-9601
Methyl N-Amyl KetoneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 Heptanone

FORMULA

 $\text{CH}_3(\text{CH}_2)_4\text{COCH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			1670		rat	
			730		mouse	
				13,000	rabbit	
Lowest published lethal concentration in air						
inhalation - rat 4000 PPM						

SECTION III PHYSICAL DATA MW - 114.18

BOILING POINT	° F.	VAPOR PRESSURE	
151°C		at 20°C	2.6 mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-36°C		3.9	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.82			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
0.4			

APPEARANCE AND ODOR

Water white liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
120°F		
METHOD USED		LOWER
O.C.		

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Methyl N-Amyl Ketone

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

100 PPM, 465 mg/kg.

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE

Irritation of mucous membranes, narcosis, eye irritation.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - rest; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Neoprene

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

305-9601B

CAS:000100618

BY45500

PRODUCT DESIGNATION

03-306-0202
N-MethylanilineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Monomethylaniline

FORMULA

 $C_6H_5NH(CH_3)$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose						
oral - rabbit - 280 mg/kg						
oral - mouse 380 mg/kg						

SECTION III PHYSICAL DATA

MW - 107.15

BOILING POINT 196°C	° F.	VAPOR PRESSURE at 36°C	mm Hg.
MELTING POINT -57°C	° F.	VAPOR DENSITY (Air = 1) 3.70	1
SPECIFIC GRAVITY (H ₂ O = 1) 0.99		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Reddish brown, oily liquid.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition, emits aniline fumes.

PRODUCT DESIGNATION

N-Methylaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

2 PPM, 9 mg/C.M.

CARCINOGENIC

neoplastic

PRINCIPLE ROUTES OF ABSORPTION

Ingestion, inhalation, skin

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Headache, drowsiness, cyanosis, mental confusion, convulsions

EFFECTS OF CHRONIC EXPOSURE Fatigue, loss of appetite, headache, dizziness, blood damage, central nervous system damage.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - rest, wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Neoprene rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

306-0202B

PRODUCT DESIGNATION

03-306-2702
Methyl Bromoacetate

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Methyl Bromoacetate	FORMULA $\text{CH}_3\text{COOCH}_2\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Note:			See Note			
Lowest published lethal dose						
intravenous - mouse	10 mg/kg					

SECTION III PHYSICAL DATA MW - 152.99

BOILING POINT 144 d	° F.	VAPOR PRESSURE 52°C	mm Hg. 15
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) > 1		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O low solubility		VOLATILE	% Vol. % Wt
APPEARANCE AND ODOR colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical and water.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
Methyl Bromoacetate	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
None available	
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION severe
RELEVANT SYMPTOMS OF EXPOSURE Irritation of eyes and upper respiratory system, dizziness and depression, palpitation of heart.	
EFFECTS OF CHRONIC EXPOSURE	
--	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Store in standard flammable liquids cabinet.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

306-2702B

PRODUCT DESIGNATION

03-306-3702
Methyl B-Bromopropionate

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Methyl 3-Bromopropionate	FORMULA $\text{BrCH}_2\text{CH}_2\text{COOCH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 167.01

BOILING POINT at 60 mm - 106°C	° F.	VAPOR PRESSURE at 60°C	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	12
SPECIFIC GRAVITY (H ₂ O = 1) 1.5122		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O --		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Methyl B-Bromopropionate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Irritation of eyes and upper respiratory system, dizziness and depression, palpitation of heart.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in standard flammable liquids cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

306-3702B

CAS:000108101

SA92750

PRODUCT DESIGNATION

03-306-4702

Methyl Iso-Butyl Ketone

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

~~4-Methyl-2-Pentanone~~
CHEMICAL NAME AND SYNONYMS

FORMULA

Hexone

 $\text{CH}_3 - \text{COCH}_2\text{CH}(\text{CH}_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			2080		rat	
Lowest published toxic concentration in air						
inhalation - human 200 PPM						

SECTION III PHYSICAL DATA

MW - 100.16

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
118°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-85°C		3.45	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.80			
SOLUBILITY IN WATER lbs/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
2			

APPEARANCE AND ODOR

Colorless liquid, pleasant ketone like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE)	UPPER
62°F	LIMITS	LOWER
METHOD USED		
C.C.		

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical. Water may be ineffective.

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles & self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Methyl Iso-butyl Ketone

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

100 PPM, 410 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE Weakness, loss of appetite, stomach ache, nausea, vomiting,
eye and nasal irritation, narcosis, headache, nausea, lowering of body temperature

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES If swallowed -give emetic, get medical aid, gastric lavage;
inhalation - rest; oxygen as needed; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels; evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Rubber
RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside storage preferable, inside storage in a standard flammable
liquid cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

306-4702B

PRODUCT DESIGNATION

03-306-6202
Methyl Carbonate

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

dimethyl carbonate

CO(OCH₃)₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LD ₅₀ - 8500 mg/kg subcutaneous rat						

SECTION III PHYSICAL DATA MW - 90.08

BOILING POINT 90°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 1°C	° F.	VAPOR DENSITY (Air = 1) 3.1	
SPECIFIC GRAVITY (H ₂ O = 1) 1.07		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid, pleasant odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 66°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical. Water may be ineffective.		

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Methyl Carbonate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION inhalation (mainly), ingestion SKIN AND EYE IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE Weakness, loss of coordination, gasping, frothing at mouth, pulmonary edema.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES If swallowed - drink water, milk of magnesia, get medical aid; inhalation - artificial respiration & oxygen as needed - wash from skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside storage preferred, store inside flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

306-6202B

CAS:025639423

GW01750

PRODUCT DESIGNATION

03-307-0303
P-MethylcyclohexanolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Hexahydromethyl Phenol

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Hexahydrocresol

FORMULA

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Inhalation - human	TCLO 500 PPM		1660		Rat	
Lowest published lethal dose						
oral - rabbit 1750 mg/kg						

SECTION III PHYSICAL DATA

MW - 114.18

BOILING POINT

174°C

° F.

VAPOR PRESSURE

at 30°C

mm Hg.

1.5

MELTING POINT

-50°C

° F.

VAPOR DENSITY (Air = 1)

3.93

SPECIFIC GRAVITY (H₂O = 1)

0.92

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

very slightly soluble

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

colorless, viscous liquid, aromatic, menthol odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

154°F

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED
C.C.

EXTINGUISHING MEDIA

Foam, carbon dioxide or dry chemicals.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P-Methylcyclohexanol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

50 PPM, 235 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE Salivation, eye and mucous membrane irritation, tremors,
narcosis, headache, gross hemorrhage.

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid, gastric lavage;
inhalation - rest, oxygen as needed; wash from eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

can react with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

307-0303B

PRODUCT DESIGNATION

03-307-0703
M-Methylcyclohexanone

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 3 Methylcyclohexanone	FORMULA $\text{CH}_3\text{C}_6\text{H}_{11}\text{CO}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

BOILING POINT 170°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -74°C	° F.	VAPOR DENSITY (Air = 1)	3.86
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.92			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
no			
APPEARANCE AND ODOR water white to pale yellow, acetone like odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 118°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED C.C.		LOWER
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

M-Methylcyclohexanone

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

eye, skin and mucous membrane irritation, narcosis

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid, gastric lavage; inhalation - give oxygen as needed. Wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

307-0703B

PRODUCT DESIGNATION

03-307-0903
P-Methylcyclohexanone

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 4 Methylcyclohexanone	FORMULA $\text{CH}_3\text{C}_5\text{H}_9\text{CO}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

MW - 112.17

BOILING POINT 171°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -41°C	° F.	VAPOR DENSITY (Air = 1)	3.86
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O no		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

water white to pale yellow - acetone like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 118°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED C.C.		LOWER
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
P-Methylcyclohexanone	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	<div style="display: flex; justify-content: space-between;"> none available CARCINOGENIC no </div>
PRINCIPLE ROUTES OF ABSORPTION	<div style="display: flex; justify-content: space-between;"> Inhalation, ingestion SKIN AND EYE IRRITATION moderate </div>
REVELANT SYMPTOMS OF EXPOSURE	Eye, skin and mucous membrane irritation, narcosis.
EFFECTS OF CHRONIC EXPOSURE	Liver and kidney damage.
EMERGENCY AND FIRST AID PROCEDURES	If swallowed - give emetic, get medical aid, gastric lavage; inhalation - give oxygen as needed. Wash from skin & eyes.
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Safety goggles
SPECIAL	GLOVES
OTHER PROTECTIVE EQUIPMENT	Rubber
	RESPIRATOR
	With proper filter
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

307-0903B

PRODUCT DESIGNATION

03-307-1303
Methyl A, B-Dibromopropionate

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Methyl 2,3 - Dibromopropionate

FORMULA

 $\text{BrCH}_2\text{CHBrCOOCH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA

MW - 245.92

BOILING POINT

203 at 115 mm

° F.

VAPOR PRESSURE

at 93°C

mm Hg.

17

MELTING POINT

--

° F.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

1.96

EVAPORATION RATE (____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

clear liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

none available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical, water.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Methyl A,B-Dibromopropionate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion, skin SKIN AND EYE IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE Irritation of eyes and upper respiratory system, dizziness and depression, palpitation of heart.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE goggles
MECHANICAL (GENERAL)	GLOVES rubber
SPECIAL	RESPIRATOR with proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in standard flammable liquids cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

307-1303B

CAS:000074953

PA73500

PRODUCT DESIGNATION

03-307-2103
Methylene BromideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Dibromomethane

FORMULA

 CH_2Br_2

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
				3738	mouse	

SECTION III PHYSICAL DATA MW - 173.86

BOILING POINT 97°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -52.7°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 2.50		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O 1.17		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
not available		
METHOD USED		LOWER
EXTINGUISHING MEDIA		
Probably inflammable like CH ₂ Cl ₂		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

May generate COBr_2 when in contact with flame or very hot metal surfaces.

PRODUCT DESIGNATION
Methylene Bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
not available

CARCINOGENIC
no

PRINCIPLE ROUTES OF ABSORPTION
inhalation, skin, ingestion

SKIN AND EYE
IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE Dizziness, nausea, numbness of extremities, sense of
stupor or dullness, drunkenness.

EFFECTS OF CHRONIC EXPOSURE
Dermatitis

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - induce vomiting, get
medical aid; wash from eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)
Alkali metals

HAZARDOUS DECOMPOSITION PRODUCTS
May generate toxic COBr₂ on contact with flame or very hot metal surfaces.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

307-2103B

CAS:000075092

PA80500

PRODUCT DESIGNATION

03-307-2203
03-307-2253
Methylene chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS Dichloromethane	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Dichloromethane	FORMULA CH_2Cl_2

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human LDLO	500 mg/kg		945		Rat	
Lowest published toxic concentration in air					Mouse	14,400 PPM
inhalation - human 500 PPM/1 year						
Lowest published lethal dose						
Oral - dog - 3000 mg/kg						
intravenous - dog - 200 mg/kg						
subcutaneous - rabbit - 2700 mg/kg						

SECTION III PHYSICAL DATA MW - 84.94

BOILING POINT 40°C	° F.	VAPOR PRESSURE at 22°C	380 mm Hg.
MELTING POINT -97°C	° F.	VAPOR DENSITY (Air = 1)	2.93
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.33			
SOLUBILITY IN WATER P _{ts} /100 P _{ts} H ₂ O 2 at 20°C.		VOLATILE	% Vol. % Wt
APPEARANCE AND ODOR colorless, volatile liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 66%
METHOD USED practically non-inflammable		LOWER 15.5%
EXTINGUISHING MEDIA		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

May generate phosgene on contact with flame or very hot metal surfaces.

PRODUCT DESIGNATION
Methylene chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL TLV 200 PPM, 750 mg/C.M. CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion, skin SKIN AND EYE IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE Headache, giddiness, stupor, irritability, fatigue, irritation of eyes and respiratory passages, shortness of breath.

EFFECTS OF CHRONIC EXPOSURE Liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - artificial respiration as needed; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID) Alkali metals

HAZARDOUS DECOMPOSITION PRODUCTS May generate phosgene on contact with flame or very hot metal surfaces.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	safety goggles
SPECIAL	GLOVES
	rubber
	RESPIRATOR
	self-contained

OTHER PROTECTIVE EQUIPMENT Rubber, protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Store in cool, dry, well-ventilated area away from fire hazards.

OTHER PRECAUTIONS

SIGNATURE DATE

307-2203B

CAS:000075116

PA85750

PRODUCT DESIGNATION

03-307-2303
Methylene IodideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

diiodomethane

FORMULA

CH₂I₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg.		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
				830	mouse	

SECTION III PHYSICAL DATA MW - 267.83

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
181°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
5°C		9.25	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
3.33			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol, % Wt.
1.6			
APPEARANCE AND ODOR			
light straw to clear colored liquid.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		
METHOD USED		LOWER
EXTINGUISHING MEDIA		
not available		

SPECIAL FIRE FIGHTING PROCEDURES

--

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point - emits toxic fumes of iodides.

PRODUCT DESIGNATION Methylene iodide	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	not available
	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
inhalation, ingestion, skin	IRRITATION moderate
REVELANT SYMPTOMS OF EXPOSURE	Nausea, vomiting, diarrhea, dizziness, visual disturbances, irritability, drowsiness, central nervous system depressant
EFFECTS OF CHRONIC EXPOSURE	Dermatitis
EMERGENCY AND FIRST AID PROCEDURES	Inhalation - rest; if swallowed - wash mouth, give emetic; get medical aid; wash from eyes & skin.
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Safety goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

307-2303B

PRODUCT DESIGNATION

03-307-2803
Methylethylamine
Hydrochloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS N-Methylethylamine Hydrochloride	FORMULA CH₃NHC₂H₅Cl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 95.58

BOILING POINT --	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 133°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O very soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR white crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Methylethylamine Hydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Ingestion, inhalation of dust

SKIN AND EYE

IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE

Eye and mucous membrane irritation, irritation of gastroenteric tract.

EFFECTS OF CHRONIC EXPOSURE

Irritation of cornea and lungs.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - drink water, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

307-2803B

PRODUCT DESIGNATION

03-307-3303
Methylethylaniline

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Methylethylaniline	FORMULA $C_6H_5N(CH_2)_2CH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 135.20

BOILING POINT 201°C	° F.	VAPOR PRESSURE at 94°C	mm Hg. 12
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.92		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless to yellow liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, water spray, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Methylethylaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION ~~none available~~

SKIN AND EYE

inhalation, ingestion, skin

IRRITATION

severe

RELEVANT SYMPTOMS OF EXPOSURE Weakness, tremors, cyanosis, drowsiness, central nervous system depression.

EFFECTS OF CHRONIC EXPOSURE

Fatigue, loss of appetite, headache, dizziness

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl gloves

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

307-3303B

PRODUCT DESIGNATION

03-307-3843
03-307-3853
Methyl Ethyl Ketone

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 Butanone

FORMULA

CH₃COC₂H₅

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			3400		rat	
				13,000	rabbit	
LDLO - inhalation human	500 mg/kg					
LDLO - inhalation - rat	2000 PPM					
Lowest published toxic concentration in air						
inhalation - human	300 PPM					
inhalation - woman	398 PPM - CNS					
inhalation - human	100 PPM - 5 min.					

SECTION III PHYSICAL DATA

MW - 72.10

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
80°C		at 20°C	71.2
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-86°C		2.41	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.81			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
37			

APPEARANCE AND ODOR

colorless liquid, acetone-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
22°F		LOWER
METHOD USED		
O.C.		

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical. Water may be ineffective.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

Moderate explosion hazard when exposed to flame.

PRODUCT DESIGNATION

Methyl Ethyl Ketone

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

200 PPM, 590 mg/C.M.

CARCINOGENIC

severe

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion

IRRITATION

severe

RELEVANT SYMPTOMS OF EXPOSURE

Eye and nasal passage irritation, narcotic symptoms, drying & irritation of skin.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid -
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels; evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in standard safety cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

307-3843B

PRODUCT DESIGNATION

03-307-5803
Methylhydrazine Sulfate

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Methylhydrazine Sulfate	FORMULA $\text{CH}_2\text{NHNH}_2\text{H}_2\text{SO}_4$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO - oral - mouse	1551 mg/kg	75 weeks carcinogen	none available			

SECTION III PHYSICAL DATA MW - 144.15

BOILING POINT -- ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 142°C ° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) --	EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O very soluble	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR white crystal	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Methylhydrazine Sulfate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

yes

PRINCIPLE ROUTES OF ABSORPTION

inhalation of dust, ingestion, skin

SKIN AND EYE

IRRITATION

severe

RELEVANT SYMPTOMS OF EXPOSURE Respiratory irritation and convulsions, eye and skin irritations, gastroenteric disturbances.

EFFECTS OF CHRONIC EXPOSURE

Blood and liver damage.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

307-5803B

CAS:000074884

PA94500

PRODUCT DESIGNATION

03-307-7803
Methyl IodideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Iodomethane

FORMULA

 CH_3I

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human LDLO 50 mg/kg			220	110	mouse rat	

SECTION III PHYSICAL DATA MW - 141.95

BOILING POINT 42.5°C	° F.	VAPOR PRESSURE at 25.3°C	mm Hg. 400
MELTING POINT -64.4°C	° F.	VAPOR DENSITY (Air = 1)	4.89
SPECIFIC GRAVITY (H ₂ O = 1) 2.28		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 1.8		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR Colorless liquid - turns brown on exposure to light
sweetish odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not flammable	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA		

not available

SPECIAL FIRE FIGHTING PROCEDURES

--

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point - emits toxic fumes of iodides.

PRODUCT DESIGNATION Methyl Iodide	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	TLV - 5 PPM, 28 mg/CM.
	CARCINOGENIC yes
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
inhalation, ingestion, skin	IRRITATION severe
REVELANT SYMPTOMS OF EXPOSURE Nausea, vomiting, diarrhea, dizziness, visual disturbances, irritability, drowsiness, central nervous system depressant.	
EFFECTS OF CHRONIC EXPOSURE	
Dermatitis	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash from eyes & skin.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Absorb with paper towels; evaporate in hood.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	safety goggles
MECHANICAL (GENERAL)	GLOVES
	rubber
SPECIAL	RESPIRATOR
	with proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Store in tightly closed containers in dark place.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

307-7803B

PRODUCT DESIGNATION

03-308-0404

A- Methyl naphthalene

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1 Methyl naphthalene	FORMULA $C_{10}H_7CH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			4360		rat	

SECTION III PHYSICAL DATA MW - 142.21

BOILING POINT 243 ⁰ C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -32 ⁰ C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.03		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

A-Methylnaphthalene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

Nausea, vomiting, diarrhea, anemia, jaundice, excitement, convulsions, coma, headache, visual disturbances.

EFFECTS OF CHRONIC EXPOSURE

Nausea, vomiting, diarrhea, anemia, jaundice, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

308-0404B

PRODUCT DESIGNATION

03-308-0474

B-Methylnaphthalene

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 Methylnaphthalene

FORMULA

 $C_{10}H_7CH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			4360		rat	

SECTION III PHYSICAL DATA

MW - 142.21

BOILING POINT

° F.

242°C

VAPOR PRESSURE

mm Hg.

MELTING POINT

° F.

34°C

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

0.944

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

insoluble

APPEARANCE AND ODOR

solid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

none available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

B-Methylnaphthalene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

Nausea, vomiting, diarrhea, anemia, jaundice, excitement, convulsions, coma, headache, visual disturbances.

EFFECTS OF CHRONIC EXPOSURE

Nausea, vomiting, diarrhea, anemia, jaundice, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

Ingestion - give emetic, get medical aid; inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

308-0474B

CAS:000108112

SA73500

PRODUCT DESIGNATION

03-308-4904

4 Methyl - 2 Pentanol

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Methylamyl alcohol

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Methy isobutyl carbinol

FORMULA

CH₃CHOHCH₂CH(CH₃)₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			2600		rat	
				3560	rabbit	
			see note			
Note;						
Lowest published lethal concentration in air						
inhalation - rat - 2000 PPM 14 hours						

SECTION III PHYSICAL DATA MW - 102.2

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
132 ⁰ C		at 20 ⁰ C	2.8
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-90 ⁰ C		3.53	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.81			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
1.6			

APPEARANCE AND ODOR

clear liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
106 ⁰ F		5.5%
METHOD USED		LOWER
		1.0%

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

4 Methyl 2 Pentanol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

25 PPM, 100 mg/C.M. (skin)

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE

Eye irritation, narcotic in high concentrations.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid;
inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

308-4904B

PRODUCT DESIGNATION

03-308-5904
Methyl-P-Phenylenediamine
Dihydrochloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS N Methyl - P - Phenylenediamine Hydrochloride	FORMULA $\text{CH}_3\text{NHC}_6\text{H}_4\text{NH}_2\text{HCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 195.10

BOILING POINT --	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) --		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O very soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR yellow crystals		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION	
Methyl-P-Phenylenediamine Dihydrochloride	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
none available	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation of dust, ingestion	IRRITATION moderate
RELEVANT SYMPTOMS OF EXPOSURE	
Headache, drowsiness, cyanosis, mental confusion, convulsions.	
EFFECTS OF CHRONIC EXPOSURE	
--	
EMERGENCY AND FIRST AID PROCEDURES	
If swallowed - give emetic get medical aid; inhalation - rest; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

308-5904B

PRODUCT DESIGNATION

03-308-6404
A-Methyl-A-Phenylhydrazine

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1 Methyl, 1 Phenylhydrazine	FORMULA $\text{NH}_2\text{N}(\text{C}_6\text{H}_5)\text{CH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 122.17

BOILING POINT 227°C at 755 mm	° F.	VAPOR PRESSURE at 118°C	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	21
SPECIFIC GRAVITY (H ₂ O = 1) 1.04		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O slightly soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR yellow liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA alcohol foam, water, carbon dioxide		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS When heated to decomposition point, it gives off fumes of nitrogen compounds.

PRODUCT DESIGNATION

A-Methyl-A-Phenylhydrazine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE

Irritation of skin, eyes and mucous membranes,
gastroenteric disturbances.

EFFECTS OF CHRONIC EXPOSURE

Blood and liver damage, loss of appetite.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting,
get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Avoid lead dioxide

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

308-6404B

PRODUCT DESIGNATION

03-308-8404
Methyl-Iso-Propylcarbinol

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2 Methyl butanol 3	FORMULA (CH ₃) ₂ CHCHOHCH ₃

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA

BOILING POINT 112°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1) 3.0
SPECIFIC GRAVITY (H ₂ O = 1) 0.82		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100-pts H ₂ O 2.8		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR colorless to yellow liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 103°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 9.0 % LOWER 1.2 %
METHOD USED		
EXTINGUISHING MEDIA alcohol foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION Methyl - Iso - Propylcarbinol	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL none available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion	SKIN AND EYE IRRITATION severe
REVELANT SYMPTOMS OF EXPOSURE Eye, nose and throat irritation, narcosis; headache, dizziness, nausea, vomiting, diarrhea.	
EFFECTS OF CHRONIC EXPOSURE Liver damage	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid; inhalation - rest, artificial respiration; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

308-8404B

PRODUCT DESIGNATION

03-308-8904

Methyl Iso-Propyl Ketone

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

3 Methyl 2 Butanone

FORMULA

 $\text{CH}_3\text{COCH}(\text{CH}_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			148		rat	
Note:						
Lowest published lethal concentration in air						
inhalation rat 5700 PPM/4 hr.						

SECTION III PHYSICAL DATA

MW - 86.13

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

95°C

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

-92°C

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

0.80

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

very slightly soluble

APPEARANCE AND ODOR

colorless liquid, acetone like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

none available

FLAMMABLE
(EXPLOSIVE)

UPPER

METHOD USED

LIMITS

LOWER

EXTINGUISHING MEDIA

alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Methyl Isopropyl Ketone

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL None available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion SKIN AND EYE IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Irritation to eyes and mucous membranes, narcotic effect.

EFFECTS OF CHRONIC EXPOSURE --

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid;
inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
SPECIAL	GLOVES
OTHER PROTECTIVE EQUIPMENT	Rubber
	RESPIRATOR
	With proper filter

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

308-8904B

CAS:000077781

WS82250

PRODUCT DESIGNATION

Methyl Sulfate
03-309-1605MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Dimethyl Sulfate

FORMULA

 $(\text{CH}_3)_2\text{SO}_4$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Inhalation - human LCLO	97 PPM 110 Min.		440		Rat	
Note: Lowest published lethal concentration in air; inhalation - rat 32 ppm.						

SECTION III PHYSICAL DATA Mol. Wt. 126.13

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
188°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-38°C		4.35	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.3322 at 20°/4°C			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Very slightly soluble			
APPEARANCE AND ODOR			
Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
182°F		
METHOD USED		LOWER
Open Cup		
EXTINGUISHING MEDIA		
Water spray, dry chemical, foam, or carbon dioxide.		

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Methyl Sulfate

SECTION V HEALTH HAZARD DATA (Skin)

TOXIC LEVEL

TLV 0.01 ppm

CARCINOGENIC Experimental
Carcinogen

PRINCIPLE ROUTES OF ABSORPTION

Inhalation of vapor; percutaneous absorption of liquid; SKIN AND EYE IRRITATION Yes

RELEVANT SYMPTOMS OF EXPOSURE Eye irritation, bronchial irritation, lung irritation, kidney damage, dimming of vision (symptoms may be delayed).

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, get medical aid; wash skin & eyes; if swallowed - drink water, then milk of magnesia, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Water spray

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION Full Protection

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR
w/appropriate filter

OTHER PROTECTIVE EQUIPMENT Self-contained breathing apparatus, if contaminated area must be entered.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry, well-ventilated location away from fire hazards.

OTHER PRECAUTIONS

SIGNATURE

DATE

309-1605B

PRODUCT DESIGNATION

03-309-2105
Methyl ThiocyanateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Methyl Sulfocyanate

FORMULA

 CH_3SCN

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Notes:						
1. Lowest published lethal dose						
oral - cat 8.5 mg/kg						
2. Subcutaneous - rabbit LDLO - 20 mg/kg						

SECTION III PHYSICAL DATA

MW - 73.11

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
133°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-51°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.07			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
very slightly soluble			
APPEARANCE AND ODOR			
colorless liquid, onion odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		
METHOD USED		LOWER

EXTINGUISHING MEDIA

water, alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus and goggles.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Methyl Thiocyanate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

ingestion, inhalation

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

eye and mucous membrane irritation. Thiocyanate intoxication.

EFFECTS OF CHRONIC EXPOSURE

Goiters

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid, gastric lavage; inhalation - rest, give oxygen as needed. Wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

309-2105B

CAS:000109046

US38500

PRODUCT DESIGNATION

03-221-9100
2-BromopyridineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

 α Bromo-pyridine

FORMULA

 $\text{BrC}_5\text{H}_4\text{N}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
#1 lowest published lethal dose intraperitoneal - mouse	31.3 mg/kg.					

SECTION III PHYSICAL DATA MW - 158.01

BOILING POINT 193°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.657		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Slightly soluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR Liquid with fish-like odor			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
N/A		
METHOD USED		LOWER
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

2-Bromopyridine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Narcosis, headache, nausea, giddiness, vomiting;
oral - liver & kidney damage.

EFFECTS OF CHRONIC EXPOSURE

Occasional vomiting and diarrhea; weight loss and anemia;
ocular and facial paralysis.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting,
then gastric lavage; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Use in hood

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

221-9100B

PRODUCT DESIGNATION

03-222-1201
M-Bromotoluene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

3-Bromotoluene

FORMULA

 $\text{CH}_3\text{C}_6\text{H}_4\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 171.04

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
183.7			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-39.8			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.41			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR			
Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
N/A		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

M-Bromotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Eye & respiratory system irritation, severe

internal irritation of digestive tract.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic,
get medical aid; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

222-1201B

PRODUCT DESIGNATION

03-222-1231
O-Bromotoluene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2-Bromotoluene

FORMULA

 $\text{CH}_3\text{C}_6\text{H}_4\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀ -	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 171.04

BOILING POINT 181°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -28°C	° F.	VAPOR DENSITY (Air = 1) 5.9
SPECIFIC GRAVITY (H ₂ O = 1) 1.42		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 175°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
O-Bromotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion

SKIN AND EYE
IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE
Eye & respiratory system irritation, severe internal
irritation of digestive tract.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES
Inhalation - rest; if swallowed - give emetic, get medical
aid; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

222-1231B

PRODUCT DESIGNATION

03-222-1261
P-Bromotoluene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P-Tolyl Bromide, P-Bromotoluene	FORMULA $\text{CH}_3\text{C}_6\text{H}_4\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW-171.04

BOILING POINT 185°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 27°C	° F.	VAPOR DENSITY (Air = 1) 5.9
SPECIFIC GRAVITY (H ₂ O = 1) 1.39		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Liquid or crystal.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 185°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

P-Bromotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

Severe

RELEVANT SYMPTOMS OF EXPOSURE Eye & respiratory system irritation, severe internal
irritation of digestive tract.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic,
get medical aid; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

222-1261B

CAS:000123864

AF73500

03-222-2701

PRODUCT DESIGNATION

03-222-2721

03-222-2751

03-222-2761

N-Butyl Acetate

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Butyl Acetate

FORMULA

 $\text{CH}_3\text{COOC}_4\text{H}_9$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			7056		mouse	
			See Note			
LDLO oral - human 500 mg/kg			14000		rat	
Lowest published toxic concentration in air						
Inhalation - human 200 PPM						

SECTION III PHYSICAL DATA MW-116.16

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
126°C		at 25°C	15
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-74°C		4.0	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.88			
SOLUBILITY IN WATER 1 Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
72°F		7.6
METHOD USED		LOWER
closed cup		1.7
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

N-Butyl Acetate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV-150 PPM, 710 mg/C.M.

CARCINOGENIC NO

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

IRRITATION

Moderate

Inhalation, ingestion, skin

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation, salivation, irritation of respiratory passages.

EFFECTS OF CHRONIC EXPOSURE

Fatigue, loss of weight, blood changes.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - give oxygen as needed;
wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Can react with oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper, evaporate in hood, burn paper.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Rubber protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, well-ventilated place away from source of ignition.

OTHER PRECAUTIONS

SIGNATURE

DATE

222-2701B

CAS:000110190

AI40250

PRODUCT DESIGNATION

03-222-2741
Iso-Butyl AcetateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Isobutyl Acetate

FORMULA

 $\text{CH}_3\text{COOCH}_2\text{CH}(\text{CH}_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			15000		rat	
			4763		rabbit	
Note: Lowest published lethal concentration in air						
inhalation - rat 8000 PPM						

SECTION III PHYSICAL DATA MW - 116.16

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
117°C		at 25°C	20
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-99°C		4.0	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.87			
SOLUBILITY IN WATER	Pts/100 pts H ₂ O	VOLATILE	% Vol. % Wt.
0.6			

APPEARANCE AND ODOR

Colorless liquid, fruit-like odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
64°F		LOWER
METHOD USED		
CC		
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Iso-Butyl Acetate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV-150 PPM, 700 mg/C.M.

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of eyes & respiratory passages, salivation.

EFFECTS OF CHRONIC EXPOSURE

Fatigue, loss of weight, blood changes.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - give oxygen as needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Can react with oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper: evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Overalls, self-contained respirator.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in standard combustible liquids storage cabinet, in tightly closed container.

OTHER PRECAUTIONS

SIGNATURE

DATE

222-2741B

CAS:000105464

AF73800

PRODUCT DESIGNATION

03-222-2781
Sec-Butyl AcetateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Sec - Butyl Acetate

FORMULA

 $\text{CH}_3\text{COOCH}(\text{CH}_2)_2\text{CH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

MW-116.16

BOILING POINT

° F.

113°C

VAPOR PRESSURE

mm Hg.

at 25°C

24

MELTING POINT

° F.

--

VAPOR DENSITY (Air = 1)

4.0

SPECIFIC GRAVITY (H₂O = 1)

0.87

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER 3 Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Colorless liquid, mild odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

88°F

FLAMMABLE
(EXPLOSIVE)

UPPER

METHOD USED

O.C.

LIMITS

LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Sec Butyl Acetate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV-200 PPM, 950 mg/C.M.

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation, salivation, irritation of respiratory passages.

EFFECTS OF CHRONIC EXPOSURE

Fatigue, loss of weight, blood changes.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;
inhalation - oxygen as needed; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Can react with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

222-2781B

CAS:000513495

EO-32250

See butyl amine

PRODUCT DESIGNATION

03-222-3701
Sec ButylamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2-aminobutane

FORMULA

 $(C_2H_5)_2CHCH_2NH_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			350		Rat	
			225		dog	
				2500	rabbit	

SECTION III PHYSICAL DATA MW-73.14

BOILING POINT 66°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -104°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.72		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER 90 Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless liquid ammonia-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 15°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles & self contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Sec - Butylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

• None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

Severe

REVELANT SYMPTOMS OF EXPOSURE

Headache; nose, throat & eye irritations, skin & eye
burns, restlessness, increased pulse & respiratory rates, convulsions.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - drink water, get
medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

222-3701B

CAS:000104518

CY90700

PRODUCT DESIGNATION

03-222-4701
N-Butyl BenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1-Phenylbutane

FORMULA

 $C_6H_5(CH_2)_3CH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose						
Oral - rat 5000 mg/kg.						

SECTION III PHYSICAL DATA

MW - 124.31

BOILING POINT

° F.

182°C.

VAPOR PRESSURE

mm Hg.

at 23°C.

1

MELTING POINT

° F.

-82°C.

VAPOR DENSITY (Air = 1)

4.6

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

0.86

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

Insoluble

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

160°F.

FLAMMABLE
(EXPLOSIVE)UPPER
5.8%

METHOD USED

LIMITS

LOWER
0.8%

OC

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

N-Butyl Benzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation (mainly) ingestion

SKIN AND EYE

IRRITATION

Moderate

RELEVANT SYMPTOMS OF EXPOSURE Depression of central nervous system, eye and respiratory system irritation.

EFFECTS OF CHRONIC EXPOSURE

Possible liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

222-4701B

CAS: 000135988

CY91000

PRODUCT DESIGNATION

03-222-4731
Sec-Butyl BenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 Phenylbutane

FORMULA

 $C_6H_5CH(CH_3)C_2H_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			2240		Rat	

SECTION III PHYSICAL DATA

MW-134.25

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
174°C.		at 19°C.	1
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-83°C.		4.62	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.86			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
126°F.		6.9%
METHOD USED		LOWER
O.C.		0.8%
EXTINGUISHING MEDIA		

Foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Sec - Butyl Benzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None Available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation (mainly) ingestion

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE Depression of central nervous system, eye and respiratory system irritation.

EFFECTS OF CHRONIC EXPOSURE

Possible liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid; wash from skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR
Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

222-4731B

CAS:000098066

CY91200

cf with Tertbutyl Toluene & Ethyl Benz

PRODUCT DESIGNATION

03-222-4761
Tert-Butyl benzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tert-butylbenzene

FORMULA

 $C_6H_5C(CH_3)_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - rat 500 mg/kg						

SECTION III PHYSICAL DATA MW-134.24

BOILING POINT 169°C	° F.	VAPOR PRESSURE at 13°C	mm Hg.
MELTING POINT -58°C	° F.	VAPOR DENSITY (Air = 1)	1
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.867			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
insoluble			

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 160°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 5.8
METHOD USED C.C.		LOWER 0.8
EXTINGUISHING MEDIA		

Foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
Tert-butylbenzene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
Not available	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation (mainly) ingestion	SKIN AND EYE IRRITATION Moderate
RELEVANT SYMPTOMS OF EXPOSURE	
Depression of central nervous system, eye & respiratory system irritation.	
EFFECTS OF CHRONIC EXPOSURE	
Possible liver & kidney damage.	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

222-4761B

PRODUCT DESIGNATION

03-222-8701
N-Butyl Chloroacetate

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

N-Butyl Chloroacetate

FORMULA

C4H9O2CCH2Cl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

MM - 150.61

BOILING POINT

° F.

183°C.

VAPOR PRESSURE

mm Hg.

MELTING POINT

° F.

--

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

1.08

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

None available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

N-Butyl Chloroacetate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

Moderate to severe

RELEVANT SYMPTOMS OF EXPOSURE

Eye and respiratory passage irritation, salivation.

EFFECTS OF CHRONIC EXPOSURE

Fatigue, loss of weight, blood changes.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - give oxygen as needed; if swallowed - give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

222-8701B

PRODUCT DESIGNATION

033-222-9211
 α-Butylene Bromide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

1,2 dibromobutane

CH₃CH₂CHBrCH₂Br

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
166°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-65°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.82			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR			
Yellowish liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
N/A		
METHOD USED		LOWER
EXTINGUISHING MEDIA		
Water, foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
Water may be ineffective.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION	
α - butylene bromide	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
None available	
CARCINOGENIC	
No	
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, ingestion	
SKIN AND EYE	
IRRITATION	
Moderate	
REVELANT SYMPTOMS OF EXPOSURE	
Eye irritation, headache, vomiting, drowsiness, narcosis	
EFFECTS OF CHRONIC EXPOSURE	
Dermatitis, liver & kidney damage	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Wear self contained breathing apparatus	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With organic vapor resistant canister
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

222-9211B

PRODUCT DESIGNATION

03-222-9241
 β -Butylene Bromide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2,3 dibromobutane

FORMULA

CH3CHBrCHBrCH3

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 215.94

BOILING POINT 158 ⁰ C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -34.5 ⁰ C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.78		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water, foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

 β -butylene bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE Eye irritation, headache, vomiting, drowsiness,
narcosis, liver & kidney damage.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, liver & kidney damage

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - wash mouth, give
emetic; get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear self contained breathing apparatus.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With organic vapor resistant canister

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

222-9241B

PRODUCT DESIGNATION

03-222-9271
Iso-butylene Bromide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA
1,2 dibromoisobutane	(CH ₃) ₂ CBrCH ₂ Br

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA

MW - 215.94

BOILING POINT 149°C at 737 ml	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -70.3°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.76			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR			
Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
N/A		
METHOD USED		LOWER
EXTINGUISHING MEDIA		
Water, foam, carbon dioxide, dry chemical		
SPECIAL FIRE-FIGHTING PROCEDURES		
Water may be ineffective		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Iso-butylene bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

Moderate

REVELANT SYMPTOMS OF EXPOSURE

Eye irritation, headache, vomiting, drowsiness, narcosis, liver & kidney damage.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, liver & kidney damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - wash mouth give emetic, get medical aid; wash from eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear self contained breathing apparatus.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Rubber
RESPIRATOR

With organic vapor resistant canister

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

222-9271B

CAS: 000592847

LQ55000

PRODUCT DESIGNATION

03-223-0302
N-Butyl FormateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Butyl Methanoate	FORMULA $C_4H_9O_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO - inhalation - human	10418 ppm		2660		rabbit	

SECTION III PHYSICAL DATA MW - 101.12

BOILING POINT 106°C	° F.	VAPOR PRESSURE at 31.6°C	mm Hg.
MELTING POINT -90°C	° F.	VAPOR DENSITY (Air = 1)	40
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.911			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
slightly			
APPEARANCE AND ODOR			
colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 64°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 8.0%
METHOD USED CC		LOWER 1.7%
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
N-Butyl formate	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
CARCINOGENIC No	
None available	
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion	IRRITATION Severe
RELEVANT SYMPTOMS OF EXPOSURE Irritant of mucous membranes & respiratory tract, eye irritation, salivation, vomiting.	
EFFECTS OF CHRONIC EXPOSURE	

EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest; if swallowed - give emetic; get medical aid; wash from eyes & skin.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Absorb on paper, evaporate in hood.	
WASTE DISPOSAL METHOD	
Mix with more flammable solvent and burn.	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Chemical cartridge respirator
OTHER PROTECTIVE EQUIPMENT	
Overalls	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Keep away from sources of ignition.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

223-0302B

PRODUCT DESIGNATION

03-223-2312
Iso-Butyl Iodide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1 Iodo-2 Methyl Propane	FORMULA (CH ₃) ₂ CHCH ₂ I

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW - 184.03

BOILING POINT 121°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -94°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.60		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point emits toxic fumes of iodates.

PRODUCT DESIGNATION

Isobutyl Iodide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion, skin

IRRITATION

slight

REVELANT SYMPTOMS OF EXPOSURE

Nausea, vomiting, diarrhea, dizziness, visual disturbances,irritability, drowsiness, central nervous system depression.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - wash mouth, give
emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

223-2312B

PRODUCT DESIGNATION

03-223-2332
N-Butyl Iodide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1-Iodobutane	FORMULA $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{I}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

MW - 184.03

BOILING POINT 131°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -103°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.62			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR			

Colorless to light brown liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES --		
UNUSUAL FIRE AND EXPLOSION HAZARDS When heated to decomposition point emits toxic fumes of iodates.		

PRODUCT DESIGNATION

N-butyl iodide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Slight

RELEVANT SYMPTOMS OF EXPOSURE Nausea, vomiting, diarrhea, dizziness, visual disturbances, irritability, drowsiness, central nervous system depressant.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

223-2332B

PRODUCT DESIGNATION

03-223-2352
Sec - Butyl Iodide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2 Iodobutane	FORMULA $C_2H_5CHICH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW 184.03

BOILING POINT 120°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -104	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.60		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless to light brown liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES --		
UNUSUAL FIRE AND EXPLOSION HAZARDS When heated to decomposition point emits toxic fumes of iodates.		

PRODUCT DESIGNATION

Sec-butyl iodide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Slight

RELEVANT SYMPTOMS OF EXPOSURE Nausea, vomiting, diarrhea, dizziness, visual disturbances, irritability, drowsiness, central nervous system depressant

EFFECTS OF CHRONIC EXPOSURE

Dermatitis

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - wash mouth, give emetic; get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

223-2352A

PRODUCT DESIGNATION

03-223-2372
Tert-Butyl Iodide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 iodo-2 methylpropane

FORMULA

$(CH_3)_3CI$

SECTION II HAZARDOUS INGREDIENTS MW - 184.03

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA

BOILING POINT 99°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -34°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.57		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point emits toxic fumes of iodates.

PRODUCT DESIGNATION	
Tert-butyl iodide	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
Not available	No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION slight
RELEVANT SYMPTOMS OF EXPOSURE Nausea, vomiting, diarrhea, dizziness, visual disturbances, irritability, drowsiness, central nervous system depression.	
EFFECTS OF CHRONIC EXPOSURE	
Dermatitis	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

223-2372B

CAS - 000109740

ET875000

PRODUCT DESIGNATION

03-225-6403
N-ButyronitrileMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Propyl Cyanide

 C_3H_7CN

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/Kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose				400	Rabbit	
oral - rat 50 mg/kg.			200		Rat	
Lowest published lethal concentration in air						
inhalation - rat 400 PPM.						

SECTION III PHYSICAL DATA

MW - 69.10

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
118°C.		at 15°C.	10
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-113°C.		1.07	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.796			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Slightly soluble			
APPEARANCE AND ODOR			

Colorless liquid, sharp suffocating odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE)	UPPER
79°F.	LIMITS	LOWER
METHOD USED		1.65%
O.C.		
EXTINGUISHING MEDIA		

Dry chemical, alcohol foam or carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES

Protective clothing, self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

N-Butyronitrile

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TWA-TLV-8 PPM, 22 mg/C.M. (NIOSH Value)

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE Dizziness, rapid respiration, headache, drowsiness, drop in blood pressure and pulse, delayed symptoms.

EFFECTS OF CHRONIC EXPOSURE Eye irritation, loss of appetite, weight loss, mental deterioration.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - inhalation of amyl nitrite, induce vomiting, or gastric lavage, wash skin & eyes; inhalation, rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

When heated to decomposition emits highly toxic cyanide fumes.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb with paper towels - evaporate in hood.

WASTE DISPOSAL METHOD

Add excess alcoholic sodium hydroxide, after one hour, evaporate alcohol, then add calcium hypochlorite.

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective apron, full protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

225-6403B

CAS:000075150

FF66500

PRODUCT DESIGNATION

Carbon Disulfide
03-227-4004MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Carbon Disulfide	FORMULA CS ₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
				300	Rabbit	
LDLO - oral - human 14 mg/kg						
LCLO - inhalation - human 4000 ppm/30 min.						
TCLO - inhalation - human 50 mg/C.M. - 7 years						

SECTION III PHYSICAL DATA Mol. Wt. 76.1

BOILING POINT 46°C.	° F.	VAPOR PRESSURE (28°C)	400 mm Hg.
MELTING POINT -110.8°C	° F.	VAPOR DENSITY (Air = 1)	2.6
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.3			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			

APPEARANCE AND ODOR

Clear, colorless to faint yellow liquid; strong disagreeable odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA % Vol.

FLASH POINT -22°F	FLAMMABLE (EXPLOSIVE)	UPPER 44%
METHOD USED Closed Cup	LIMITS	LOWER 1.3%

EXTINGUISHING MEDIA

Foam ineffective; use dry chemical, carbon dioxide, or other inert gas.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Gives off flammable vapors at low temperatures over a wide range; forms explosive mixtures in air; flash back.

PRODUCT DESIGNATION Carbon Disulfide (skin)	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL TLV 20 ppm, 60 mg/C.M.	
CARCINOGENIC No	
PRINCIPLE ROUTES OF ABSORPTION Inhalation and prolonged skin contact	
SKIN AND EYE IRRITATION	
RELEVANT SYMPTOMS OF EXPOSURE Restlessness, blurred vision, nausea, vomiting, headache	
EFFECTS OF CHRONIC EXPOSURE Bizarre sensations in extremities, sensory loss, muscular weakness, memory loss, irritability, blurred vision, insomnia, mental depression, partial blindness,	
EMERGENCY AND FIRST AID PROCEDURES parkinsonian tremor, heart, liver, kidney damage. Remove from exposure ; apply artificial respiration; give amyl nitrite or sodium nitrite; rest, keep warm; obtain medical attention.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID) Azides, chlorine, chlorine monoxide, fluorine, nitric oxide, nitrogen dioxide, (permanganates and sulfuric acid), potassium and zinc.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD Provide safe place for burning it. (Do not pour on ground.)	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles, face shield
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT Self-contained breathing apparatus.	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Keep away from sources of ignition, good ventilation. Protect against lightening or static electricity.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

227-4004B

CAS:000558134

FG47250

PRODUCT DESIGNATION

03-227-4504
Carbon TetrabromideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tetrabromomethane

FORMULA

C Br₄

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest Published lethaldose						
oral - rat 1000 mg/kg.						
LD50 - subcutaneous - mouse 298 mg/kg						

SECTION III PHYSICAL DATA MW - 331.67

BOILING POINT 190°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT α-48°C, β90°C	° F.	VAPOR DENSITY (Air = 1) 11.4
SPECIFIC GRAVITY (H ₂ O = 1) 3.42		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.024		VOLATILE % Vol. - % Wt.

APPEARANCE AND ODOR

Colorless solid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Nonflammable	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

--

SPECIAL FIRE FIGHTING PROCEDURES

Self contained respirator if heated in a fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
Carbon tetrabromide	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
TLV 0.1 PPM, 1.4 mg/C.M.	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION Severe
RELEVANT SYMPTOMS OF EXPOSURE Eye and upper respiratory irritation, lung, liver & kidney damage, damage to cornea.	
EFFECTS OF CHRONIC EXPOSURE	
Liver damage	
EMERGENCY AND FIRST AID PROCEDURES Inhalation & rest, get medical aid; if swallowed - give emetic, get medical aid; wash from eyes and skin.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Collect on paper, evaporate on dish in hood.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Safety goggles
MECHANICAL (GENFRAI)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

227-4504B

CAS:000056235

FG-49000

PRODUCT DESIGNATION

Carbon Tetrachloride
03-227-4604
03-227-4624
03-227-4664

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tetrachloromethane

FORMULA

CCl₄

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ ppm	
			ORAL	PERCUT.	SPECIES	CONC.
			2800		Rat	8000
			12800		Mouse	9526/8 hrs.
LDLO - human - oral 43 mg/kg						
TDLO - oral - woman 180 mg/kg			6380		Rabbit	
LCLO - inhalation - human 1000 ppm						
TCLO - inhalation - human 20 ppm.						

SECTION III PHYSICAL DATA Mol. Wt. 153.84

BOILING POINT 76.75°C	° F.	VAPOR PRESSURE 25°C	113 mm Hg.
MELTING POINT -22.6°C	° F.	VAPOR DENSITY (Air = 1) 5.3	
SPECIFIC GRAVITY (H ₂ O = 1) 1.585		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.08		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Colorless liquid, sweetish odor (ethereal).

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not flammable	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits toxic fumes.

PRODUCT DESIGNATION
Carbon Tetrachloride (skin)

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
TLV 10 ppm, 25 mg/C.M.

PRINCIPLE ROUTES OF ABSORPTION
Inhalation of vapor, ingestion, sometimes skin absorption

RELEVANT SYMPTOMS OF EXPOSURE
Abdominal pain, nausea, vomiting, dizziness, loss of blood pressure, respiratory slowing, and fall of blood pressure. Delayed symptoms of liver or kidney

EFFECTS OF CHRONIC EXPOSURE
damage.
Liver, kidney damage, anemia, loss of appetite and weight, dermatitis, loss of memory,

EMERGENCY AND FIRST AID PROCEDURES
anorexia.
Remove from exposure, rest, keep warm; if necessary, give artificial respiration. Do not give stimulants. Obtain medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)
Allyl alcohol, aluminum, barium, beryllium, disilane, ethylene, fluorine, alkalies, magnesium, LOX, plutonium, tetrasilane, trisilane, uranium,

HAZARDOUS DECOMPOSITION PRODUCTS
wax, zirconium.
Heated - phosgene (COCl₂)

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Polyvinyl gloves
SPECIAL	RESPIRATOR Organic filter

OTHER PROTECTIVE EQUIPMENT
Self-contained breathing apparatus

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Protect from physical damage. Store in cool, dry, well-ventilated location away from any area where the fire hazard may be acute.

OTHER PRECAUTIONS

SIGNATURE

DATE

227-4604B

CAS:000120809

UX10500

PRODUCT DESIGNATION

03-227-5004
CatecholMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Pyrocatechol

FORMULA

 $C_6H_4(OH)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human	50 mg/kg		3890 260		Rat Mouse	
			550		Guinea pig	
				800	Rabbit	

SECTION III PHYSICAL DATA MW - 110.11

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
246°C			
MELTING POINT	° F.	VAPOR DENSITY (Air -)	
105°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.34			
SOLUBILITY IN WATER 45 Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless crystal salt

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
261°F		LOWER
METHOD USED		
CC		
EXTINGUISHING MEDIA		
Water, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

--

UNUSUAL FIRE AND EXPLOSION HAZARDS

--

PRODUCT DESIGNATION
Catechol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 5 ppm, 20 mg/C.M.

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Skin, ingestion

SKIN AND EYE

IRRITATION Very severe

RELEVANT SYMPTOMS OF EXPOSURE Central nervous system depression, convulsions

EFFECTS OF CHRONIC EXPOSURE

Blood damage, dermatitis

EMERGENCY AND FIRST AID PROCEDURES Wash eyes and skin; if swallowed - drink water, then 2 tsp. epsom salts in water; get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety glasses

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR
With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

227-5004B

CAS:000118752

DK68250

PRODUCT DESIGNATION

03-227-7504
ChloranilMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Chloranil

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2,3,5,6 Tetrachloric P-Benzoquinone

FORMULA

OC₆Cl₄O

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human	500 mg/kg		4000		Rat	

SECTION III PHYSICAL DATA MW 245.86

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
290°C.			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Yellow crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Dry chemical, carbon dioxide, alcohol foam.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

UCN-11322

(3 10-74)

227-7504A

PRODUCT DESIGNATION

Chloranil

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Irritation to skin, eye and mucous membrane, headache, dizziness.

EFFECTS OF CHRONIC EXPOSURE

May cause cancer of liver or kidneys.

EMERGENCY AND FIRST AID PROCEDURES

Wash skin & eyes; if swallowed - gastric lavage, get medical aid; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Safety goggles

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR
With mechanical filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

227-7504B

CAS:000078955

UCO7000

PRODUCT DESIGNATION

03-228-0105
ChloroacetoneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS
1 Chloro 2 PropanoneFORMULA
CH3COCH2Cl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal concentration in air						
Inhalation - human - 605 PPM/10 minutes.						

SECTION III PHYSICAL DATA MW - 95.53

BOILING POINT 121 ⁰ C.	⁰ F.	VAPOR PRESSURE mm Hg.
MELTING POINT -44.5 ⁰	⁰ F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.16		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O ∞		VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR

Colorless liquid, pungent odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		
METHOD USED		LOWER
EXTINGUISHING MEDIA		
Alcohol foam		
Water may be ineffective.		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits phosgene on heating to decomposition point.

PRODUCT DESIGNATION

Chloroacetone

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC Neoplastic

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Irritation of respiratory system and eyes; ingestion - severe internal irritation.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

228-0105B

CA-000107142

AL82250

PRODUCT DESIGNATION

03-228-0605
ChloroacetonitrileMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Chloromethyl Cyanide	FORMULA ClCH ₂ CN

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			220		Rat	
LCLO inhalation - rat	250 ppm/4 hrs.					
LDLO - skin - rabbit	71 mg/kg					

SECTION III PHYSICAL DATA MW-75.50

BOILING POINT 126°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.19		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Crystals		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, dry chemical, carbon dioxide, water may be ineffective.		
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION Chloroacetonitrile	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL None available	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion, skin	SKIN AND EYE IRRITATION Mild to moderate
RELEVANT SYMPTOMS OF EXPOSURE Dizziness, rapid respiration, headache, drowsiness, drop in blood pressure, rapid pulse, unconsciousness.	
EFFECTS OF CHRONIC EXPOSURE Dizziness, weakness, lung congestion, eye irritation, loss of appetite and weight, mental deterioration.	
EMERGENCY AND FIRST AID PROCEDURES Remove from area, give amyl nitrite inhalation every 5 minutes, artificial respiration with oxygen, wash skin & eyes, get medical aid.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS Cyanides	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR Self contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Outside or detached storage preferred inside storage in standard liquids storage room.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

228-0605B

CAS:000532274

AM63000

PRODUCT DESIGNATION

03-228-1100
 α -chloro-acetophenoneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Phenacyl Chloride	FORMULA $C_1H_2COC_6H_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal concentration in air						
inhalation - human 8500 mg/C.M. 10 month exposure						
Lowest published toxic concentration in air						
inhalation - human 93 mg/C.M. - 3 month exposure						
TCLO - inhalation - human - 20 mg/C.M. irritant						

SECTION III PHYSICAL DATA W - 154.6

BOILING POINT 237-247°C	° F.	VAPOR PRESSURE at 0°C	mm Hg.
MELTING POINT 56°C	° F.	VAPOR DENSITY (Air = 1)	5.2
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

White crystals - fragrant non-persistent odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 244°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

May react with water or steam to produce toxic and corrosive fumes.

PRODUCT DESIGNATION	
α-chloro-acetophenone	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
TLV-0.05 PPM, 0.3 mg/C.M.	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, ingestion	SKIN AND EYE IRRITATION Severe
REVELANT SYMPTOMS OF EXPOSURE	
Eye irritation, corneal haziness and pain; burning of throat and eyes; irritation of skin and eyes.	
EFFECTS OF CHRONIC EXPOSURE	
--	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - remove from exposure, rest, treat for pulmonary edema; if swallowed - wash mouth, give emetic, get medical aid; wash mouth, give emetic, get medical aid; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Absorb on paper towels, evaporate in hood.	
WASTE DISPOSAL METHOD	
Dissolve in a combustible liquid and burn.	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self contained
OTHER PROTECTIVE EQUIPMENT	
Protecting clothing	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

228-1100B

CAS:000079049

A064750

PRODUCT DESIGNATION

02-228-1605
Chloroacetyl chlorideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

 α -chloroacetyl chloride

FORMULA

 ClCH_2COCl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose inhalation - rat 1000 PPM						

SECTION III PHYSICAL DATA MW - 112.95

BOILING POINT 106 °F.	VAPOR PRESSURE mm Hg.
MELTING POINT -23 °C	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.50	EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O	VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR

Water white or slightly yellow liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Do not use water or foam
use carbon dioxide or dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point gives off
toxic chloride fumes

PRODUCT DESIGNATION

Chloroacetyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

50 PPB

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Irritation of eyes and respiratory system; severe
internal damage if swallowed; eye & skin burns.

EFFECTS OF CHRONIC EXPOSURE

Bronchial irritation, errosion of teeth.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, get medical aid; if swallowed -
drink water, milk of magnesia, get medical aid; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Reacts with water to produce H Cl alcohol & dimethyl sulfoxide

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Cover spill with sodium bicarbonate

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self contained

OTHER PROTECTIVE EQUIPMENT

Rubber apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

228-1605B

CAS:000095512

BX05250

PRODUCT DESIGNATION

03-228-2635
O-ChloroanilineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Fast Yellow GC Base

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

O-Chloroaniline

FORMULA

 $\text{Cl}(\text{C}_6\text{H}_4)\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			256		Mouse	
				222	Cat	

SECTION III PHYSICAL DATA

MW - 127.58

BOILING POINT 211°C.	° F.	VAPOR PRESSURE at 46°C.	mm Hg.
MELTING POINT 0°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.21		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Liquid, sweet odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water spray, carbon dioxide, alcohol foam.

SPECIAL FIRE FIGHTING PROCEDURES

Self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Vapor may form explosive mixtures in air.

PRODUCT DESIGNATION

O-Chloroaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, skin, ingestion

SKIN AND EYE

IRRITATION Low

REVELANT SYMPTOMS OF EXPOSURE

Headache, nausea, vomiting, jaundic, convulsions

EFFECTS OF CHRONIC EXPOSURE

Severe kidney damage, some liver damage, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

Remove from exposure; wash skin & eyes; if swallowed -
remove by gastric lavage and cathartics; oxygen as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Sodium and potassium peroxide, ozone, perchloric acid.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear protective clothing during cleanup.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in flammable liquids cabinets.

OTHER PRECAUTIONS

SIGNATURE

DATE

228-2635B

PRODUCT DESIGNATION

03-228-2665
P-ChloroanilineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P-Chloroaniline	FORMULA $C_6H_4(Cl)NH_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published toxic concentration in air 44 mg/C.M. inhalation - human			420	3200	Rat	
			100		Mouse	
			100		Bird	
				239	Cat	

SECTION III PHYSICAL DATA MW - 127.58°C.

BOILING POINT 231°C.	° F.	VAPOR PRESSURE at 59°C.	mm Hg.
MELTING POINT 77°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.43		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Soluble in hot water		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Crystalline solid, sweet odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water spray, carbon dioxide, alcohol foam.		
SPECIAL FIRE FIGHTING PROCEDURES Self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS Vapor may form explosive mixtures in air.		

PRODUCT DESIGNATION	
P-Chloroaniline	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
None Available	
CARCINOGENIC	
No	
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, skin, ingestion	
SKIN AND EYE	
IRRITATION Low	
REVELANT SYMPTOMS OF EXPOSURE	
Cyanosis, headache, blood pressure drop, lethargy, jaundice & anemia, pain in joints, fainting.	
EFFECTS OF CHRONIC EXPOSURE	
Weight loss, anemia, weakness and irritability, possible liver damage, inflammation of kidney, ringing in ears.	
EMERGENCY AND FIRST AID PROCEDURES	
Remove from exposure; wash from skin & eyes; if swallowed - remove by gastric lavage and catharsis; give oxygen as needed.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
Sodium and potassium peroxide, ozone, perchloric acid.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Wear protective clothing during cleanup.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
Protective clothing	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Store in flammable liquids cabinet.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

228-2665B

CU50750

03-228-3635
O-chlorobenzaldehyde

MATERIAL SAFETY DATA SHEET

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2-chlorobenzaldehyde	FORMULA $\text{Cl C}_6\text{H}_4\text{CHO}$

[illegible]

BOILING POINT 208	° F.	VAPOR PRESSURE	mm Hg
MELTING POINT 11°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.29		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Very slightly soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR White crystal			

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
Not available		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
Foam, carbon dioxide, dry chemical		

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
O-chlorobenzaldehyde

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL None available CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION Ingestion, skin, inhalation SKIN AND EYE IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE Eye irritation, headache, drowsiness, gastroenteric distress, pulmonary edema

EFFECTS OF CHRONIC EXPOSURE Anemia, dermatitis

EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid; wash eyes & skin; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE	DATE
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228-3635B

PRODUCT DESIGNATION

03-228-3665
P-chlorobenzaldehyde

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P-chlorobenzaldehyde	FORMULA Cl C ₆ H ₄ CHO

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 140.57

BOILING POINT 213°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 48°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.12		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Soluble in hot water		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR White needle-like crystals		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
P-chlorobenzaldehyde

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Ingestion, skin, inhalation of dust

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation, headache, drowsiness, gastroenteric distress, pulmonary edema

EFFECTS OF CHRONIC EXPOSURE

Anemia, dermatitis

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid; wash eyes & skin; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

228-3665B

CAS:000108907

CZ01750

PRODUCT DESIGNATION

03-228-4105
ChlorobenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Chlorobenzol

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Phenyl chloride

FORMULA

 C_6H_5Cl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			2910		Rat	
			2830		Rabbit	

SECTION III PHYSICAL DATA MW - 112.56

BOILING POINT 131.7°C	° F.	VAPOR PRESSURE at 22.2°C	10 ^{mm} Hg.
MELTING POINT -55.6°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.113		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Clear colorless liquid with aromatic odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 85°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 7.1%
METHOD USED Closed Cup		LOWER 1.3%

EXTINGUISHING MEDIA

Carbon dioxide; dry chemical, foam, water spray

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
Chlorobenzene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
TLU - 75 PPM, 350 mg/C.M.	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, ingestion, skin	SKIN AND EYE IRRITATION Yes
REVELANT SYMPTOMS OF EXPOSURE Cyanosis, deep & rapid respiration, irregular pulse, drowsiness, unconsciousness	
EFFECTS OF CHRONIC EXPOSURE	
Lung, liver and kidney damage.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - remove from exposure, rest; if swallowed - wash mouth, give emetic, get medical aid ; wash eyes and skin.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Absorb spill with paper towels and evaporate in hood.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Polyvinyl alcohol
SPECIAL	RESPIRATOR
	Self contained breathing apparatus
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Store in tightly closed containers and protect against physical damage.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

228-4105B

CAS-000623030

DI28000

PRODUCT DESIGNATION

03-228-4605
P-ChlorobenzonitrileMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Chlorobenzonitrile

FORMULA

ClC6H4CN

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			887		Rat	

SECTION III PHYSICAL DATA

MW - 137.57

BOILING POINT

223°C.

° F.

VAPOR PRESSURE

mm Hg.

MELTING POINT

94°C.

° F.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

Insoluble

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

White crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

None available

FLAMMABLE
(EXPLOSIVE)

UPPER

METHOD USED

LIMITS

LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P Chlorobenzonitrile

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Mild to moderate

RELEVANT SYMPTOMS OF EXPOSURE Dizziness, rapid respiration, headache, drowsiness, drop in blood pressure, rapid pulse.

EFFECTS OF CHRONIC EXPOSURE Dizziness, weakness, eye irritation, lung congestion, weight and appetite loss, mental degradation.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - amyl nitrite inhalation, induce vomiting, get medical aid; wash skin & eyes; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

Cyanides

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Protective apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred, inside storage in standard flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

228-4605B

PRODUCT DESIGNATION

03-228-5635
O-chlorobenzoyl chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,2 chlorobenzoyl chloride	FORMULA $\text{Cl C}_6\text{H}_4\text{COCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW - 175.02

BOILING POINT 230 ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -4 ° C	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O	VOLATILE % Vol. % Wt.
Decomposes	
APPEARANCE AND ODOR	

Colorless liquid - fumes

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water spray, foam, carbon dioxide or dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Full protective clothing

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

O-Chlorobenzoyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Irritates respiratory system, skin & eye burns,
mouth and digestive tract burns.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, artificial respiration if needed;
if swallowed - drink water, milk of magnesia, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

dimethyl sulfoxide

HAZARDOUS DECOMPOSITION PRODUCTS

When heated, phosgene is produced

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in coll, dry, well-ventilated room.

OTHER PRECAUTIONS

SIGNATURE

DATE

228-5635B

PRODUCT DESIGNATION

03-228-5665
P-Chlorobenzoyl Chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,4 Chlorobenzoyl Chloride	FORMULA $\text{ClC}_6\text{H}_4\text{COCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW-175.02

BOILING POINT 221°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 16°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.38		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Decomposes		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid - fumes		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water spray, foam, carbon dioxide or dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES Full protective clothing.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
P-Chlorobenzoyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

Severe

REVELANT SYMPTOMS OF EXPOSURE

Irritates respiratory system, skin & eye burns,

mouth and digestive tract burns.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, artificial respiration as needed;
ingestion-drink water, milk of magnesia, get medical aid; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Dimethyl Sulfoxide

HAZARDOUS DECOMPOSITION PRODUCTS

When heated, phosgene is produced

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry, well-ventilated location.

OTHER PRECAUTIONS

SIGNATURE

DATE

228-5665B

PRODUCT DESIGNATION

03-228-6105
O-Chlorobenzyl Chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,2 Chlorobenzyl Chloride	FORMULA <chem>ClC6H4CH2Cl</chem>

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW-161.08

BOILING POINT 219°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -30°C	° F.	VAPOR DENSITY (Air = 1) 5.55
SPECIFIC GRAVITY (H ₂ O = 1) 1.27		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Clear liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water spray, dry chemical, carbon dioxide		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

O-Chlorobenzyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

High

REVELANT SYMPTOMS OF EXPOSURE Eye, nose & throat irritation; severe burns to mouth
and digestive tract if swallowed.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES If inhaled - rest; if swallowed - give emetic, get
medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION May undergo exothermic condensation in
presence of copper aluminum, iron, zinc, magnesium, tin and other metals.

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Flush spills with large quantities of water and ventilate area to remove vapors.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

228-6105B

PRODUCT DESIGNATION

03-228-6605
M-Chlorobromobenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,3 Chlorobromobenzene	FORMULA $\text{ClC}_6\text{H}_4\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW 191.47

BOILING POINT 196°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -21°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.63			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR			
White crystal			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water spray, carbon dioxide, foam, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Wear goggles and self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

M Chlorobromobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Cyanosis, deep rapid respiration, irregular pulse,
drowsiness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Lung, liver & kidney damage

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic; get medical aid; wash
eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

MECHANICAL (GENERAL)

Goggles
GLOVES
Polyvinyl alcohol

SPECIAL

RESPIRATOR
With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

228-6605B

PRODUCT DESIGNATION

03-228-6665
4 Chlorobromobenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
1, 4 Chlorobromobenzene	
CHEMICAL NAME AND SYNONYMS	FORMULA
P Chlorobromobenzene	ClC ₆ H ₄ Br

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 191.47

BOILING POINT 196°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 67°C.	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.58		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR White crystal		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water spray, carbon dioxide, foam, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES Wear goggles and self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

4 Chlorobromobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

Severe

REVELANT SYMPTOMS OF EXPOSURE

Cyanosis, deep and rapid respiration, irregualr pulse,
drowsiness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Lung, liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get
medical aid; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl Alcohol

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

228-6665B

PRODUCT DESIGNATION

03-228-7105
G-Chlorobutyronitrile

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS G Chlorobutyronitrile	FORMULA Cl CH ₂ CH ₂ CH ₂ CN

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 103.55

BOILING POINT 198° C.	° F.	VAPOR PRESSURE at 96° C.	25 mm Hg.
MELTING POINT -	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.16		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR Liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES Self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

G-Chlorobutyronitrile

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

Moderate

REVELANT SYMPTOMS OF EXPOSURE Dizziness, rapid respiration, headache, drowsiness, drop in blood pressure, pulse, delayed symptoms.

EFFECTS OF CHRONIC EXPOSURE

Eye irritation, loss of appetite and weight, mental deterioration.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - inhalation of amyl nitrite, induce vomiting or gastric lavage; wash skin & eyes; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

When heated to decomposition emits highly toxic cyanide fumes.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb with paper towels - evaporate in hood.

WASTE DISPOSAL METHOD

Add excess alcoholic sodium hydroxide, after one hour, evaporate alcohol, then add calcium hypochloride.

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Rubber

RESPIRATOR

Self contained

OTHER PROTECTIVE EQUIPMENT

Protective apron.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

228-7105B

CAS-000067663

FS-91000

PRODUCT DESIGNATION

Chloroform (trichloromethane)
03-228-9135
03-228-9215

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Trichloromethane

FORMULA

CHCl₃

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ 2/C.M.	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO - inhalation - human	5000 mg/C.M./7 min.		300		Rat	
TCLO - " "	1000 mg/C.M./1 year				Mouse	28
LDLO oral - human	140 mg/kg				Dog	100
					Rabbit	59

SECTION III PHYSICAL DATA Mol. Wt. 119.39

BOILING POINT 61.26°C	° F.	VAPOR PRESSURE 10.4°C	100 mm Hg.
MELTING POINT 142.2	° F.	VAPOR DENSITY (Air = 1) 4.12	
SPECIFIC GRAVITY (H ₂ O = 1) 1.49845 @ 15°C		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Heavy, water-white, volatile, sweet-tasting liquid with characteristic odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not flammable	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water, foam, CO₂, etc.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits toxic and irritating fumes.

PRODUCT DESIGNATION

Chloroform

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 25 ppm, 120 mg/C.M.

Teratogen

CARCINOGENIC

Experimental carcinogen

PRINCIPLE ROUTES OF ABSORPTION

Inhalation of vapor, ingestion

SKIN AND EYE

IRRITATION Eye damage

RELEVANT SYMPTOMS OF EXPOSURE Vapor has anesthetic properties, causing drowsiness, giddiness, headache, nausea, vomiting, unconsciousness; can cause conjunctivities if vapor contacts eyes.

EFFECTS OF CHRONIC EXPOSURE

Liver damage, followed sometimes by jaundice and cirrhosis of the liver.

EMERGENCY AND FIRST AID PROCEDURES

Remove volatile anesthetic by artificial respiration, make patient rest, keep warm, obtain medical attention.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID) Alkali metals, acetone, aluminum, disilane, magnesium, nitrogen tetroxide, sodium methylate.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR
w/appropriate filter

OTHER PROTECTIVE EQUIPMENT

Self-contained breathing apparatus, protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in tightly closed containers away from direct sunlight, protect container against physical damage.

OTHER PRECAUTIONS

SIGNATURE

DATE

228-9135B

PRODUCT DESIGNATION
03-228-9605
2 Chloro-5-Hydroxytoluene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 6 Chloro-M-Cresol	FORMULA Cl (C ₆ H ₃) (OH)CH ₃

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None Available			

SECTION III PHYSICAL DATA

MW - 142.59

BOILING POINT 235°C.	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 66°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O .38		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR White crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

2 Chloro-5-Hydroxytoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Eye, skin irritation, sensitizes, irritation of digestive tract, C.N.S. depression, convulsions.

EFFECTS OF CHRONIC EXPOSURE

Kidney damage

EMERGENCY AND FIRST AID PROCEDURES Wash eyes and skin; if swallowed - gastric lavage with olive oil, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

228-9605B

PRODUCT DESIGNATION

03-229-0206
M-Chloriodobenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 3 Chloriodobenzene	FORMULA $\text{ClC}_6\text{H}_4\text{I}$

SECTION II. HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 238.47

BOILING POINT 230°C	° F.	VAPOR PRESSURE at 114°C	mm Hg. 14
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Yellow liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water spray, carbon dioxide, foam dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Wear goggles and self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

M-Chloriodobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE Cyanosis, deep & rapid respiration; irregular pulse,
drowsiness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Lung, liver & kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get
medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl gloves

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

229-0206B

PRODUCT DESIGNATION

03-229-0236

O-Chloriodobenzene

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 Chloro Iodobenzene

FORMULA

ClC6H4I

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

MW - 238.47

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

234

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

0.7

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

1.95

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Colorless oil

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

N/A

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Water spray, carbon dioxide, foam, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

O-Chloroiodobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Cyanosis, deep & rapid respiration; irregular pulse,
drowsiness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Liver, lung & kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic;
get medical aid; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl alcohol

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

229-0236B

PRODUCT DESIGNATION

03-229-0266
P-Chloriodobenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

4 Chloro Iodobenzene

FORMULA

$\text{ClC}_6\text{H}_4\text{I}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 238.47

BOILING POINT 228	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 56°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.89		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR White solid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		

EXTINGUISHING MEDIA

Water spray, carbon dioxide, foam, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P-Chloroiodobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

Severe

REVELANT SYMPTOMS OF EXPOSURE

Cyanosis, deep and rapid respiration, irregular pulse,

drowsiness, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE

Lung, liver & kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Polyvinyl gloves

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

229-0266B

CAS:000600259

TX50750

PRODUCT DESIGNATION

03-229-3216
1 Chloro-1-NitropropaneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,1 Chloronitropropane	FORMULA $C_3H_5ClNO_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - human - 50 mg/kg			510		Mouse	
			50		Rabbit	

SECTION III PHYSICAL DATA MW - 123.54

BOILING POINT 140°C	° F.	VAPOR PRESSURE at 20°C	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1) 4.26	
SPECIFIC GRAVITY (H ₂ O = 1) 1.21		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER 0.8 g/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 144	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER
EXTINGUISHING MEDIA Alcohol foam, water, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

May explode when heated

PRODUCT DESIGNATION

1 Chloro-1-Nitropropane

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 20 PPM, 100 mg/C.M.

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of respiratory system, lung, liver,heart muscle and kidney damage.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid; wash skin & eyes; inhalation - give oxygen as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

May explode when heated

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Oxidizing material

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Cover spill with soda ash, spray and mix with water.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

Protective clothing made of plastic.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

229-3216B

CAS:000108430

SK24500

PRODUCT DESIGNATION

03-229-4216
M-ChlorophenolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

3 Chloro-1 hydroxybenzene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

M chlorophenol

FORMULA

Cl C₆H₄OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			570		rat	

SECTION III PHYSICAL DATA

MW - 128.56

BOILING POINT

° F.

214°C.

VAPOR PRESSURE

at 44°C.

mm Hg.

1

MELTING POINT

° F.

33°C.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

1.27

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

2.6

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Needle-like crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

None available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

METHOD USED

LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
M-Chlorophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC Neoplasti

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion, skin

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE Eye skin and mucous membrane irritation,
dermatitis, cyanosis.

EFFECTS OF CHRONIC EXPOSURE

Liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; wash from skin & eyes; if swallowed -
give emetic, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Put a mixture of sand 9 and 1 soda ash. Put into box for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Butyl Rubber

SPECIAL

RESPIRATOR
Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry place.

OTHER PRECAUTIONS

SIGNATURE

DATE

229-4216B

CAS:000095578

SK26250

PRODUCT DESIGNATION

03-229-4246
O-ChlorophenolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

2 Chloro-1 Hydroxybenzene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

O-chlorophenol

FORMULA

Cl C₆H₄OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			670		Rat	
			670		Mouse	
			440		Mammal	

SECTION III PHYSICAL DATA

MW-128.56

BOILING POINT

176°C.

° F.

VAPOR PRESSURE

at 12°C.

1

mm Hg.

MELTING POINT

7°C

° F.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

1.24

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

2.8

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

147°F.

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide - dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
O-Chlorophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC Neoplastic

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE Eye, skin and mucose membrane irritation dermatitis, cyanosis.

EFFECTS OF CHRONIC EXPOSURE

Liver damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; wash from skin & eyes; if swallowed - give emetic, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Put sand-soda ash (9:1) mixture on spill and sweep into box for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Butyl rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry place.

OTHER PRECAUTIONS

SIGNATURE

DATE

229-4246B

SK28000

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

P-Chlorophenol

C1 C₆H₄OH

SECTION II HAZARDOUS INGREDIENTS

[illegible]

SECTION III PHYSICAL DATA MW - 128.56

BOILING POINT 217°C.	° F.	VAPOR PRESSURE at 50°C.	mm Hg.
MELTING POINT 43°C.	° F.	VAPOR DENSITY (Air = 1) 4.43	
SPECIFIC GRAVITY (H ₂ O = 1) 1.31		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER $\frac{\text{pts}}{100 \text{ pts H}_2\text{O}}$ 2.7		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Needle-like crystals, straw colored, unpleasant odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
250 ⁰ F.		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Alcohol foam, dry chemical, carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P-Chlorophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Eye, skin and mucous membrane irritation dermatitis, cyanosis.

EFFECTS OF CHRONIC EXPOSURE

Liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; wash from skin & eyes. If swallowed - give emetic, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Pour a mixture of sand to soda ash (9:1) on spill and sweep into box for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Butyl Rubber

SPECIAL

RESPIRATOR
Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry place.

OTHER PRECAUTIONS

SIGNATURE

DATE

229-4276B

PRODUCT DESIGNATION

03-229-4716
M-Chlorophenyl Isocyanate

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

M-Chlorophenyl Isocyanate

FORMULA

ClC6H4NCO

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/CM		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO - ocular-human 1 ppm/1 minute eye			4760		Rat	
			530		Mouse	

SECTION III PHYSICAL DATA MW - 153.6

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
101° C. at 30 min.		at 77° C.	10
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-4° C.			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Water white liquid.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
one available		
METHOD USED		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Powerful lachrymater.

PRODUCT DESIGNATION

M-Chlorophenyl Isocyanate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Skin, eyes and mucous membrane irritation.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - oxygen as needed; if swallowed - induce vomiting, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

229-4716B

PRODUCT DESIGNATION

03-229-4746
O-Chlorophenyl Isocyanate

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS O-Chlorophenyl Isocyanate	FORMULA Cl C ₆ H ₄ NCO

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 153.6

BOILING POINT 106° C. at 30 min.	° F.	VAPOR PRESSURE at 77° C.	10 mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS Powerful lachrymater		

PRODUCT DESIGNATION
O-Chlorophenyl Isocyanate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of skin, eyes and mucous membrane.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES Inhalation - oxygen as needed; if swallowed - induce vomiting, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

229-4746B

CAS:000096242

TY40250

PRODUCT DESIGNATION

03-229-6466
3-Chloro, 1,2 PropanediolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

 α Chlorohydrin

FORMULA

 $\text{ClCH}_2\text{CHOHCH}_2\text{OH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			150		Rat	
				5	Mouse	
			160		Mouse	

SECTION III PHYSICAL DATA MW 110.54

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
213°C decomposes			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.33			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR			
Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
N/A		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
3 Chloro - 1,2 Propanediol	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
None available	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION Moderate
REVELANT SYMPTOMS OF EXPOSURE	eye and nasal irritation, nausea, vomiting, giddiness, dizziness, incoordination, coma
EFFECTS OF CHRONIC EXPOSURE	Nausea, vomiting, abdominal pain
EMERGENCY AND FIRST AID PROCEDURES	Wash eyes and skin; if swallowed - give emetic; get medical aid; inhalation - rest, give oxygen as needed .
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
SPECIAL	GLOVES
	Rubber
	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

229-6466B

PRODUCT DESIGNATION

03-229-7716
 β -Chloropropionyl Chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA
3 Chloropropionyl chloride	$\text{CH}_2\text{ClCH}_2\text{COCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW - 126.98

BOILING POINT 144°C	° F.	VAPOR PRESSURE at 44°C	mm Hg. 18
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.33		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

 β Chloropropionyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, coughing, headache, pulmonary edema,
ulceration of skin, dizziness.EFFECTS OF CHRONIC EXPOSURE Erosion of teeth, bronchial irritation and chronic
cough.EMERGENCY AND FIRST AID PROCEDURES Ingestion - drink water, milk of magnesia, get medical
aid; inhalation - artificial respiration as needed; wash eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID) May react violently with water, alcohol,
and dimethyl sulfoxide.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

229-7716B

CAS:000109091

US59500

PRODUCT DESIGNATION

03-229-9216
2 ChloropyridineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

 α chloropyridine

CHEMICAL NAME AND SYNONYMS

FORMULA

2- chloropyridine

 C_5H_4NCl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			107		Mouse	
LCLO - inhalation - rat	250 ppm/7 hrs.			64	Rabbit	

SECTION III PHYSICAL DATA

MW 113.55

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
170°C		at 13°C	
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
--		3.93	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.21			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Soluble			
APPEARANCE AND ODOR			
Oil with fish-like odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
N/A		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

2 Chloropyridine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

Severe

REVELANT SYMPTOMS OF EXPOSURE

Narcosis, headache, nausea, giddiness, vomiting;oral - liver & kidney damage.

EFFECTS OF CHRONIC EXPOSURE

Occasional vomiting and diarrhea; weight loss & anemia;ocular and facial paralysis.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting,
then gastric lavage; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

May react with oxidizing materials

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Use in hood

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

229-9216B

PRODUCT DESIGNATION

03-230-0307
M-Chlorotoluene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

3 Chlorotoluene

FORMULA

CH3C6H4Cl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA

MW - 126.58

BOILING POINT

162°C

° F.

VAPOR PRESSURE

at 43°C

mm Hg.

10

MELTING POINT

-48°C

° F.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

1.08

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

Not available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

M-Chlorotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Eye & respiratory system irritation, severe internal

damage, narcotic effect

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic,
get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

230-0307B

RECEIVED BY TIC SEP 3 1981

PRODUCT DESIGNATION

03-230-0337
O-Chlorotoluene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2 Chlorotoluene	FORMULA $\text{CH}_3\text{C}_6\text{H}_4\text{Cl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW 126.58

BOILING POINT 159°C	° F.	VAPOR PRESSURE at 43°C	10 mm Hg.
MELTING POINT -37°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.08		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES --		
UNUSUAL FIRE AND EXPLOSION HAZARDS --		

PRODUCT DESIGNATION
O-Chlorotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 50 PPM, 250 mg/C.M.

CARCINOGENIC Neoplastic

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Eye and respiratory system irritation, severe internal damage.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid;
wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

230-0337B

PRODUCT DESIGNATION

P chlorotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Eye & respiratory system irritation, severe
internal damage if swallowed.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get
medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

230-0367B

PRODUCT DESIGNATION

03-309-2205
Methyl-Iso-Thiocyanate

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Methyl Mustard Oil

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Methyl Isothiocyanate

FORMULA

 CH_3CnS

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human - LDLO	50 mg/kg		97		rat	
			97		mouse	

SECTION III PHYSICAL DATA MW - 73.11

BOILING POINT 119°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 36°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.07		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O very slightly soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water, alcohol foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus and goggles.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Methyl - Iso - Thiocyanate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

Eye and mucous membrane irritation, skin irritation.

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, medical aid, gastric lavage;
inhalation - rest, give oxygen as needed; wash from eyes & skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels; evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber (butyl)

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Coveralls

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

309-2205B

PRODUCT DESIGNATION

03-309-3605
Methyl-M-Toluidine

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS N Methyl-M-Toluidine	FORMULA $\text{CH}_3\text{NHC}_6\text{H}_4\text{CH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 121.18

BOILING POINT 207°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.95		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES Wear full protective clothing.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION	
Methyl-M-Toluidine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
none available	CARCINOGENIC
no	
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, ingestion, skin	SKIN AND EYE
	IRRITATION moderate
REVELANT SYMPTOMS OF EXPOSURE	
Cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions.	
EFFECTS OF CHRONIC EXPOSURE	
Weight loss, anemia, weakness.	
EMERGENCY AND FIRST AID PROCEDURES	
If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Outside storage preferred. Inside storage in a standard flammable liquids storage cabinet.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

309-3605B

PRODUCT DESIGNATION

03-309-3705
Methyl-O-Toluidine

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS N Methyl-O-Toluidine	FORMULA $\text{CH}_3\text{NHC}_6\text{H}_4\text{CH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 121.18

BOILING POINT 207°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.97		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES Wear full protective clothing.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION	
Methyl-O-Toluidine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
none available	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION moderate
RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions.	
EFFECTS OF CHRONIC EXPOSURE	
Weight loss, anemia, weakness	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Outside storage preferred. Inside storage in a standard flammable liquids storage cabinet.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

309-3705B

PRODUCT DESIGNATION

03-309-3805
Methyl P Toluidine

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS N Methyl P Toluidine	FORMULA $\text{CH}_3\text{NHC}_6\text{H}_4\text{CH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 121.18

BOILING POINT 210°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.94		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES wear full protective clothing		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Methyl-P-Toluidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE cyanosis, air hunger, nausea, vomiting, high blood pressure, convulsions.

EFFECTS OF CHRONIC EXPOSURE

weight loss, anemia, weakness

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside storage preferred. Inside storage in a standard flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

309-3805B

CAS:000110918

QD64750

PRODUCT DESIGNATION

03-309-8205
03-309-8305
MorpholineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

Diethylenimide oxide

CHEMICAL NAME AND SYNONYMS

FORMULA

MorpholineC₂H₄OC₂H₄NH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human LDLO 50 mg/kg			1050	500	rat rabbit	

SECTION III PHYSICAL DATA

MW - 87.12

BOILING POINT

° F.

129°C

VAPOR PRESSURE

at 23°C

mm Hg.

10

MELTING POINT

° F.

-8°C

VAPOR DENSITY (Air = 1)

3.00

SPECIFIC GRAVITY (H₂O = 1)

1.00

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

∞

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Colorless, hygroscopic oil, pepper-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

100°F

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

O.C.

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION Morpholine	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL 20 PPM, 70 mg/C.M. skin	CARCINOGENIC neoplastic
PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion, skin	SKIN AND EYE IRRITATION severe
RELEVANT SYMPTOMS OF EXPOSURE Nasal & bronchial irritation, skin and eye irritation.	
EFFECTS OF CHRONIC EXPOSURE Liver and kidney damage.	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - get medical aid immediately - gastric lavage with milk; inhalation - rest - artificial respiration, oxygen as needed; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Spread 9:1 mixture of sand, baking soda, transfer into cardboard carton for disposal.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE goggles
MECHANICAL (GENERAL)	GLOVES rubber (butyl)
SPECIAL	RESPIRATOR with proper filter
OTHER PROTECTIVE EQUIPMENT Plastic coveralls	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Store tightly closed bottle in a dark, cool place.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

309-8205B

PRODUCT DESIGNATION

03-309-9205
Myristoyl chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Myristoyl Chloride

FORMULA

 $C_{13}H_{27}Cl$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

MW-246.81

BOILING POINT 168°C 15 mm	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 3°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O decomposes in water		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR. colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		
METHOD USED		LOWER
EXTINGUISHING MEDIA Carbon dioxide, dry chemical. Do not use water.		

SPECIAL FIRE FIGHTING PROCEDURES

Full protective clothing, self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point, gives off toxic HCl.

PRODUCT DESIGNATION

Myristoyl chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE

Irritation of eyes and respiratory system; severe internal damage if swallowed; eye and skin burns.

EFFECTS OF CHRONIC EXPOSURE

Bronchial irritation, erosion of teeth.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - drink water, milk of magnesia, get medical aid, wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Reacts with water or alcohol

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Flush spills with large quantities of water and ventilate area to remove vapor.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR
Self-contained

OTHER PROTECTIVE EQUIPMENT

Rubber apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

309-9205B

PRODUCT DESIGNATION

03-314-0286
Amsco Diluent 125-82

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME Amsco Division-Union Oil		EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)		
TRADE NAME AND SYNONYMS Amsco odorless mineral spirits		CHEMICAL FAMILY Petroleum hydrocarbon family
CHEMICAL NAME AND SYNONYMS Amsco Diluent 125-82		FORMULA

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA

BOILING POINT 360-400°F	° F.	VAPOR PRESSURE at 68°F	mm Hg. 0.5
MELTING POINT none available	° F.	VAPOR DENSITY (Air = 1) 5.17	
SPECIFIC GRAVITY (H ₂ O = 1) 0.74 - 0.77		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O negligible		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR clear, slight oily odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 129°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 6.0%
METHOD USED closed cup		LOWER 1.0%
EXTINGUISHING MEDIA water spray, CO ₂ , foam, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

none

UNUSUAL FIRE AND EXPLOSION HAZARDS

none

PRODUCT DESIGNATION
Amsco Diluent

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
TLV - 200 PPM

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE Severe eye irritation, drying of skin; inhalation -
headache, dizziness, nausea.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES If swallowed - get medical aid; inhalation - artificial
respiration as necessary; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

none

INCOMPATABILITY (MATERIALS TO AVOID)

Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS Thermal decomposition may yield carbon monoxide.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Flush with water into retaining area or container. Avoid exposure to sparks,
fire or hot metal surface.

WASTE DISPOSAL METHOD

Incinerate under safe conditions.

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

yes

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

yes

SPECIAL

RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

Eye bath and safety shower.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep away from heat, sparks and open flame. Use with adequate ventilation.

OTHER PRECAUTIONS

SIGNATURE

DATE

314-0286B

CAS:000091203

QJ05250

PRODUCT DESIGNATION

03-314-0706
NaphthaleneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

moth flakes

CHEMICAL NAME AND SYNONYMS

FORMULA

naphthalene

 $C_{10}H_8$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - child LDLO	100 mg/kg		1780		rat	
Oral - human LDLO	50 mg/kg					

SECTION III PHYSICAL DATA MW - 128.16

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
218°C		at 52.6°C	1
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
80.2°C		4.42	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.145			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
low			

APPEARANCE AND ODOR

white crystalline solid - moth ball odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
174°F		5.9%
METHOD USED		LOWER
		0.9%

EXTINGUISHING MEDIA

Water, carbon dioxide, dry chemical or foam.

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Naphthalene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 10 PPM, 50 mg/C.M.

CARCINOGENIC neoplastic

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION yes

REVELANT SYMPTOMS OF EXPOSURE

Gastroenteric distress, tremors, convulsions, fever,
respiratory failure, headache, nausea, vomiting.

EFFECTS OF CHRONIC EXPOSURE

clouding of lens.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - gastric lavage,
blood transfusion, oxygen.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

314-0706B

PRODUCT DESIGNATION

03-314-1206
A-Naphthaleneacetonitrile

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

1 Naphthaleneacetonitrile

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

 α naphthaleneacetonitrile

FORMULA

 $C_{10}H_7CH_2CN$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

MW - 167.21

BOILING POINT

194°C at 18 mm

° F.

VAPOR PRESSURE

185°C

mm Hg.

10

MELTING POINT

35°C

° F.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

--

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

crystal or liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

none available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
A-Naphthaleneacetonitrile

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

none available

SKIN AND EYE

inhalation, ingestion (mainly)

IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE Dizziness, rapid respiration, headache, drowsiness, drop in blood pressure, rapid pulse.

EFFECTS OF CHRONIC EXPOSURE Dizziness, weakness, hoarseness, lung congestion, eye irritation, loss of weight and appetite.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - cyanide antidote; inhalation - inhale amyl nitrite artificial respiration; get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

314-1206B

CAS-000090153

QL28000

PRODUCT DESIGNATION

03-314-2706
A-NaphtholMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

A-Hydroxynaphthalene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

A-Naphthol

FORMULA

 $C_{10}H_7OH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ Mg/Kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			2590		Rat	
				880	Rabbit	

SECTION III PHYSICAL DATA

MW - 144.18

BOILING POINT	$^{\circ}F.$	VAPOR PRESSURE	$mm\ Hg.$
283 $^{\circ}$ C.		at 94 $^{\circ}$ C.	1
MELTING POINT	$^{\circ}F.$	VAPOR DENSITY (Air = 1)	
96 $^{\circ}$ C.			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.10			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless crystal, disagreeable odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

A-Naphthol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion & skin

SKIN AND EYE

IRRITATION

Severe

RELEVANT SYMPTOMS OF EXPOSURE

Skin and mucous membrane irritation, eye damage.

EFFECTS OF CHRONIC EXPOSURE

Kidney damage, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - drink water, epsom salt solution, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

314-2706B

CAS-000135193

QL29750

PRODUCT DESIGNATION

03 314-2806
B-NaphtholMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

B-Hydroxynaphthalene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

B-Naphthol

FORMULA

 $C_{10}H_7OH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human - LDLO	50 mg/kg		2420		Rat	

SECTION III PHYSICAL DATA MW-144.18

BOILING POINT 280°C.	° F.	VAPOR PRESSURE at 146°C	mm Hg. 10
MELTING POINT 122.5°C.	° F.	VAPOR DENSITY (Air = 1) 4.97	
SPECIFIC GRAVITY (H ₂ O = 1) 1.22		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

White to yellow white crystal, phenolic odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 322°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
B-Naphthol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion & skin

SKIN AND EYE
IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE
Skin and mucous membrane irritation, eye damage.

EFFECTS OF CHRONIC EXPOSURE
Kidney damage, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES
Inhalation - rest; if swallowed - drink water, epsom salt solution, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Safety goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE	DATE
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314-2806B

PRODUCT DESIGNATION

03-314-3706
A-Naphthonitrile

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS A-Naphthonitrile	FORMULA $C_{10}H_7CN$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 153.19

BOILING POINT 307° C.	° F.	VAPOR PRESSURE at 158° C.	mm Hg. 12
MELTING POINT 35° C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.09		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Leaf-like crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

A-Naphthonitrile

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE Headache, nausea, vomiting, abdominal cramping, unconsciousness, convulsions.

EFFECTS OF CHRONIC EXPOSURE

Flushing of face, nausea, jaundice.

EMERGENCY AND FIRST AID PROCEDURES Wash skin & eyes; inhalation - inhale amyl nitrite vapor; if swallowed - give emetic, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With organic filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

314-3706B

CAS-000134327

QM14000

PRODUCT DESIGNATION

03-314-5306
A-NaphthylamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

1-Naphthylamine
CHEMICAL NAME AND SYNONYMS

FORMULA

 α - Naphthylamine $C_{10}H_7NH_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			779		Rat	

SECTION III PHYSICAL DATA MW - 143.18

BOILING POINT 301°C.	° F.	VAPOR PRESSURE at 104°C.	mm Hg.
MELTING POINT 50°C.	° F.	VAPOR DENSITY (Air = 1) 4.93	1
SPECIFIC GRAVITY (H ₂ O = 1) 1.13		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR Colorless to pink or grey solid.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 315°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water or foam may cause frothing. Carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

Can react with oxidizing materials.

PRODUCT DESIGNATION

A-Naphthylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation

EFFECTS OF CHRONIC EXPOSURE

Bladder tumors.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - emetic, get medical aid; wash skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR Filter type respirator for dust, mist and fumes.

OTHER PROTECTIVE EQUIPMENT

Full protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in sealed container.

OTHER PRECAUTIONS

SIGNATURE

DATE

314-5306B

PRODUCT DESIGNATION

03-314-5906
β- Naphthylamine Hydrochloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2-Naphthylamine Hydrochloride	FORMULA <chem>C10H7NH2HCl</chem>

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.

SECTION III PHYSICAL DATA MW - 179.65

BOILING POINT -- ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -- ° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) --	EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Very soluble	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Leaflet crystals	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

 β -Naphthylamine Hydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation

EFFECTS OF CHRONIC EXPOSURE

Bladder tumors

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - rest; wash skin & hands.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Filter type for dust, mist and fumes

OTHER PROTECTIVE EQUIPMENT

Full protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

314-5906B

PRODUCT DESIGNATION

03-314-6306
 A-Naphthylhydrazine
 Hydrochloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
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ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

α Naphthylhydrazine hydrochloride

FORMULA

$C_{10}H_7NHNH_2 \cdot HCl$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 194.66

BOILING POINT --	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER : Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR			
crystalline			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

A-Naphthylhydrazine Hydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation of dust, ingestion, skin

SKIN AND EYE

IRRITATION

severe

REVELANT SYMPTOMS OF EXPOSURE

Irritation of skin, eyes and mucous membranes - gastroenteric disturbances, anemia.

EFFECTS OF CHRONIC EXPOSURE

Blood and liver damage, loss of appetite.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

314-6306B

CAS: 000551064

NX91000

PRODUCT DESIGNATION

03-314-6806
1-Naphthyl IsocyanateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS 2- Naphthyl Isocyanate	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1 - Naphthyl Isocyanate	FORMULA $C_{10}H_7NCO$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			245		mouse	

SECTION III PHYSICAL DATA

MW - 185.25

BOILING POINT 270°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 4°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.18		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O decomposes		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA alcohol foam, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

1 - Naphthyl Isocyanate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

skin, eye and respiratory tract irritation.

EFFECTS OF CHRONIC EXPOSURE

allergic sensitization of respiratory tract.

EMERGENCY AND FIRST AID PROCEDURES

if swallowed - induce vomiting, get medical aid; inhalation - rest;
wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

314-6806B

PRODUCT DESIGNATION

03-314-6906
B-Naphthyl Isocyanate

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

2-Naphthyl Isocyanate

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

B-Naphthyl Isocyanate

FORMULA

$C_{10}H_7NCO$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 185.25

BOILING POINT --	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 56°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O decomposes		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

B-Naphthyl Isocyanate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Skin, eye and respiratory tract irritation.

EFFECTS OF CHRONIC EXPOSURE

Sensitization of respiratory tract.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

314-6906B

PRODUCT DESIGNATION

03-315-0907
3 Nitro-4 Acetylaminotoluene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
2 Nitro-P-Acetotoluidide CHEMICAL NAME AND SYNONYMS	FORMULA
3 Nitro 4 Acetyl amino Toluene	$\text{NO}_2\text{C}_6\text{H}_3(\text{CH}_3)(\text{NHCOCH}_3)$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 194.19

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
--			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
93°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
--			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
soluble			
APPEARANCE AND ODOR			
yellow crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		
METHOD USED		LOWER
EXTINGUISHING MEDIA		
carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

3 Nitro-4 Acetylaminotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION slight

RELEVANT SYMPTOMS OF EXPOSURE

difficulty in breathing, cyanosis, vomiting, headache

EFFECTS OF CHRONIC EXPOSURE

blood damage

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May explode when heated with sulfuric acid.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

315-0907B

PRODUCT DESIGNATION

03-315-1907
5 Nitro-2-Aminoaniso^{le}MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

5 nitro-o-anisidine

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1-methoxy-4 nitroaniline

FORMULA

 $\text{NO}_2\text{C}_6\text{H}_4(\text{NH}_2)\text{OCH}_3$

SECTION II HAZARDOUS INGREDIENTS 2 6 3 2 3

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			704		rat	

SECTION III PHYSICAL DATA MW - 168.15

BOILING POINT --	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 141°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.21		EVAPORATION RATE (____ - 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O --		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR yellow crystals		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 390°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

water spray, carbon dioxide, dry chemical, foam

SPECIAL FIRE FIGHTING PROCEDURES

wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
5-Nitro-2-Aminoanisoie

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
inhalation, ingestion, skin

SKIN AND EYE
IRRITATION yes

REVELANT SYMPTOMS OF EXPOSURE
Headache, nausea, vomiting, weakness, stupor, cyanosis.

EFFECTS OF CHRONIC EXPOSURE
Liver damage

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

MECHANICAL (GENERAL)

goggles
GLOVES

SPECIAL

rubber
RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

with proper filter

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

315-1907B

PRODUCT DESIGNATION

03-315-2407
5 Nitro-4-Amino-1,
3-Dimethyl Benzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME		EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)		
TRADE NAME AND SYNONYMS	5 nitro-4-amino-1,3 dimethyl-benzene	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	6 nitro-2,4,xylidine	FORMULA $(CH_3)_2C_6H_2(NH_2)NO_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 166.18

BOILING POINT --	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 69°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O --		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR crystalline		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA water spray, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION	
5 Nitro-4-amino-1,3-Dimethyl-Benzene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
none available	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
inhalation, ingestion, skin	IRRITATION yes
RELEVANT SYMPTOMS OF EXPOSURE	
Cyanosis, headache, nausea, vomiting, weakness, stupor.	
EFFECTS OF CHRONIC EXPOSURE	
Liver damage	
EMERGENCY AND FIRST AID PROCEDURES	
If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	goggles
MECHANICAL (GENERAL)	GLOVES
	rubber
SPECIAL	RESPIRATOR
	with proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

315-2407B

PRODUCT DESIGNATION

03-315-2907
3-Nitro-4 Aminophenetole

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

3-Nitro-4 aminophenetole

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

3 Nitro-P-Phenetidine

FORMULA

$$\text{NO}_2\text{C}_6\text{H}_3(\text{NH}_2)\text{OC}_2\text{H}_5$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 182.18

BOILING POINT -- ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 113°C ° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) --	EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O --	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR red crystals	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA water spray, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

3-Nitro-4-Aminophenetole

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

yes

RELEVANT SYMPTOMS OF EXPOSURE

Cyanosis, headache, nausea, vomiting, weakness, stupor.

EFFECTS OF CHRONIC EXPOSURE

Liver damage

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;

inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

~~rubber~~
RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

315-2907B

CAS:000119324 *e*

XU80500

PRODUCT DESIGNATION

03-315-3407
3-Nitro-4-AminotolueneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

3 Nitro-4-Aminotoluene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

3 Nitro-P-Toluidine

FORMULA

 $\text{NO}_2\text{C}_6\text{H}_3(\text{CH}_3)\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			3		bird	

SECTION III PHYSICAL DATA MW - 152.15

BOILING POINT --	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 117°C	° F.	VAPOR DENSITY (Air = 1) 5.2	
SPECIFIC GRAVITY (H ₂ O = 1) 1.31		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O slightly soluble		VOLATILE % Vol	% Wt.
APPEARANCE AND ODOR red crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 315°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED C.C.		LOWER
EXTINGUISHING MEDIA Water spray, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

3-Nitro-4-Aminotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

yes

RELEVANT SYMPTOMS OF EXPOSURE

cyanosis, headache, nausea, vomiting, weakness, stupor.

EFFECTS OF CHRONIC EXPOSURE

Liver damage.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

~~rubber~~
RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

315-3407B

PRODUCT DESIGNATION

03-315-3507

4-Nitro-2-Aminotoluene

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

4 nitro-2-aminotoluene

CHEMICAL NAME AND SYNONYMS

FORMULA

4 nitro-o-toluidine

 $\text{NO}_2(\text{C}_6\text{H}_3)(\text{CH}_3)\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 152.15

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
--			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
107°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.37			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
very slightly soluble			
APPEARANCE AND ODOR			
yellow crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		
METHOD USED		LOWER
EXTINGUISHING MEDIA		
water spray, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
4-Nitro-2-Aminotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC
no

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion, skin

SKIN AND EYE
IRRITATION
yes

REVELANT SYMPTOMS OF EXPOSURE
Cyanosis, headache, nausea, vomiting, weakness, stupor.

EFFECTS OF CHRONIC EXPOSURE
Liver damage

EMERGENCY AND FIRST AID PROCEDURES
If swallowed - give emetic, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE	DATE
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315-3507B

CAS:00099092

BY68250

PRODUCT DESIGNATION

03-315-3807
M-NitroanilineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

3-Nitroaniline

FORMULA

 $\text{NO}_2\text{C}_6\text{H}_4\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			535		rat	
			308		mouse	

SECTION III PHYSICAL DATA MW - 138.12

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
306°C		at 119°C	1
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
114°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.43			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
0.09			
APPEARANCE AND ODOR			

Yellow rhombic crystals, burning sweet taste.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
390°F		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Water spray, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

M-Nitroaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion skin

SKIN AND EYE

IRRITATION yes

RELEVANT SYMPTOMS OF EXPOSURE

cyanosis, headache, nausea, vomiting, weakness, stupor.

EFFECTS OF CHRONIC EXPOSURE

Liver damage

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;

inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber (butyl)

SPECIAL

RESPIRATOR

with proper filter

OTHER PROTECTIVE EQUIPMENT

Protective work clothes

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect against moisture and physical damage.

OTHER PRECAUTIONS

SIGNATURE

DATE

315-3807B

PRODUCT DESIGNATION

03-315-3907
O-NitroanilineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 Nitroaniline

FORMULA

 $\text{NO}_2\text{C}_6\text{H}_4\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			3564		rat	
			1288		mouse	

SECTION III PHYSICAL DATA

MW - 138.12

BOILING POINT 284°C	° F.	VAPOR PRESSURE at 104°C	mm Hg. 1
MELTING POINT 72°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.44		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.1		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR orange needle crystals.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 390°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water spray, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

O-Nitroaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

yes

RELEVANT SYMPTOMS OF EXPOSURE

cyanosis, headache, nausea, vomiting, weakness, stupor.

EFFECTS OF CHRONIC EXPOSURE

Liver damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Rubber (butyl)

SPECIAL

RESPIRATOR
With proper filter

OTHER PROTECTIVE EQUIPMENT

Protective clothing and shoes

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect against moisture and physical damage.

OTHER PRECAUTIONS

SIGNATURE

DATE

315-3907B

PRODUCT DESIGNATION

03-315-5407
P-Nitrobenzal Bromide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
<u>αα</u> -Dibromo-P-Nitrotoluene	
CHEMICAL NAME AND SYNONYMS	FORMULA
P-Nitrobenzal Bromide	$\text{NO}_2\text{C}_6\text{H}_4\text{CHBr}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 294.94

BOILING POINT --	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 82°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) --		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR needle-like crystals.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA water spray, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
P-Nitrobenzal Bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion, skin SKIN AND EYE IRRITATION Slight

RELEVANT SYMPTOMS OF EXPOSURE Difficulty in breathing, cyanosis, vomiting, headache

EFFECTS OF CHRONIC EXPOSURE
Blood damage

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May explode when heated with sulfuric acid.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
SPECIAL	GLOVES
	Rubber
	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred; inside storage in standard flammable liquids cabinet.

OTHER PRECAUTIONS

SIGNATURE DATE

315-5407B

PRODUCT DESIGNATION

03-315-6857
NitrobenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Oil of mirbane

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Nitrobenzene

FORMULA

 $\text{NO}_2\text{C}_6\text{H}_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			640	2100	rat	
Lowest published lethal dose						
subcutaneous - rat - 640 mg/kg						
oral rabbit - 600 mg/kg						
skin rabbit - 600 mg/kg						
TCLO oral - women - 200 mg/kg						
LDLO oral - human 5 mg/kg						

SECTION III PHYSICAL DATA MW - 123.11

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
211°C		at 45°C	1
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
6°C		4.3	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.20			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
0.2			

APPEARANCE AND ODOR

Pale yellow liquid with a characteristic odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
190°F		
METHOD USED		LOWER
C.C.		1.8%

EXTINGUISHING MEDIA

Water spray, carbon dioxide, dry chemical or foam.

SPECIAL FIRE FIGHTING PROCEDURES

Wear complete protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Store separate from oxidizing materials, heat or sources of ignition.

PRODUCT DESIGNATION	
Nitrobenzene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
TLV - 1 PPM, 5 mg/C.M. skin	Teratogen CARCINOGENIC <u>no</u>
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, ingestion, skin	SKIN AND EYE IRRITATION <u>slight</u>
RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, excitement, weakness, difficult breathing, shock and circulatory failure.	
EFFECTS OF CHRONIC EXPOSURE	
Headache, vertigo, blood damage.	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
Avoid, nitric acid, aniline with glycerine, and aluminum chloride with phenol.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	<u>goggles</u>
	GLOVES
SPECIAL	<u>rubber</u>
	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	<u>with proper filter</u>
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

315-6857B

PRODUCT DESIGNATION

03-316-0208
P-Nitrobenzoyl chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 4-Nitrobenzoyl chloride	FORMULA $\text{NO}_2\text{C}_6\text{H}_4\text{COCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 185.57

BOILING POINT --	° F.	VAPOR PRESSURE at 154°C	mm Hg. 15
MELTING POINT 72°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) --		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O decomposes		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR needle-like crystals.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

P-Nitrobenzoyl chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

Respiratory system, skin & eye irritation, burns mouth
and digestive system.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - drink water, milk of magnesia, get medical
aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

MECHANICAL (GENERAL)

SPECIAL

OTHER PROTECTIVE EQUIPMENT

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

GLOVES

Rubber

RESPIRATOR

With proper filter

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

316-0208B

PRODUCT DESIGNATION

03-316-0608
P-Nitrobenzyl Bromide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P Nitro-a-bromotoluene	FORMULA $\text{NO}_2\text{C}_6\text{H}_4\text{CH}_2\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 216.04

BOILING POINT -- °F.	VAPOR PRESSURE mm Hg.
MELTING POINT 100 °C	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) --	EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR needle-like crystals.	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA water, carbon dioxide, dry chemicals.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
P-Nitrobenzyl Bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION SKIN AND EYE
inhalation, ingestion, skin IRRITATION slight

RELEVANT SYMPTOMS OF EXPOSURE
Difficulty in breathing, cyanosis, vomiting, headache.

EFFECTS OF CHRONIC EXPOSURE
Blood damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)
May explode when heated with sulfuric acid.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE goggles
MECHANICAL (GENERAL)	GLOVES rubber
SPECIAL	RESPIRATOR self-contained
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

316-0608B

PRODUCT DESIGNATION

03-316-0808

P-Nitrobenzyl Chloride

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Nitro- α Chlorotoluene

FORMULA

 $\text{NO}_2\text{C}_6\text{H}_4\text{CH}_2\text{Cl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 171.58

BOILING POINT --	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 71°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR needle-like crystals.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

water, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P-Nitrobenzyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

RELEVANT SYMPTOMS OF EXPOSURE

Difficulty in breathing, cyanosis, vomiting, headache.

EFFECTS OF CHRONIC EXPOSURE

Blood damage.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May explode when heated with sulfuric acid.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

316-0808B

PRODUCT DESIGNATION

03-316-1108
M-Nitrobromobenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS M-Bromonitrobenzene	FORMULA $\text{BrC}_6\text{H}_4\text{NO}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 202.02

BOILING POINT 257°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 56°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.70		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR yellow crystals.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA water spray, carbon dioxide, dry chemical, foam.		
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
M-Nitrobromobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
inhalation, ingestion, skin

SKIN AND EYE
IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE
cyanosis, headache, weakness, anemia

EFFECTS OF CHRONIC EXPOSURE
hemoglobinuria

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - oxygen as needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store away from oxidizing materials and sources of heat.

OTHER PRECAUTIONS

SIGNATURE

DATE

316-1108B

PRODUCT DESIGNATION

03-316-1208
O-Nitrobromobenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

O-Bromonitrobenzene

FORMULA

$\text{BrC}_6\text{H}_4\text{NO}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 202.02

BOILING POINT 261	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 43°C	° F.	VAPOR DENSITY (Air - 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.62		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR yellow crystals		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water spray, carbon dioxide, dry chemical, foam.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
O-Nitrobromobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none available
CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
inhalation, ingestion, skin
SKIN AND EYE
IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE
cyanosis, headache, weakness, anemia.

EFFECTS OF CHRONIC EXPOSURE
hemoglobinuria

EMERGENCY AND FIRST AID PROCEDURES
If swallowed - give emetic, get medical aid; inhalation - oxygen if needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR Self-contained
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Store away from oxidizing materials and sources of heat.

OTHER PRECAUTIONS

SIGNATURE

DATE

316-1208B

PRODUCT DESIGNATION

03-316-1308
P-Nitrobromobenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P Bromonitrobenzene	FORMULA $\text{BrC}_6\text{H}_4\text{NO}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA

BOILING POINT 256°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 127°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.94		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR yellow crystals		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Water spray, carbon dioxide, dry chemical, foam.		
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
P-Nitrobromobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion, skin SKIN AND EYE IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE cyanosis, headache, weakness, anemia

EFFECTS OF CHRONIC EXPOSURE hemoglobinuria

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid;
inhalation - oxygen as needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store away from oxidizing materials and sources of heat.

OTHER PRECAUTIONS

SIGNATURE

DATE

316-1308B

CAS:000121733

CZ09400

PRODUCT DESIGNATION

03-316-1708
M-NitrochlorobenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

M-Chloronitrobenzene

FORMULA

 $\text{ClC}_6\text{H}_4\text{NO}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
TCLO inhalation - human	0.012 mg/C.M.		390		Mouse	

SECTION III PHYSICAL DATA MW = 157.56

BOILING POINT 236 ⁰	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 44 ⁰ C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.34		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR yellow crystals, aromatic odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 261 ⁰ F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA water spray, carbon dioxide, dry chemical, foam		
SPECIAL FIRE FIGHTING PROCEDURES wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

M-Nitrochlorobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

cyanosis, headache, weakness, anemia.

EFFECTS OF CHRONIC EXPOSURE

Hemoglobinuria

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - oxygen if needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store away from oxidizing materials and sources of heat.

OTHER PRECAUTIONS

SIGNATURE

DATE

316-1708B

CAS:000088733

CZ08750

PRODUCT DESIGNATION

03-316-1808
O-nitrochlorobenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

O-chloronitrobenzene

FORMULA

 $\text{ClC}_6\text{H}_4\text{NO}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			288		rat	
			135		mouse	

SECTION III PHYSICAL DATA MW - 157.56

BOILING POINT 246°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 33°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR yellow crystals, aromatic odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 261°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water spray, carbon dioxide, dry chemical, foam.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
O-Nitrochlorobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
inhalation, ingestion, skin

SKIN AND EYE
IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE
cyanosis, headache, weakness, anemia

EFFECTS OF CHRONIC EXPOSURE
hemoglobinuria

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - oxygen if needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store away from oxidizing materials and sources of heat.

OTHER PRECAUTIONS

SIGNATURE

DATE

316-1808B

PRODUCT DESIGNATION

03-316-1908
P-Nitrochlorobenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P Chloronitrobenzene	FORMULA $\text{ClC}_6\text{H}_4\text{NO}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			420		rat	
			650		mouse	

SECTION III PHYSICAL DATA MW - 157.56

BOILING POINT 242°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 84°C	° F.	VAPOR DENSITY (Air = 1) 5.44	
SPECIFIC GRAVITY (H ₂ O = 1) 1.29		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR yellow crystals, aromatic odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 261°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA water spray, carbon dioxide, dry chemical, foam		
SPECIAL FIRE FIGHTING PROCEDURES wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
P-Nitrochlorobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL TLV - 1 mg/C.M. CARCINOGENIC NO

PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion, skin SKIN AND EYE IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE cyanosis, headache, weakness, anemia

EFFECTS OF CHRONIC EXPOSURE hemoglobinuria

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid;
inhalation - oxygen if needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	goggles
SPECIAL	GLOVES
	rubber
	RESPIRATOR
	self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store away from oxidizing materials and sources of heat.

OTHER PRECAUTIONS

SIGNATURE

DATE

316-1908B

PRODUCT DESIGNATION

03-316-2608
2-Nitro-P-Cymene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2 Nitro-P-Cymene	FORMULA $\text{NO}_2\text{C}_6\text{H}_3(\text{CH}_3)\text{C}_3\text{H}_7$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 179.21

BOILING POINT 152° C. - 15 mm	° F.	VAPOR PRESSURE at 128° C.	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Oil			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

2-Nitro-P-Cymene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Slight

RELEVANT SYMPTOMS OF EXPOSURE

Difficulty in breathing, cyanosis, vomiting, headache.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - rest; wash skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May explode when heated with sulfuric acid.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred; inside storage in standard flammable liquids cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

316-2608B

PRODUCT DESIGNATION

03-316-3108
2 Nitro-1,4 Diaminobenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS 2 Nitro - 1,4 Diaminobenzene	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2 Nitro-P-Phenylenediamine	FORMULA $\text{NO}_2\text{C}_6\text{H}_3(\text{NH}_2)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

BOILING POINT ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 140°C ° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) --	EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O --	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR --	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA information not available		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION			
2 Nitro-1,4 Diaminobenzene			
SECTION V HEALTH HAZARD DATA			
TOXIC LEVEL		CARCINOGENIC	
None available		no	
PRINCIPLE ROUTES OF ABSORPTION		SKIN AND EYE	
inhalation, ingestion, skin		IRRITATION	
		yes	
REVELANT SYMPTOMS OF EXPOSURE			
cyanosis, headache, nausea, vomiting, weakness, stupor			
EFFECTS OF CHRONIC EXPOSURE			
Liver damage			
EMERGENCY AND FIRST AID PROCEDURES			
If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.			
SECTION VI REACTIVITY DATA			
CONDITIONS CONTRIBUTING TO INSTABILITY			
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION			
INCOMPATABILITY (MATERIALS TO AVOID)			
HAZARDOUS DECOMPOSITION PRODUCTS			
SECTION VII SPILL OR LEAK PROCEDURES			
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED			
WASTE DISPOSAL METHOD			
SECTION VIII SPECIAL PROTECTION INFORMATION			
VENTILATION REQUIREMENTS LOCAL EXHAUST		PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE	
		goggles	
MECHANICAL (GENERAL)		GLOVES	
		rubber	
SPECIAL		RESPIRATOR	
		with proper filter	
OTHER PROTECTIVE EQUIPMENT			
SECTION IX SPECIAL PRECAUTIONS			
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE			
information not available			
OTHER PRECAUTIONS			
SIGNATURE		DATE	

316-3108B

PRODUCT DESIGNATION

03-316-3308
4-Nitro-1,2-Diaminobenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

4 Nitro-1,2-Diaminobenzene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

4 Nitro-P-Phenylenediamine

FORMULA

 $\text{NO}_2\text{C}_6\text{H}_3(\text{CH}_2)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			681		rat	
			681		mouse	

SECTION III PHYSICAL DATA

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.

MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
202°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	

SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR			
dark red crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
not available		
METHOD USED		LOWER
EXTINGUISHING MEDIA		
information not available		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
4-Nitro-1,2-Diaminobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION yes

RELEVANT SYMPTOMS OF EXPOSURE

cyanosis, headache, nausea, vomiting, weakness, stupor.

EFFECTS OF CHRONIC EXPOSURE

liver damage

EMERGENCY AND FIRST AID PROCEDURES

if swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Information not available.

OTHER PRECAUTIONS

SIGNATURE

DATE

316-3308B

PRODUCT DESIGNATION

03-316-3708
O-Nitrodiethylaniline

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2-Nitro-N, N-diethylaniline	FORMULA $\text{NO}_2\text{C}_6\text{H}_4\text{N}(\text{C}_2\text{H}_5)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 194.24

BOILING POINT -- ° F.	VAPOR PRESSURE at 155°C	20 mm Hg.
MELTING POINT -- ° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O slightly soluble	VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR yellow liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA information not available		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
O-Nitrodiethylaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion, skin SKIN AND EYE IRRITATION yes

REVELANT SYMPTOMS OF EXPOSURE Weakness, tremors, cyanosis, drowsiness.

EFFECTS OF CHRONIC EXPOSURE Fatigue, loss of appetite, headache, dizziness.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles

MECHANICAL (GENERAL) GLOVES

SPECIAL Rubber

RESPIRATOR With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

316-3708B

PRODUCT DESIGNATION

03-316-4108
M-Nitrodimethylaniline

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 3-Nitro-N,N-dimethylaniline	FORMULA $\text{NO}_2\text{C}_6\text{H}_4\text{N}(\text{CH}_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 166.18

BOILING POINT 280°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 60°C	° F.	VAPOR DENSITY (A ₁ = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.313		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR yellow to red crystals.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION M-Nitrodimethylaniline	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL none available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion, skin	SKIN AND EYE IRRITATION yes
RELEVANT SYMPTOMS OF EXPOSURE weakness, tremors, cyanosis, drowsiness	
EFFECTS OF CHRONIC EXPOSURE Fatigue, loss of appetite, headache, dizziness	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE goggles
MECHANICAL (GENERAL)	GLOVES rubber
SPECIAL	RESPIRATOR with proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

316-4108B

PRODUCT DESIGNATION

03-316-4608
2-Nitro,1,4-Dimethylbenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Nitro-P-Xylene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2-Nitro-1,4-Dimethylbenzene

FORMULA

 $(\text{NO}_2)\text{C}_6\text{H}_3(\text{CH}_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			2440		Rat	

SECTION III PHYSICAL DATA MW - 151.16

BOILING POINT 239 ⁰ C	⁰ F.	VAPOR PRESSURE at 102 ⁰ C	10 mm Hg.
MELTING POINT --	⁰ F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.13		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR yellow liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Information - not available.		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

2-Nitro-1,4-Dimethylbenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

slight

RELEVANT SYMPTOMS OF EXPOSURE

difficulty in breathing, cyanosis, vomiting, headache.

EFFECTS OF CHRONIC EXPOSURE

blood damage.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May explode when heated with sulfuric acid

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Information not available.

OTHER PRECAUTIONS

SIGNATURE

DATE

316-4608B

PRODUCT DESIGNATION

03-316-4808
3-Nitro-1,2-Dimethylbenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS 3 Nitro-O-Xylene	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 3-Nitro-1,2-Dimethylbenzene	FORMULA $\text{NO}_2\text{C}_6\text{H}_3(\text{CH}_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 151.16

BOILING POINT 245°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 15°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.147		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR yellow liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA information not available		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
3-Nitro-1,2-Dimethylbenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion, skin SKIN AND EYE IRRITATION slight

REVELANT SYMPTOMS OF EXPOSURE
Difficulty in breathing, cyanosis, vomiting, headache.

EFFECTS OF CHRONIC EXPOSURE

Blood damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)
May explode when heated with sulfuric acid.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Information not available.

OTHER PRECAUTIONS

SIGNATURE

DATE

316-4808B

CAS:000350469

DA14000

PRODUCT DESIGNATION

03-316-7108
P-NitrofluorobenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P-Fluoronitrobenzene	FORMULA $\text{FC}_6\text{H}_4\text{NO}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO oral - rat 250 mg/kg						

SECTION III PHYSICAL DATA MW - 141.10

BOILING POINT 207°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 27°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.32		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR yellow crystal			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA water spray, carbon dioxide, dry chemical, foam.		
SPECIAL FIRE FIGHTING PROCEDURES wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
P-Nitrofluorobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION SKIN AND EYE
inhalation, ingestion, skin IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE
cyanosis, headache, weakness, anemia

EFFECTS OF CHRONIC EXPOSURE
hemoglobinuria

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid, inhalation - oxygen if needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
SPECIAL	GLOVES
OTHER PROTECTIVE EQUIPMENT	Rubber
	RESPIRATOR
	Self-contained

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Store away from oxidizing materials and sources of heat.

OTHER PRECAUTIONS

SIGNATURE DATE

316-7108B

PRODUCT DESIGNATION

03-316-8108
M-Nitroiodobenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS M-Iodonitrobenzene	FORMULA $\text{IC}_6\text{H}_4\text{NO}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 249.02

BOILING POINT 280°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 38°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.88		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

crystalline

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA water spray, carbon dioxide, dry chemical, foam		
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
M-Nitroiodobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION SKIN AND EYE
inhalation, ingestion, skin IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE
cyanosis, headache, weakness, anemia

EFFECTS OF CHRONIC EXPOSURE
hemoglobinuria

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - oxygen if needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR Self-contained
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Store away from oxidizing materials and sources of heat.

OTHER PRECAUTIONS

SIGNATURE	DATE
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316-8108B

PRODUCT DESIGNATION

03-316-8208
O-Nitroiodobenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS O-Iodonitrobenzene	FORMULA $C_6H_4NO_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 249.02

BOILING POINT 289°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 52°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.88		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR yellow crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA water spray, carbon dioxide, dry chemical, foam.		
SPECIAL FIRE FIGHTING PROCEDURES wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

O-Nitroiodobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

cyanosis, headache, weakness, anemia.

EFFECTS OF CHRONIC EXPOSURE

hemoglobinuria

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - oxygen if needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

~~Rubber~~
RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store away from oxidizing materials and sources of heat.

OTHER PRECAUTIONS

SIGNATURE

DATE

316-8208B

PRODUCT DESIGNATION

03-316-8308
P-Nitroiodobenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P-Iodonitrobenzene	FORMULA $\text{C}_6\text{H}_4\text{NO}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 249.02

BOILING POINT 287°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 171°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 2.27		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR yellow crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA water spray, carbon dioxide, dry chemical, foam.		
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION	
P-Nitroiodobenzene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
none available	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
inhalation, ingestion, skin	IRRITATION moderate
REVELANT SYMPTOMS OF EXPOSURE	
cyanosis, headache, weakness, anemia.	
EFFECTS OF CHRONIC EXPOSURE	
hemoglobinuria	
EMERGENCY AND FIRST AID PROCEDURES	
If swallowed - give emetic, get medical aid; inhalation - oxygen if needed; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
	GLOVES
SPECIAL	Rubber
	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	With proper filter
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Store away from oxidizing materials and sources of heat.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

316-8308B

PRODUCT DESIGNATION

03-316-8608
Nitromesitylene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2 Nitromesitylene	FORMULA $\text{NO}_2\text{C}_6\text{H}_2(\text{CH}_3)_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 165.19

BOILING POINT 255°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 44°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR crystalline			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA information not available.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
Nitromesitylene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion, skin SKIN AND EYE IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE chemical pneumonia, central nervous system depression, frequent bleeding.

EFFECTS OF CHRONIC EXPOSURE Nervous tension, anxiety, asthmatic bronchitis.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - oxygen as needed; if swallowed - get medical aid, gastric lavage; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

316-8608B

PRODUCT DESIGNATION

03-316-9108
NitromethaneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Nitromethane

FORMULA

 CH_3NO_2

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LCLO inhalation - monkey	2446 mg/C.M.		940		rat	
LDLO oral - human	500 mg/kg.		450		mouse	

SECTION III PHYSICAL DATA MW-61.05

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
101°C		at 25°C	38
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-29°C		2.11	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.14			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
9.5			
APPEARANCE AND ODOR			
colorless liquid, strong odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
95°F		
METHOD USED		LOWER
C.C.		
EXTINGUISHING MEDIA	Alcohol foam, carbon dioxide, dry chemical. Water may be ineffective.	

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Explosion hazard - moderate when exposed to heat or flame.

PRODUCT DESIGNATION

Nitromethane

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 100 PPM, 250 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion

IRRITATION

moderate

REVELANT SYMPTOMS OF EXPOSURE

Narcosis, irritation of mucous membrane, centralnervous system excitation.

EFFECTS OF CHRONIC EXPOSURE

Liver and spleen damage.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid, gastric lavage; inhalation - artificial respiration, oxygen if needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Avoid $AlCl_3$ with organic matter, $Ca(OH)_2$, $CaOCl$, hydrocarbons, organic amines,

HAZARDOUS DECOMPOSITION PRODUCTS

NaOH and KOH

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

After covering spill with soda ash, spray with water and neutralize with 6 N HCl.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber (neoprene)

SPECIAL

RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

Plastic working clothes

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred, inside standard flammable liquids storage cabinet. Store away from other flammable liquids.

OTHER PRECAUTIONS

SIGNATURE

DATE

316-9108B

PRODUCT DESIGNATION

03-316-9608
P-Nitromethylaniline

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P-Nitro-N-Methylaniline	FORMULA $\text{NO}_2\text{C}_6\text{H}_4\text{NHCH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 152.15

BOILING POINT --	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 152°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) --		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR brown-yellow crystals.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA information not available.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION	
P-Nitromethylaniline	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
none available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
inhalation, ingestion, skin	IRRITATION moderate
RELEVANT SYMPTOMS OF EXPOSURE Headache, drowsiness, cyanosis, mental confusion,	
convulsions.	
EFFECTS OF CHRONIC EXPOSURE Fatigue, loss of appetite, headache, dizziness, blood damage,	
central nervous system damage.	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation -	
rest; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	goggles
MECHANICAL (GENERAL)	GLOVES
	neoprene rubber
SPECIAL	RESPIRATOR
	with proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

316-9608B

PRODUCT DESIGNATION

03-317-1209
5 Nitro-1-Naphthylamine

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

5 Nitro α -Naphthylamine

FORMULA

$$\text{NO}_2\text{C}_{10}\text{H}_6\text{NH}_2$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 188.19

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.

MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
119°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

red needle-like crystals.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		
METHOD USED		LOWER

EXTINGUISHING MEDIA

information not available.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
5 Nitro-1-Naphthylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none available

CARCINOGENIC suspected

PRINCIPLE ROUTES OF ABSORPTION
inhalation, ingestion, skin

SKIN AND EYE
IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE
Cyanosis, headache, nausea, vomiting, weakness, stupor.

EFFECTS OF CHRONIC EXPOSURE
Liver damage, possible bladder tumors.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE goggles
MECHANICAL (GENERAL)	GLOVES rubber
SPECIAL	RESPIRATOR with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

317-1209B

CAS:000554847

SM19250

PRODUCT DESIGNATION

03-317-3239
M-NitrophenolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

M-Nitrophenol

FORMULA

 $\text{NO}_2\text{C}_6\text{H}_4\text{OH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			447		Rat	
			1414		Mouse	

SECTION III PHYSICAL DATA

MW 139.12

BOILING POINT

° F.

VAPOR PRESSURE
at 194° C.

70 mm Hg.

MELTING POINT

° F.

97° C.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

1.49

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

1.35

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Monoclinic prism crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

None available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Use water to cool down containers.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing, self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition gives off toxic nitrogen oxide fumes.

PRODUCT DESIGNATION
M-Nitrophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None Available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye and mucous membrane irritation, C.N.S. depressant.

EFFECTS OF CHRONIC EXPOSURE

Forms methemoglobin, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; wash from skin & eyes. If swallowed - remove by gastric lavage or emesis.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Keep from oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Butyl Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing and shoes.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect from physical damage. Separate from combustibles and other organic materials.

OTHER PRECAUTIONS

SIGNATURE

DATE

317-3239B

CAS:000100027

SM22750

PRODUCT DESIGNATION

03-317-3439
P-NitrophenolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Nitrophenol

FORMULA

 $\text{NO}_2\text{C}_6\text{H}_4\text{OH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ Mg/Kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			350		Rat	
			467		Mouse	

SECTION III PHYSICAL DATA

MW 139.12

BOILING POINT

decomposes at 279°C.

° F.

VAPOR PRESSURE

mm Hg.

MELTING POINT

114°C.

° F.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

1.48

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

1.6

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Colorless to light yellow crystals.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

223°C.

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Use water to wet down containers.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing, self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition, gives off toxic nitrogen oxide fumes.

PRODUCT DESIGNATION P-Nitrophenol	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL None available	CARCINOGENIC No
PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion, skin	SKIN AND EYE IRRITATION Moderate
REVELANT SYMPTOMS OF EXPOSURE Eye and mucous membrane irritation, CNS depressant.	
EFFECTS OF CHRONIC EXPOSURE Forms methemoglobin, dermatitis.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; wash from skin & eyes. If swallowed - remove by gastric lavage or emesis.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID) Keep away from oxidizing materials.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Butyl Rubber
SPECIAL	RESPIRATOR Self-contained
OTHER PROTECTIVE EQUIPMENT Protective clothing	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Keep from combustible materials.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

317-3439B

PRODUCT DESIGNATION

03-317-3709
O-Nitrophenol Sodium Salt

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Sodium-O-Nitrophenol	FORMULA NO ₂ C ₆ H ₄ O Na

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW-161.10

BOILING POINT -	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) -		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Very soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Reddish crystals.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Use water to wet down containers.		
SPECIAL FIRE FIGHTING PROCEDURES Wear full protective clothing; self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS When heated to decomposition give off toxic nitrogen oxide fumes.		

PRODUCT DESIGNATION

O-Nitrophenol sodium salt

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Slight

RELEVANT SYMPTOMS OF EXPOSURE

Eye and mucous membrane irritation, CNS depressant.

EFFECTS OF CHRONIC EXPOSURE

Forms methemoglobin, dermatitis

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; wash from eyes & skin; if swallowed -
remove by gastric lavage or emesis.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Keep from oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Butyl Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep from combustible materials.

OTHER PRECAUTIONS

SIGNATURE

DATE

317-3709B

PRODUCT DESIGNATION

03-317-4709
P-Nitrophenylhydrazine

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Nitrophenylhydrazine

FORMULA

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Note:						
Lowest published lethal dose						
Interperitoneal - mouse	250/mg/kg					

SECTION III PHYSICAL DATA MW - 153.14

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
157°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
soluble in hot water			
APPEARANCE AND ODOR			
orange-red crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE)- LIMITS	UPPER
none available		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
information not available.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

P-Nitrophenylhydrazine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE Irritation of skin, eyes and mucous membranes, gastroenteric disturbances, anemia.

EFFECTS OF CHRONIC EXPOSURE

Blood and liver damage, loss of appetite.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

317-4709B

PRODUCT DESIGNATION

03-317-4909
P-Nitrophenylhydrazine
Hydrochloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P-Nitrophenylhydrazine Hydrochloride	FORMULA $\text{NO}_2\text{C}_6\text{H}_4\text{NHNH}_2\text{HCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 189.61

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 215°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR orange-red crystals.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA information not available.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

P-Nitrophenylhydrazine Hydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of eyes, skin & mucous membranes, gastroenteric disturbances, anemia.

EFFECTS OF CHRONIC EXPOSURE

Blood and liver damage, loss of appetite.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

317-4909B

PRODUCT DESIGNATION

03-317-6209
1-NitropropaneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
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ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
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CHEMICAL NAME AND SYNONYMS 1-Nitropropane	FORMULA $C_3H_7NO_2$
--	-------------------------

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human LDLO 500 mg/kg			800		mouse	
LDLO - oral - rat 1000 mg/kg.						
Inhalation - human - TCLO 150 ppm		irritant				

SECTION III PHYSICAL DATA MW - 89.09

BOILING POINT 132°C	° F.	VAPOR PRESSURE at 25°C	mm Hg.
MELTING POINT -108°C	° F.	VAPOR DENSITY (Air = 1)	3.06
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.00			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
9.5			

APPEARANCE AND ODOR

colorless liquid, with disagreeable odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 120°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED T.O.C.		LOWER

EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical or water spray.

SPECIAL FIRE FIGHTING PROCEDURES

Wear protective clothing and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
1-Nitropropane	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
TLV - 25 PPM, 90 mg/C.M.	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, ingestion	SKIN AND EYE IRRITATION moderate
RELEVANT SYMPTOMS OF EXPOSURE Headache, dizziness, nausea, vomiting, diarrhea, restlessness, muscular uncoordination.	
EFFECTS OF CHRONIC EXPOSURE	
Liver, kidney and heart damage.	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid, gastric lavage; inhalation - artificial respiration, oxygen as needed, wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
Unstable with amines, acids, alkalis.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
After mixing spill with soda ash, spray with water, neutralize with	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
Plastic working clothing	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Out side or detached storage preferred, store inside in standard flammable liquids cabinet, isolate from other flammable liquids.	
OTHER PRECAUTIONS	
Avoid contact with Ca(OH)_2 , NaOH, KOH, hydrocarbons.	
SIGNATURE	DATE

317-6209B

CAS:000079469

TZ52500

PRODUCT DESIGNATION

03-317-6309
2-NitropropaneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2-Nitropropane	FORMULA $C_3H_7NO_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
1. Lowest published toxic concentration in air - inhalation - human 15 PPM.						
2. Lowest published lethal dose - oral - rat 500 mg/C.M.						

SECTION III PHYSICAL DATA

MW - 89.09

BOILING POINT 120°C	° F.	VAPOR PRESSURE at 25°C	20 mm Hg.
MELTING POINT -93°C	° F.	VAPOR DENSITY (Air = 1) 3.06	
SPECIFIC GRAVITY (H ₂ O = 1) 0.99		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 1.7		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

colorless liquid with disagreeable odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 103°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED T.O.C.		LOWER 2.6%

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical or water spray.

SPECIAL FIRE FIGHTING PROCEDURES

Wear protective clothing and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
2 Nitropropane

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 25 PPM, 90 mg/C.M.

CARCINOGENIC Yes

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE Headache, dizziness, nausea, vomiting, diarrhea, restlessness, muscular uncoordination.

EFFECTS OF CHRONIC EXPOSURE

Liver, kidney and heart damage, liver cancer.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid, gastric lavage; inhalation - artificial respiration, oxygen as needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Unstable with amines, acids, alkalis.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

After covering spill with soda ash, spray with water and neutralize with HCl.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Rubber (neoprene)

SPECIAL

RESPIRATOR
Self-contained

OTHER PROTECTIVE EQUIPMENT

Plastic work clothes

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred, store inside in standard flammable liquids cabinet, isolate from other flammable liquids.

OTHER PRECAUTIONS

Avoid contact with $\text{Ca}(\text{OH})_2$, NaOH, KOH, hydrocarbon.

SIGNATURE

DATE

317-6309B

PRODUCT DESIGNATION

03-317-7209
2-Nitroresorcinol

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2-Nitroresorcinol	FORMULA $\text{NO}_2\text{C}_6\text{H}_3(\text{OH})_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 155.11

BOILING POINT d>180°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 83°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) --		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O --		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA information not available		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

2-Nitroresorcinol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE Itching, dermatitis, restlessness, cyanosis, dizziness, tremors, convulsion and death.

EFFECTS OF CHRONIC EXPOSURE

Liver, kidney and lung damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid; inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

317-7209B

PRODUCT DESIGNATION

03-317-8009
P-Nitrosodiethylaniline

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS N,N-Diethyl-P-Nitrosoaniline	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS P-Nitrosodiethylaniline	FORMULA (C ₂ H ₅) ₂ NC ₆ H ₄ NO

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

MW - 178.23

BOILING POINT ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 84°C ° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.24	EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O very slightly soluble	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR green crystals	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, water spray, carbon dioxide and dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P-Nitrosodiethylaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

inhalation, ingestion, skin

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE Weakness, tremors, cyanosis, drowsiness, dermatitis.

EFFECTS OF CHRONIC EXPOSURE

Fatigue, loss of appetite, headache, dizziness, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;
inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

317-8009B

CAS:000138896

BX71750

PRODUCT DESIGNATION

03-317-8209

P-Nitrosodimethylaniline

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Nitrosodimethylaniline

FORMULA

 $(\text{CH}_3)_2\text{NC}_6\text{H}_4\text{NO}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg.		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			65		rat	
Note: Lowest published lethal dose						
Oral - Mammal 650 mg/kg.						

SECTION III PHYSICAL DATA MW - 150.14

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
87°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
insoluble			
APPEARANCE AND ODOR			
green leaflets			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		
METHOD USED		LOWER
EXTINGUISHING MEDIA	Alcohol foam, dry chemical, carbon dioxide and water spray.	

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P-Nitrosodimethylaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

neoplastic

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

Weakness, tremors, cyanosis, drowsiness, dermatitis.

EFFECTS OF CHRONIC EXPOSURE

Fatigue, loss of appetite, headache, dizziness, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

317-8209B

CAS-000132536

QL45500

PRODUCT DESIGNATION

03-317-8809
2-Nitroso 1-NaphtholMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2-Nitroso-1-Naphthol	FORMULA <chem>HOc1ccc(cc1)[N+](=O)[O-]</chem>

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published toxic dose oral - rat 11 g/Kg/Year						

SECTION III PHYSICAL DATA

MW - 173.18

BOILING POINT ° F.	VAPOR PRESSURE mm Hg.
MELTING POINT ° F. Decomp. 140°C.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Soluble in hot water	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Yellow needles	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Dry chemical, carbon dioxide, alcohol foam.		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

2-Nitroso-1-Naphthol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation and burns, dermatitis, nausea, vomiting, convulsions.

EFFECTS OF CHRONIC EXPOSURE

Kidney and liver damage, hematuria.

EMERGENCY AND FIRST AID PROCEDURES

Wash eyes and skin; if ingested - give emetic, get medical aid; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With particulate filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

317-8809B

PRODUCT DESIGNATION

03-317-9409
Nitrosopiperidene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

1 Nitrosopiperidene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Nitrosopiperidene

FORMULA

NON (CH₂)₂CH₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			200	100	Rat	

SECTION III PHYSICAL DATA MW - 114.15

BOILING POINT 218°C	° F.	VAPOR PRESSURE at 110°C	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.06		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Yellow oil, amine-like odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point, give off toxic oxides of nitrogen.

PRODUCT DESIGNATION

Nitrosopiperidene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC
yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Weakness, nausea, vomiting, salivation, muscular paralysis,
asphyxia; eye and skin irritation; respiratory distress, convulsions.

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid;
inhalation - oxygen as needed; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

317-9409B

PRODUCT DESIGNATION

03-317-9609
Nitrosoresorcinol
Sodium Salt

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Nitrosoresorcinol Sodium Salt	FORMULA $\text{NOC}_6\text{H}_3(\text{OH})\text{ONa}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA For P-Nitrosoresorcinol

BOILING POINT --	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 148 d°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) --		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR yellow crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA information not available.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Nitrosoresorcinol Sodium Salt

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC
no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE Itching, dermatitis, restlessness, cyanosis, dizziness,
tremors, convulsions and death.

EFFECTS OF CHRONIC EXPOSURE

Liver, kidney and lung damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid;
inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Rubber

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

317-9609B

CAS:000099081

XT29750

PRODUCT DESIGNATION

03-317-9709
M-NitrotolueneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

3-Methylnitrobenzene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

M-Nitrotoluene

FORMULA

 $\text{CH}_3\text{C}_6\text{H}_4\text{NO}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			1072		rat	
			330		mouse	
			2400		rabbit	
			3600		guinea pig	

SECTION III PHYSICAL DATA MW - 137.15

BOILING POINT 232°C	° F.	VAPOR PRESSURE at 50°C	mm Hg.
MELTING POINT 15°C	° F.	VAPOR DENSITY (Air = 1) 4.72	
SPECIFIC GRAVITY (H ₂ O = 1) 1.16		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.05		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 233°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED C.C.		LOWER
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

M-Nitrotoluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 5 PPM, 30 mg/CM

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Slight

RELEVANT SYMPTOMS OF EXPOSURE

Difficulty in breathing, cyanosis, vomiting, headache.

EFFECTS OF CHRONIC EXPOSURE

Blood damage.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May explode when heated with sulfuric acid.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Add sodium bicarbonate or sand-soda ash mixture (9:1). Transfer into cardboard
carton for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber (butyl)

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage preferred inside storage in standard flammable
liquids cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

317-9709B

CAS:000088722

XT31500

PRODUCT DESIGNATION

03-317-9809
O-NitrotolueneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

2 Methyl Nitrobenzene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

O-Nitrotoluene

FORMULA

 $\text{CH}_3\text{C}_6\text{H}_4\text{NO}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			891		rat	
			2462		mouse	

SECTION III PHYSICAL DATA MW - 137.1

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
222°C		at 50°C	1
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-4°C		4.72	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.16			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
0.07			
APPEARANCE AND ODOR			
yellowish liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
223°F		
METHOD USED		LOWER
C.C.		

EXTINGUISHING MEDIA

Water, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION O-Nitrotoluene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL TLV - 5 PPM, 30 mg/C.M.	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion, skin	SKIN AND EYE IRRITATION slight
RELEVANT SYMPTOMS OF EXPOSURE Difficulty in breathing, cyanosis, vomiting, headache.	
EFFECTS OF CHRONIC EXPOSURE Blood damage	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID) May explode when heated with sulfuric acid.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Pour sand soda ash mixture (9:1) on to spill and sweep up into cardboard container for disposal.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber (butyl)
SPECIAL	RESPIRATOR Self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Outside or detached storage preferred; inside storage in standard flammable liquids cabinet.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

317-9809B

CAS:000099990

XT33250

PRODUCT DESIGNATION

03-317-9909
P-NitrotolueneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
4 Methyl Nitrobenzene	
CHEMICAL NAME AND SYNONYMS	FORMULA
P-Nitrotoluene	$\text{CH}_3\text{C}_6\text{H}_4\text{NO}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			2144	16,000	rat	
			1231		mouse	

SECTION III PHYSICAL DATA MW - 137.15

BOILING POINT 238°C	° F.	VAPOR PRESSURE at 54°C	mm Hg.
MELTING POINT 52°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.12			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
insoluble			
APPEARANCE AND ODOR yellowish crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 223°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED C.C.		LOWER
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemicals.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
P-Nitrotoluene	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
TLV - 5 PPM, 30 mg/C.M.	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION	
inhalation, ingestion, skin	SKIN AND EYE IRRITATION slight
REVELANT SYMPTOMS OF EXPOSURE	
Difficulty in breathing, cyanosis, vomiting, headache.	
EFFECTS OF CHRONIC EXPOSURE	
Blood damage	
EMERGENCY AND FIRST AID PROCEDURES	
If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
May explode when heated with sulfuric acid.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Add (9:1) sand to soda ash to spill and transfer to cardboard container for disposal.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber (butyl)
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Outside or detached storage preferred inside storage in standard flammable liquids cabinet.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

317-9909B

PRODUCT DESIGNATION

03-321-0301
Oxalyl Chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Oxalyl Chloride	FORMULA CLOCCOC1

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 126.93

BOILING POINT 64°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -12°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.49		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA carbon dioxide, dry chemical - avoid water.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
Oxalyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, coughing, headache, pulmonary edema,
ulceration of skin, dizziness.

EFFECTS OF CHRONIC EXPOSURE Erosion of teeth, jaw necrosis, bronchial irritation and
chronic cough.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - drink water, milk of magnesia, get medical aid;
inhalation - rest; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

water and alcohol.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Cover spill with sodium bicarbonate, transfer to plastic bag for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Coveralls

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

321-0301B

PRODUCT DESIGNATION

03-326-0402
Palmitoyl Chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS
Palmitoyl Chloride

FORMULA
 $\text{CH}_3(\text{CH}_2)_{14}\text{COCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 274.88

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
		at 195°C	17
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
12°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
decomposes			
APPEARANCE AND ODOR			
colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Use carbon dioxide or dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Palmitoyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC
no

PRINCIPLE ROUTES OF ABSORPTION
inhalation, ingestion

SKIN AND EYE
IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE
Cyanosis, coughing, headache, pulmonary edema, ulceration
of skin, dizziness.

EFFECTS OF CHRONIC EXPOSURE
Erosion of teeth, jaw necrosis, bronchial irritation
and chronic cough.

EMERGENCY AND FIRST AID PROCEDURES
Inhalation - rest, artificial respiration as needed;
ingestion - get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)
Avoid contact with water.

HAZARDOUS DECOMPOSITION PRODUCTS
Produces HCl on contact with water.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Safety goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Store in cool, dry area away from heat inside storage in standard flammable
liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

376-0402B

PRODUCT DESIGNATION

03-326-3402
Pentamethylene Bromide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,5 Dibromopentane

FORMULA

 $\text{Br}(\text{CH}_2)_5\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 229.96

BOILING POINT 222 ⁰ C	° F.	VAPOR PRESSURE at 108 ⁰ C	mm Hg. 20
MELTING POINT -40 ⁰ C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.69		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O --		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water, foam, carbon dioxide and dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Pentamethylene Bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
inhalation, ingestion

SKIN AND EYE
IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE
eye irritation, narcosis, drowsiness, headache, vomiting.

EFFECTS OF CHRONIC EXPOSURE
dermatitis, liver & kidney damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Rubber

RESPIRATOR

With organic vapor resistant canister.

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

326-3402B

PRODUCT DESIGNATION

M-Phenetidine
03-326-5902

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
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ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
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1 amino - 3 Ethoxybenzene CHEMICAL NAME AND SYNONYMS	FORMULA
---	---------

M Aminophenetol

$\text{NH}_2\text{C}_6\text{H}_4\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 137.18

BOILING POINT 248°C	° F.	VAPOR PRESSURE at 125°C	mm Hg. 7
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA
carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES
water or foam may cause frothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

M-Phenetidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

cyanosis, hypothermia, headache, drowsiness, vomiting,
irritation of alimentary tract, nephritis.

EFFECTS OF CHRONIC EXPOSURE

Weight loss, anemia, weakness, irritability, possible
liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - emetic or gastric
lavage, get medical attention; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Pour (9:1) sand to soda ash mixture on spill, put in cardboard carton
for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber (butyl)

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in dark, cool area.

OTHER PRECAUTIONS

SIGNATURE

DATE

326-5902B

PRODUCT DESIGNATION

03-326-6002
O-Phenetidine

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

1 amino - 2 Ethoxybenzene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

O-Aminophenetol

FORMULA

$$\begin{array}{ccccccc} \text{C} & \text{H} & \text{O} & \text{C} & \text{H} & \text{N} & \text{H} \\ 2 & 5 & & 6 & 4 & 2 & \end{array}$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA MW - 137.18

BOILING POINT 229°C	° F.	VAPOR PRESSURE 133°C	25 ^{mm} Hg.
MELTING POINT < -21°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) --		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Oil, colorless to brownish			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES water or foam may cause frothing.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

O-Phenetidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE Cyanosis, hypothermia, headache, drowsiness, vomiting, irritation of alimentary tract, nephritis.

EFFECTS OF CHRONIC EXPOSURE Weight loss, anemia, weakness, irritability, possible liver damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - emetic or gastric lavage, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Pour (9:1) sand to soda ash mixture on spill, put in cardboard carton for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber (butyl)

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Plastic coveralls, self-contained breathing apparatus.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in dark, cool area.

OTHER PRECAUTIONS

SIGNATURE

DATE

326-6002B

CAS:000156434

SI64600

PRODUCT DESIGNATION

03-326-6102
P-PhenetidineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

1 Amino - 4 Ethoxybenzene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Aminophenetol, 4 Ethoxy Aniline

FORMULA

 $C_9H_{10}O_2NH_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Unclassified - mouse	LD50 83 mg/kg		none available			

SECTION III PHYSICAL DATA MW - 137.18

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
255°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
3°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.06			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
very slightly			
APPEARANCE AND ODOR			
liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE)	UPPER
241°F	LIMITS	LOWER
METHOD USED		

EXTINGUISHING MEDIA

carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

water or foam may cause frothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P-Phenetidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

Cyanosis, hypothermia, headache, drowsiness, vomiting,

~~irritation of alimentary tract, nephritis.~~

EFFECTS OF CHRONIC EXPOSURE

Weight loss, anemia, weakness, irritability, possible liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - emetic or gastric lavage,
get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Pour (9:1) sand to soda ash mixture on spill, put in cardboard container
for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber (butyl)

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Store in dark, cool area.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

326-6102B

PRODUCT DESIGNATION

Phenol
03-326-6904

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS
Carbolic Acid

FORMULA
 C_6H_5OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			414	669	Mouse	
			300			
				850	Rabbit	
Note: Lowest published lethal dose; oral - human 140 mg/kg						
Lowest published toxic dose; oral - human 14 mg/kg						

SECTION III PHYSICAL DATA Mol. Wt. 94.11

BOILING POINT 181.9°C	° F.	VAPOR PRESSURE at 40.1°C	mm Hg. 1
MELTING POINT 40.6°C	° F.	VAPOR DENSITY (Air = 1) 3.24	
SPECIFIC GRAVITY (H ₂ O = 1) 1.072		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 8.2		VOLATILE	% Vol, % Wt.
APPEARANCE AND ODOR White, crystalline solid with a characteristic odor. (Threshold 1 PPM)			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 175°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED Closed Cup		LOWER
EXTINGUISHING MEDIA Water spray, carbon dioxide, dry chemical, or foam		

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing, self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Phenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 5 ppm, 19 mg/C.M.

CARCINOGENIC Experimental
Carcinogen

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, skin, ingestion

SKIN AND EYE

IRRITATION

Severe

RELEVANT SYMPTOMS OF EXPOSURE Tremor, excitement, convulsions, ulceration of tissue, blood pressure decline, cyanosis, diarrhea, pneumonia may follow.

EFFECTS OF CHRONIC EXPOSURE

Liver & kidney damage, digestive disturbances, nervousness, skin eruptions.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, keep warm; wash from skin & eyes; if swallowed - drink water, 2 tsp. epsom salts in water, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Calcium hypochlorite, butadiene and aluminum chloride and nitrobenzene

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Flush with quantities of water (evacuate area) caustic soda solution used for neutralization.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION Full Protection

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber, neoprene or polyethylene

SPECIAL

RESPIRATOR

w/chemical cartridge

OTHER PROTECTIVE EQUIPMENT

Face shield, rubber apron, self-contained full-face if concentration is over 400 mg/C.M.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry, well-ventilated area, away from areas where fire hazard may be acute.

OTHER PRECAUTIONS

SIGNATURE

DATE

326-6904B

PRODUCT DESIGNATION

03-326-7902
G-Phenoxybutyronitrile

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
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CHEMICAL NAME AND SYNONYMS	FORMULA
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G-Phenoxybutyronitrile

$$\text{C}_6\text{H}_5\text{-O-C}_3\text{H}_6\text{CN}$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 161.20

BOILING POINT 285° C. at 765 mm.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 46° C.	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR

Needle-like crystals.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Dry chemical, alcohol foam or carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

G-Phenoxybutronitrile

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE Dizziness, rapid respiration, headache, drowsiness, drop in blood pressure and pulse, delayed symptoms.

EFFECTS OF CHRONIC EXPOSURE

Eye irritation, loss of appetite, weight loss, mental deterioration.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - inhalation of amyl nitrite, induce vomiting or gastric lavage; wash skin and eyes; inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

When heated to decomposition point, emits highly toxic cyanide fumes.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

326-7902B

PRODUCT DESIGNATION

03-327-0603
Phenylacetyl Chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Phenylacetyl Chloride	FORMULA $C_6H_5CH_2COCl$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none available			

SECTION III PHYSICAL DATA

MW - 154.59

BOILING POINT 170°C at 250 mm	° F.	VAPOR PRESSURE at 95°C	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	12
SPECIFIC GRAVITY (H ₂ O = 1) 1.17		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O decomposes		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES wear full protective clothing.		
UNUSUAL FIRE AND EXPLOSION HAZARDS reacts with water		

PRODUCT DESIGNATION

Phenyl Acetyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, coughing, headache, pulmonary edema, ulceration of skin, dizziness.

EFFECTS OF CHRONIC EXPOSURE Erosion of teeth, jaw necrosis, bronchial irritation and chronic cough.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - artificial respiration if necessary; ingestion - drink water, milk of magnesia, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Avoid water.

HAZARDOUS DECOMPOSITION PRODUCTS

Produces HCl with water.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry well-ventilated room; inside storage in standard flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

327-0603B

CAS:000108452

SS77000

PRODUCT DESIGNATION

03-327-2603
M-PhenylenediamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

3 Aminoaniline

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,3 Aminobenzene

FORMULA

 $C_6H_4(NH_2)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Notes:			See Notes			
Lowest published lethal dose						
Oral - rat 80 mg/kg						
Subcutaneous - rat 80 mg/kg						
Intravenous - dog 17 mg/kg						
Oral - cat 300 mg/kg						
Subcutaneous - rabbit 200 mg/kg						

SECTION III PHYSICAL DATA

MW - 108.16

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
283°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
63°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.14			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
84			

APPEARANCE AND ODOR

colorless crystal

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
water, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

M-Phenylenediamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

ingestion (mainly) inhalation

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation, headache, cyanosis, drowsiness,
mental confusion, dermatitis.

EFFECTS OF CHRONIC EXPOSURE

Liver damage

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid;
inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Cover with (9:1) sand to soda ash mixture; put in cardboard carton
for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber (butyl)

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Plastic coveralls, self-contained breathing apparatus.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

327-6203B

PRODUCT DESIGNATION

03-327-2813
P-Phenylene Diamine

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS 4 Aminoaniline	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,4 Diaminobenzene	FORMULA $C_6H_4(NH_2)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human LDLO 50	mg/kg		See Notes			
Notes:						
Lowest published lethal dose						
Oral - rat 100	mg/kg					
Subcutaneous - rat 170	mg/kg					
Intravenous - dog 17	mg/kg					
Intraperitoneal - rat 50	mg/kg					
Oral - cat - 100	mg/kg					
Subcutaneous - rabbit 200	mg/kg					

SECTION III PHYSICAL DATA MW - 108.16

BOILING POINT 267°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 140°C	° F.	VAPOR DENSITY (Air = 1) 3.72
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O 3.8		VOLATILE % Vol, % Wt.
APPEARANCE AND ODOR colorless monoclinic crystals		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 312	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED C.C.		LOWER
EXTINGUISHING MEDIA water, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

P-Phenylene Diamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

0.1 mg/C.M. (skin)

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

dermatitis, eye irritation.

EFFECTS OF CHRONIC EXPOSURE

Allergenic bronchial asthma, dermatitis, liver damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid;

inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Cover with (9:1) sand to soda ash mixture; put into cardboard carton
for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber (butyl)

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Plastic coveralls, self-contained breathing apparatus.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

327-2813B

PRODUCT DESIGNATION

03-327-2903

M-Phenylenediamine Dihydrochloride

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,4 Diaminobenzene dihydrochloride

FORMULA

 $C_6H_4(NH_2)_2 \cdot 2HCl$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			see note			
Notes:						
Intraperitoneal - mouse	LD50 100 mg/kg					
Intraperitoneal - rat	LD 50 325 mg/kg					

SECTION III PHYSICAL DATA MW - 181.08

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
--			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
very soluble			
APPEARANCE AND ODOR			
colorless crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		
METHOD USED		LOWER

EXTINGUISHING MEDIA

water, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

M-Phenylenediamine Dihydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

ingestion (mainly)

SKIN AND EYE

IRRITATION

slight

RELEVANT SYMPTOMS OF EXPOSURE Dermatitis, headache, cyanosis, drowsiness, mental confusion.

EFFECTS OF CHRONIC EXPOSURE

Liver damage

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid;
wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

327-2903B

PRODUCT DESIGNATION

03-327-3603
B-Phenylethyl Bromide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 Bromoethyl Benzene

FORMULA

 $C_6H_5C_2H_4Br$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		I.C 50	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 185.07

BOILING POINT	° F.	VAPOR PRESSURE	
See vapor pressure		102°C	20 mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
insoluble			
APPEARANCE AND ODOR			
liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		
METHOD USED		LOWER

EXTINGUISHING MEDIA

water spray, dry chemical, carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

B-Phenylethyl Bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion

IRRITATION high

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of eyes, nose and throat; severe burns to digestive tract if swallowed.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

If inhaled - rest; if swallowed - give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

327-3603B

PRODUCT DESIGNATION

03-327-5103
Phenylhydrazine

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
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ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Phenylhydrazine

FORMULA

C6H5NHNH2

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			188		rat	
			80		rabbit	
			80		guinea pig	

SECTION III PHYSICAL DATA

MW - 108.14

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
243 ⁰ C		at 72 ⁰ C	1
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
19.6 ⁰ C		3.7	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.10			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
slightly soluble			
APPEARANCE AND ODOR			
yellow, monoclinic crystals or oil.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
192 ⁰ F.		
METHOD USED		LOWER
C.C.		
EXTINGUISHING MEDIA		
Alcohol foam, water, carbon dioxide.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point, it gives off fumes of nitrogen compounds.

PRODUCT DESIGNATION
Phenylhydrazine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL TLV 5 PPM, 22 mg/C.M. CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion, skin SKIN AND EYE IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Irritation of skin, eyes and mucous membranes, gastroenteric disturbances, anemia.

EFFECTS OF CHRONIC EXPOSURE Blood and liver damage, loss of appetite.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID) Avoid lead dioxide.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Dilute with water, neutralize with sulfuric acid.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
	GLOVES
SPECIAL	Rubber
	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	Self-contained

Penetration - resistant coveralls, full-body shield.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in flammable liquids storage cabinet; detached storage preferred.

OTHER PRECAUTIONS

SIGNATURE DATE

327-5103B

PRODUCT DESIGNATION

03-327-5203
Phenylhydrazine Hydrochloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Phenylhydrazine Hydrochloride

FORMULA

C6H5NHNH2.HCl

SECTION II HAZARDOUS INGREDIENTS 6 5 2

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		
Oral - mouse - TDLO	8000 mg/kg 42 week	neoplastic				

SECTION III PHYSICAL DATA MW - 144.61

BOILING POINT --	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 245°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O very soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR yellow powder			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA alcohol foam, water, carbon dioxide		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Phenylhydrazine Hydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC neoplastic

PRINCIPLE ROUTES OF ABSORPTION

Inhalation of dust, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Irritation of skin, eyes and mucous membranes, gastroenteric disturbances, anemia.

EFFECTS OF CHRONIC EXPOSURE

Blood and liver damage, loss of appetite.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Avoid lead dioxide

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

327-5203B

CAS:000103719

DÀ36750

PRODUCT DESIGNATION

03-327-5603
Phenyl IsocyanateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

Benzene Isocyanate

CHEMICAL NAME AND SYNONYMS

FORMULA

Phenyl IsocyanateC₆H₅NCO

SECTION II HAZARDOUS INGREDIENTS 6 5

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			940		rat	

SECTION III PHYSICAL DATA

MW - 119.12

BOILING POINT

° F.

163°C

VAPOR PRESSURE

mm Hg.

at 62°C

13

MELTING POINT

° F.

-30°C

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

1.10

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

insoluble

APPEARANCE AND ODOR

liquid with acrid odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

none available

FLAMMABLE
(EXPLOSIVE)

UPPER

METHOD USED

LIMITS

LOWER

EXTINGUISHING MEDIA

Water, alcohol foam, carbon dioxide or dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus and goggles.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Phenyl Isocyanate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion

IRRITATION

severe

REVELANT SYMPTOMS OF EXPOSURE

Eye and mucous membrane irritation; skin irritation. Sensitizer

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, medical aid, gastric lavage;
inhalation - rest, give oxygen as needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

327-5603B

CAS:000103720

NX92750

PRODUCT DESIGNATION

03-327-6103
Phenyl IsothiocyanateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Benzene 1 Isothiocyanate

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Phenyl Isothiocyanate

FORMULA

 C_6H_5NCS

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			400		mouse	

SECTION III PHYSICAL DATA

MW - 135.19

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
221°C		at 90°C	15
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-21°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.14			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
insoluble			

APPEARANCE AND ODOR

Pale yellow liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water, alcohol foam, carbon dioxide, or dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus and goggles.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION Phenyl Isothiocyanate	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL None available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion	SKIN AND EYE IRRITATION Severe
RELEVANT SYMPTOMS OF EXPOSURE Eye and mucous membrane irritation; skin irritation , sensitizer.	
EFFECTS OF CHRONIC EXPOSURE Liver and kidney damage.	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, medical aid, gastric lavage; inhalation - rest, give oxygen as needed; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR Self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

327-6103B

PRODUCT DESIGNATION

03-327-7603

P-Phenylphenacyl Bromide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Bromo-P-Phenylacetophenone	FORMULA $C_6H_5C_6H_4COCH_2Br$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 275.15

BOILING POINT --	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 126°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION	
P Phenylphenacyl Bromide	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
none available	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
inhalation, ingestion	IRRITATION severe
RELEVANT SYMPTOMS OF EXPOSURE	
Eye irritation, corneal haziness and pain; burning of throat; skin irritation.	
EFFECTS OF CHRONIC EXPOSURE	
--	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

327-7603B

PRODUCT DESIGNATION

03-327-8103
B-Phenylpropionyl Chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Hydrocinnamoyl Chloride	FORMULA $C_6H_5CH_2CH_2COCl$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

BOILING POINT ° F.	VAPOR PRESSURE mm Hg.
see vapor pressure	at 120°C
MELTING POINT ° F.	VAPOR DENSITY (Air = 1)
-5°C	
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O decomposes	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR colorless liquid	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES Wear full protective clothing.		
UNUSUAL FIRE AND EXPLOSION HAZARDS Reacts with water.		

PRODUCT DESIGNATION

B-Phenylpropionyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, coughing, headache, pulmonary edema, ulceration of skin, dizziness.

EFFECTS OF CHRONIC EXPOSURE Erosion of teeth, jaw necrosis, bronchial irritation and chronic cough.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - artificial respiration if necessary; ingestion - drink water, milk of magnesia, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Avoid water

HAZARDOUS DECOMPOSITION PRODUCTS

Produces HCl with water

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

MECHANICAL (GENERAL)

Goggles
GLOVES

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dry, well-ventilated room; inside storage in standard flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

327-8103B

CAS:000103037

VT36750

PRODUCT DESIGNATION

03-328-0704
1-PhenylsemicarbazideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Cryogenine

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1-Phenylsemicarbazide

FORMULA

 $C_6H_5NHNHCONH_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Intraperitoneal - rat LD ₅₀ 55 mg/kg						

SECTION III PHYSICAL DATA

MW - 151.17

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
--			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
176			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
soluble in hot water			
APPEARANCE AND ODOR			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
Alcohol foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
1-Phenylsemicarbazide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
inhalation, ingestion, skin

SKIN AND EYE
IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Irritation of skin, eyes and mucous membranes, gastroenteric disturbances, anemia.

EFFECTS OF CHRONIC EXPOSURE

Blood and liver damage, loss of appetite.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

328-0704B

PRODUCT DESIGNATION

03-328-1704
4 Phenylthiosemicarbazide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

4 Phenylthiosemicarbazide

 $C_6H_5NHNHCSNH_2$

SECTION II HAZARDOUS INGREDIENTS

6 5 2

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Notes:						
1. Lowest published lethal dose oral - rat 50 mg/kg						
2. Lowest published lethal dose intraperitoneal - mouse 15 mg/kg.						

SECTION III PHYSICAL DATA

MW - 167.23

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 140°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA alcohol foam, dry chemical, carbon dioxide.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

4 Phenylthiosemicarbazide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of skin, eyes and mucous membranes, gastroenteric disturbances, anemia.

EFFECTS OF CHRONIC EXPOSURE

Blood and liver damage, loss of appetite.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

328-1704B

CAS:000103855

YU14000

PRODUCT DESIGNATION

03-328-2204
PhenylthioureaMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Phenylcarbamide

FORMULA

 $C_6H_5HN-CS-NH_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			3		rat	
			10		mouse	
			40		rabbit	

SECTION III PHYSICAL DATA

MW - 152.22

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

154°C

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

1.3

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

slightly soluble

APPEARANCE AND ODOR

needle-like crystals - bitter taste.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

none available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

carbon dioxide, water.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

Burns to form SO₂ fumes.

PRODUCT DESIGNATION Phenylthiourea	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL none available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion	SKIN AND EYE IRRITATION slight
RELEVANT SYMPTOMS OF EXPOSURE dermatitis	
EFFECTS OF CHRONIC EXPOSURE Ingestion - depression of bone marrow, anemia, leukopenia, allergic skin eruptions.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS On decomposition emits toxic fumes of sulfur and nitrogen.	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES
SPECIAL	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

328-2204B

PRODUCT DESIGNATION

03-328-5704
PicolineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Methyl Pyridine

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

 α Picoline

FORMULA

 $C_6H_5NCH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			790		rat	
			674		mouse	
Lowest published lethal concentration in air				410	rabbit	
inhalation - rat 4000 BPM			900		guinea pig	

SECTION III PHYSICAL DATA MW - 92.13

BOILING POINT 129°C	° F.	VAPOR PRESSURE at 24°C	10 mm Hg.
MELTING POINT -70°C	° F.	VAPOR DENSITY (Air = 1) 3.2	
SPECIFIC GRAVITY (H ₂ O = 1) 0.95		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O very soluble		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

colorless liquid with unpleasant odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 102	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Picoline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

Narcosis, headache, nausea, giddiness, vomiting

EFFECTS OF CHRONIC EXPOSURE

Occasional vomiting and diarrhea; weight loss and anemia;
ocular and facial paralysis.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid; inhalation -
artificial respiration and oxygen as necessary; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Use in hood

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

goggles

MECHANICAL (GENERAL)

GLOVES

rubber

SPECIAL

RESPIRATOR

self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside storage preferred, store inside in a flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

328-5704B

PRODUCT DESIGNATION

03-328-5804
B-Picoline

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS 3 Methylpyridine	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 3 - Picoline	FORMULA C_5H_7N

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 93.12

BOILING POINT 143°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1) 3.21
SPECIFIC GRAVITY (H ₂ O = 1) 0.96		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O ∞		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid, with unpleasant odor.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
METHOD USED		
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES Wear goggles and self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

B-Picoline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Narcosis, headache, nausea, giddiness, vomiting.

EFFECTS OF CHRONIC EXPOSURE

Occasional vomiting and diarrhea; weight loss and anemia;
ocular and facial paralysis.EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid; inhalation -
artificial respiration and oxygen as needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Used in hood

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside storage preferred, store inside in a flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

328-5804B

CAS:000108894

UT54250

PRODUCT DESIGNATION

03-328-5904
G-PicolineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

4 Methyl pyridine

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

4 Picoline

FORMULA

 $C_6H_7NCH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			1290		rat	
				270	rabbit	
Lowest published lethal concentration in air						
inhalation - rat 1000 PPM - 4 hrs.						

SECTION III PHYSICAL DATA

MW - 93.12

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

143

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

3.7°C

3.21

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

0.96

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

∞

APPEARANCE AND ODOR

colorless liquid with unpleasant odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

134°F

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

O.C.

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
G-Picoline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC
no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

Narcosis, headache, nausea, giddiness, vomiting.

EFFECTS OF CHRONIC EXPOSURE

Occasional vomiting and diarrhea; weight loss and anemia;
ocular and facial paralysis.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid;
inhalation - artificial respiration and oxygen as needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Use in hood

MECHANICAL (GENERAL)

SPECIAL

OTHER PROTECTIVE EQUIPMENT

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

GLOVES

Rubber

RESPIRATOR

Self-contained

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside storage preferred, store inside in a flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

328-5904B

PRODUCT DESIGNATION

03-328-6204
PicramideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2,4,6 Trinitroaniline	FORMULA $\text{NH}_2\text{C}_6\text{H}_2(\text{NO}_2)_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 228.12

BOILING POINT <u>explodes</u>	° F.	VAPOR PRESSURE /	mm Hg.
MELTING POINT <u>190°C</u>	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O <u>insoluble</u>		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR <u>yellow monoclinic crystals</u>			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT <u>none available</u>	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA <u>Explosive - do not fight fire except for unmanned equipment - use water.</u>		
SPECIAL FIRE FIGHTING PROCEDURES <u>Wear full protective clothing for rescue operations.</u>		
UNUSUAL FIRE AND EXPLOSION HAZARDS <u>Severe explosion hazard.</u>		

PRODUCT DESIGNATION

Picramide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation of dust, ingestion, skin

IRRITATION

moderate

REVELANT SYMPTOMS OF EXPOSURE

Headache, drowsiness, weakness, cyanosis, respiratory distress.

EFFECTS OF CHRONIC EXPOSURE

Weight loss, anemia, possible liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Reacts with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store away from oxidizing materials and heat.

OTHER PRECAUTIONS

SIGNATURE

DATE

328-6204B

PRODUCT DESIGNATION

03-328-6404
Picryl Chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2,4,6 Trinitrochlorobenzene

FORMULA

 $(\text{NO}_2)_3\text{C}_6\text{H}_2\text{Cl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
		none available				

SECTION III PHYSICAL DATA

MW - 247.56

BOILING POINT --	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 83°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.80		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR yellow monoclinic			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE). LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA Explosive - do not fight fire except for unmanned equipment - use water.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing for rescue operations.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Severe explosion hazard.

PRODUCT DESIGNATION	
Picryl Chloride	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
none available	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
inhalation, ingestion, skin	IRRITATION moderate
RELEVANT SYMPTOMS OF EXPOSURE	
Dermatitis, irritation of respiratory and digestive systems.	
EFFECTS OF CHRONIC EXPOSURE	
Dermatitis.	
EMERGENCY AND FIRST AID PROCEDURES	
Inhalation - rest; if swallowed - give emetic, get medical aid; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
Keep from oxidizing materials (explosive) inorganic nitrates, chlorates and ammonium nitrate.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Keep from oxidizing materials, combustibles, and source of heat.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

328-6404B

CAS:000107120

UF96250

PRODUCT DESIGNATION

Propionitrile
03-328-9504MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Hydrocyanic ether

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Ethyl Cyanide

FORMULA

CH₃CH₂CN

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			39		Rat	
				210	Rabbit	
LCL0 - inhalation - rat	500 PPM/4H					

SECTION III PHYSICAL DATA Mol. Wt. 5508

BOILING POINT 97.1°C	° F.	VAPOR PRESSURE at 22°C	40 mm Hg.
MELTING POINT -103.5°C	° F.	VAPOR DENSITY (Air = 1) 1.9	
SPECIFIC GRAVITY (H ₂ O = 1) 0.783		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Soluble		VOLATILE % Vol	% Wt.
APPEARANCE AND ODOR Colorless liquid; ethereal odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED Closed Cup		LOWER 3.1%

EXTINGUISHING MEDIA

Use dry chemicals, alcohol foam or carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES

Wear protective clothing; use self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Propionitrile

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TWA-TLV-6 PPM, 14 MG/C.M. (NIOSH Value)

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Mild to moderate

RELEVANT SYMPTOMS OF EXPOSURE

Dizziness, rapid respiration, headache, drowsiness, drop in blood pressure and pulse, and unconsciousness, delayed symptoms.

EFFECTS OF CHRONIC EXPOSURE

Eye irritation, loss of appetite, weight loss, mental deterioration.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - inhalation of amyl nitrite, immediate vomiting, or gastric lavage, wash from skin and eyes; inhalation - rest, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

Heated to decomposition emits highly toxic cyanide fumes.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb with paper towels; evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles - Safety Glasses

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

w/proper filter

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

328-9504B

PRODUCT DESIGNATION

03-329-0305
Propionyl Chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME		EMERGENCY TELEPHONE NO.	
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)			
TRADE NAME AND SYNONYMS		CHEMICAL FAMILY	
CHEMICAL NAME AND SYNONYMS Propionyl Chloride		FORMULA $\text{CH}_3\text{CH}_2\text{COCl}$	

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
		none available				

SECTION III PHYSICAL DATA MW - 92.5

BOILING POINT 80°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -94°C	° F.	VAPOR DENSITY (Air = 1) 3.2
SPECIFIC GRAVITY (H ₂ O = 1) 1.07		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O decomposes		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 54°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Propionyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE

Cyanosis, coughing, headache, pulmonary edema, ulceration

of skin dizziness.

EFFECTS OF CHRONIC EXPOSURE

Erosion of teeth, bronchial irritation and chronic cough.

EMERGENCY AND FIRST AID PROCEDURES

Ingestion - drink water, milk of magnesia, get medical aid; inhalation - artificial respiration as needed; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react violently with water, alcohol,
and dimethyl sulfoxide.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

329-0305B

CAS:000108214

AI49300

PRODUCT DESIGNATION

03-329-1345
03-329-1305
Iso-Propyl Acetate

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Isopropyl Acetate

FORMULA

 C_3H_7COOH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human LDLO 500 mg/kg			3000 6946		rat rabbit	
Lowest published toxic concentration in air inhalation - human 200 PPM				See Note		

SECTION III PHYSICAL DATA MW 102.13

BOILING POINT 89°C	° F.	VAPOR PRESSURE at 17°C	mm Hg.
MELTING POINT -73°C	° F.	VAPOR DENSITY (Air = 1)	40
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.87			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
3			

APPEARANCE AND ODOR

colorless liquid, aromatic odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 40°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 7.8%
METHOD USED		LOWER 1.8%

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Iso-Propyl Acetate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 250 PPM, 950 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

moderate

REVELANT SYMPTOMS OF EXPOSURE

Eye irritation, respiratory passage irritation

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towel; evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber gloves

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in standard combustible liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

329-1305B

CAS-000075310

NT84000

PRODUCT DESIGNATION

Iso-propylamine
03-329-1805MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 aminopropane

FORMULA

 $(\text{CH}_3)_2 \text{CHNH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ ppm	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO inhalation - rat	800 PPM/8 Hrs.		820	550	Rabbit	
					Rat	

SECTION III PHYSICAL DATA

Mol. Wt. 59.11

BOILING POINT

31.7°C

° F.

VAPOR PRESSURE

mm Hg.

MELTING POINT

-101.2°C

° F.

VAPOR DENSITY (Air = 1)

2.03

SPECIFIC GRAVITY (H₂O = 1)

0.694 at 15°

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

Infinite

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Colorless liquid with fishy odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

-35°F

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

0°C

EXTINGUISHING MEDIA

Alcohol foam, CO₂ or dry chemical. Water may be ineffective.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Iso-propylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 5 ppm, 12 mg/C.M.

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Nose and throat irritation, lung edema, skin and eye burns.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, keep warm, get medical aid; if swallowed - wash mouth, drink water, get medical aid; wash from skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

Can react violently with oxidizing materials

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Cover with sodium bisulfate and sprinkle with water. Drain into sewer with much water.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Butyl rubber gloves

SPECIAL

RESPIRATOR

w/proper filter

OTHER PROTECTIVE EQUIPMENT

Face shield, rubber apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

329-1805B

CAS:000107108

UH91000

PRODUCT DESIGNATION

03-329-1905
N-PropylamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1 Aminopropane

FORMULA

 $C_3H_7NH_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ PPM	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose					rat	2310
Oral - rat 570/mg/kg				560	rabbit	

SECTION III PHYSICAL DATA MW - 59.13

BOILING POINT 49°C	° F.	VAPOR PRESSURE at 20°C	mm Hg.
			248
MELTING POINT -83°C	° F.	VAPOR DENSITY (Air = 1) 1.7	
SPECIFIC GRAVITY (H ₂ O = 1) 0.72		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O infinite		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR colorless liquid, strong ammonia odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT -35°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 10.4% LOWER 2.0%
METHOD USED		
EXTINGUISHING MEDIA carbon dioxide, dry chemical, alcohol foam. Water may be ineffective.		

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
N-Propylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion

SKIN AND EYE
IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE
nose and throat irritation, lung edema, skin & eye burns.

EFFECTS OF CHRONIC EXPOSURE
--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, keep warm, get medical aid; if
swallowed - wash mouth, drink water, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR
with proper filter

OTHER PROTECTIVE EQUIPMENT

Face shield, rubber apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect against physical damage - outside or detached storage preferred. Inside storage
in a standard flammable liquids storage cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

329-1905B

PRODUCT DESIGNATION

03-329-2305
N-Propylaniline

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS N Propylaniline	FORMULA $C_3H_7NHC_6H_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Unclassified - Mouse LD ₅₀	250 mg/kg		none	available		

SECTION III PHYSICAL DATA MW - 135.20

BOILING POINT 222°C.	° F.	VAPOR PRESSURE at 87°C	mm Hg. 5
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.95		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated may decompose to give toxic aniline fumes.

PRODUCT DESIGNATION N-Propylaniline	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL none available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion, skin	SKIN AND EYE IRRITATION moderate
RELEVANT SYMPTOMS OF EXPOSURE Weakness, tremors, cyanosis, drowsiness, central nervous system depression.	
EFFECTS OF CHRONIC EXPOSURE Fatigue, loss of appetite, headache, dizziness.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Polyvinyl alcohol
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

329-2305B

CAS:000103651

DA87500

PRODUCT DESIGNATION

03-329-3305
N-PropylbenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Phenyl propane

FORMULA

 $C_3H_7C_6H_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LCLO inhalation - mouse	4100 PPM				rat	
LDLO - oral - rat	4830 mg/kg					

SECTION III PHYSICAL DATA

MW - 120.19

BOILING POINT

159.2

° F.

VAPOR PRESSURE

at 43.4°C

10 mm Hg.

MELTING POINT

-99.5°C

° F.

VAPOR DENSITY (Air = 1)

4.14

SPECIFIC GRAVITY (H₂O = 1)

0.862

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

insoluble

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

86°F

METHOD USED

C.C.

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

EXTINGUISHING MEDIA

Water spray, carbon dioxide, dry chemical or foam.

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective. Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
N-Propylbenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL not available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion, skin SKIN AND EYE IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE Skin and eye irritant, dizziness

EFFECTS OF CHRONIC EXPOSURE Possible kidney damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIDUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR Self-contained
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

329-3305B

PRODUCT DESIGNATION

03-329-4405
N-Propyl Chlorocarbonate

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS	FORMULA
Propyl Chloroformate	$\text{ClCOOC}_3\text{H}_7$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 122.55

BOILING POINT 115°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT --	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.10		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O decomposes		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION N-Propyl Chlorocarbonate	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL None available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion	SKIN AND EYE IRRITATION severe
RELEVANT SYMPTOMS OF EXPOSURE Eye irritation, irritation of upper respiratory tract, pulmonary edema.	
EFFECTS OF CHRONIC EXPOSURE --	
EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation - rest; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR Self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Keep away from water.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

329-4405B

CAS:000078751

TX85800

PRODUCT DESIGNATION

03-329-4805
Propylene BromideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Propylene dibromide

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,2 dibromopropane

FORMULA

 $\text{CH}_2\text{BrCHBrCH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Intraperitoneal - mouse	LDLO 75 mg/kg		none available			

SECTION III PHYSICAL DATA MW - 201.9

BOILING POINT 140°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -55°C	° F.	VAPOR DENSITY (Air = 1) 7.0
SPECIFIC GRAVITY (H ₂ O = 1) 1.94		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR
colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water, foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Propylene Bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

not available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

moderate

RELEVANT SYMPTOMS OF EXPOSURE

Eye irritation, narcosis, drowsiness, headache, vomiting.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear self-contained breathing apparatus.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With organic vapor resistant canister

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

329-4805B

PRODUCT DESIGNATION

03-329- 4905
Propylene Bromohydrin

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1 Bromo 2 Propanol	FORMULA $\text{BrCH}_2\text{CHOHCH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.

SECTION III PHYSICAL DATA MW - 139.0

BOILING POINT 148°C.	° F.	VAPOR PRESSURE at 52°C.	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	16
SPECIFIC GRAVITY (H ₂ O = 1) 1.60		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA alcohol foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Propylene Bromohydrin

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION

severe

REVELANT SYMPTOMS OF EXPOSURE

Eye and nasal irritation, nausea, vomiting, giddiness,
dizziness, incoordination, visual disturbances, coma.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Wash skin & eyes; if swallowed - give emetic, get medical
aid; inhalation - rest, give oxygen as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

329-4905B

CAS:000078875

TX96250

PRODUCT DESIGNATION

03-329-5105
Propylene ChlorideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Propylene dichloride

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,2 dichloropropane

FORMULA

 $\text{CH}_2\text{ClCHClCH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human LDLO 50 mg/kg			1900		rat	
LCLO - inhalation - rat	2000 ppm/4hrs.		860		mouse	
				8750	rabbit	
			2000		guinea pig	

SECTION III PHYSICAL DATA MW - 112.99

BOILING POINT 96.8°C	° F.	VAPOR PRESSURE at 25°C	mm Hg. 50
MELTING POINT -100°C	° F.	VAPOR DENSITY (Air = 1) 3.9	
SPECIFIC GRAVITY (H ₂ O = 1) 1.159		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.27		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Colorless liquid, chloroform-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 60°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Propylene Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 75 PPM, 350 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE Eye irritation, narcosis, sleepiness, headache, vomiting.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear self-contained breathing apparatus.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With organic vapor resistant canister

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

329-5105B

PRODUCT DESIGNATION

03-329-5205
Propylene Chlorohydrin

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1 Chloro 2 Propanol	FORMULA $\text{ClCH}_2\text{CHOHCH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
				480	rabbit	

SECTION III PHYSICAL DATA MW-94.55

BOILING POINT 127°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1) 3.26
SPECIFIC GRAVITY (H ₂ O = 1) 1.10		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O infinitely soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid, mild nonresidual odor.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 125°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED C.C.		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Propylene Chlorohydrin

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Eye and nasal irritation, nausea, vomiting, giddiness,
dizziness, incoordination, visual disturbances, coma.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Wash skin & eyes; if swallowed - give emetic, get medical
aid; inhalation - rest, give oxygen as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

329-5205B

CAS:000057556

TY20000

PRODUCT DESIGNATION

03-329-5595
03-329-5605
Propylene Glycol

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
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ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,2, Propanediol

FORMULA

CH₃CHOHCH₂OH

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			21,000		rat	
				23,000	rat	
			24,000		mouse	
			22,000		dog	
			18,000		rabbit	
			19,000		guinea pig	

SECTION III PHYSICAL DATA

MW - 76.11

BOILING POINT 187 ⁰ C	° F.	VAPOR PRESSURE at 20 ⁰ C	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	0.08
SPECIFIC GRAVITY (H ₂ O = 1) 1.04		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O infinite		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid, practically odorless.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 210 ⁰	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 12.5%
METHOD USED open cup		LOWER 2.6%
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Propylene Glycol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

slight

RELEVANT SYMPTOMS OF EXPOSURE

Coldness, spastic contraction of muscles, loss of reflexes, coma, death; pulmonary edema, eye irritation.

EFFECTS OF CHRONIC EXPOSURE

Kidney damage, rapid weight loss, weakened reflexes.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - rest; wash from eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

329-5605B

CAS:000075569

TZ29750

PRODUCT DESIGNATION

03-329-5805
Propylene OxideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

1,2-Epoxypropane

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Propylene Oxide

FORMULA

 $\text{CH}_3\text{CHOCH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ PPM	
			ORAL	PERCUT.	SPECIES	CONC.
			930		rat	
					mouse	1740/4 hr.
				1500	rabbit	
			690	8640	guinea pig	

SECTION III PHYSICAL DATA MW - 58.08

BOILING POINT 34°C	° F.	VAPOR PRESSURE 18°C	400 mm Hg.
MELTING POINT -104°C	° F.	VAPOR DENSITY (Air = 1) 2.0	
SPECIFIC GRAVITY (H ₂ O = 1) 0.83		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 33		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR colorless liquid with ether-like odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT -35°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 37%
METHOD USED TOC		LOWER 2.8%
EXTINGUISHING MEDIA Carbon dioxide, dry chemical, alcohol foam -		

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

May react vigorously with oxidizing materials.

PRODUCT DESIGNATION
Propylene Oxide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
TLV - 100 PPM, 240 mg/C.M.

CARCINOGENIC neoplastic

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Ingestion, inhalation

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE Irritation of eyes, upper respiratory tract and lungs; skin irritation and corneal burns; periodic vomiting.

EFFECTS OF CHRONIC EXPOSURE

Lung damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - get medical aid; inhalation - artificial respiration if needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION May polymerize with heat evolution in contact with catalyst.

INCOMPATIBILITY (MATERIALS TO AVOID) Anhydrous chlorides of Fe, Sn, Al; Peroxides of Fe and Al; alkali metal hydroxides.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels; evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Detached outside storage is preferred. Inside storage in standard flammable liquids storage cabinet. Isolate from combustible materials.

OTHER PRECAUTIONS

SIGNATURE

DATE

329-5805B

PRODUCT DESIGNATION

03-329-6305
Isopropyl Iodide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2-Iodopropane	FORMULA $\text{CH}_3\text{CHI}\cdot\text{CH}_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 169.99

BOILING POINT 90°C	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -90°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.74		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.14		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES --		

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point emits toxic fumes of iodates.

PRODUCT DESIGNATION

Isopropyl Iodide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Slight

REVELANT SYMPTOMS OF EXPOSURE

Nausea, vomiting, diarrhea, dizziness, visual disturbances, irritability, drowsiness, central nervous system depressant.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

329-6305B

CAS:000106514

DK26250

PRODUCT DESIGNATION

03-341-1906

Quinone

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Chinone

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Benzoquinone

FORMULA

$$\text{OC}_6\text{H}_4\text{O}$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral-human LDLO 40 mg/kg			130		rat	
Lowest published lethal concentration in air						
inhalation - mouse 320 mg/C.M.						

SECTION III PHYSICAL DATA MW - 108.09

BOILING POINT	° F.	VAPOR PRESSURE	
sublimes		at 25°C.	0.1 mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
116°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.318			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Very slightly soluble			
APPEARANCE AND ODOR			
Yellow crystals, pungent odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		
METHOD USED		LOWER

EXTINGUISHING MEDIA

Water, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Quinone

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL 0.1 PPM, 0.4 mg/C.M. CARCINOGENIC neoplastic

PRINCIPLE ROUTES OF ABSORPTION SKIN AND EYE
Inhalation, ingestion IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE Irritation and damage to skin & eyes, loss of vision, vomiting, collapse, coma.

EFFECTS OF CHRONIC EXPOSURE
Eye damage, discoloration, severe irritation, swelling.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give milk, emetic, get medical aid; inhalation - rest; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Collect with brush onto a paper, burn on iron pan in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
Coveralls	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

341-1906B

CAS:000108463

VG96250

PRODUCT DESIGNATION

03-348-0607
ResorcinolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

m dihydroxybenzene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,3 Benzene Diol

FORMULA

 $C_6H_4(OH)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO-oral-human 29 mg/kg			301	3360	rat rabbit	

SECTION III PHYSICAL DATA

MW - 110.11

BOILING POINT 277°C.	° F.	VAPOR PRESSURE at 108°C.	1 mm Hg.
MELTING POINT 110°C.	° F.	VAPOR DENSITY (Air = 1) 3.79	
SPECIFIC GRAVITY (H ₂ O = 1) 1.285		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 147		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR	White crystal that turns pink when exposed to light, unpleasant sweet taste.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 261°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED C.C.		LOWER
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Resorcinol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 10 PPM, 45 mg/C.M.

CARCINOGENIC neoplastic

PRINCIPLE ROUTES OF ABSORPTION

Ingestion, skin, inhalation of dust.

SKIN AND EYE

IRRITATION Moderate

REVELANT SYMPTOMS OF EXPOSURE

Hyperemia, itching, dermatitis, restlessness, cyanosis, dizziness; tremors, convulsions and death.

EFFECTS OF CHRONIC EXPOSURE

Possible liver, kidney and lung damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash eye and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Collect with brush onto a sheet of paper for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With chemical cartridge filler

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

348-0607B

CAS:000563417

VT35000

PRODUCT DESIGNATION

03-357-1708
Semicarbazide HydrochlorideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Semicarbazide Hydrochloride

FORMULA

 $\text{NH}_2\text{COH}_2\text{N} \cdot \text{HCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose - oral - rat 10 mg/kg.						

SECTION III PHYSICAL DATA

MW - 111.54

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

173°C.D.

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

very soluble

APPEARANCE AND ODOR
Crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

none available

FLAMMABLE
(EXPLOSIVE)

UPPER

METHOD USED

LIMITS

LOWER

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION			
Semicarbazide Hydrochloride			
SECTION V HEALTH HAZARD DATA			
TOXIC LEVEL		<div style="display: flex; justify-content: space-between;"> Teratogen CARCINOGENIC </div>	
none available		no	
PRINCIPLE ROUTES OF ABSORPTION		SKIN AND EYE	
Inhalation, ingestion, skin		IRRITATION Severe	
REVELANT SYMPTOMS OF EXPOSURE Irritation of skin, eyes and mucous membranes, gastroenteric disturbances, anemia.			
EFFECTS OF CHRONIC EXPOSURE			
Blood and liver damage, loss of appetite.			
EMERGENCY AND FIRST AID PROCEDURES			
Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from skin & eyes.			
SECTION VI REACTIVITY DATA			
CONDITIONS CONTRIBUTING TO INSTABILITY			
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION			
INCOMPATABILITY (MATERIALS TO AVOID)			
HAZARDOUS DECOMPOSITION PRODUCTS			
SECTION VII SPILL OR LEAK PROCEDURES			
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED			
WASTE DISPOSAL METHOD			
SECTION VIII SPECIAL PROTECTION INFORMATION			
VENTILATION REQUIREMENTS LOCAL EXHAUST		PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE	
MECHANICAL (GENERAL)		Goggles	
		GLOVES	
SPECIAL		Rubber	
		RESPIRATOR	
OTHER PROTECTIVE EQUIPMENT		Self-contained	
SECTION IX SPECIAL PRECAUTIONS			
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE			
OTHER PRECAUTIONS			
SIGNATURE		DATE	

357-1708B

CAS:000060413

WL25500

PRODUCT DESIGNATION

03-357-2708
Strychnine SulfateMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Strychnine Sulfate

FORMULA

 $(C_{21}H_{22}N_2O_2)_2 \cdot H_2SO_4 \cdot 5H_2O$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			5		rat	
Lowest published lethal dose				1.7	rat	
Oral-human 30 mg/kg			5		bird	

SECTION III PHYSICAL DATA

MW - 856.96

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

200°C.

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

3

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Colorless, odorless, bitter crystal.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

not available

FLAMMABLE
(EXPLOSIVE)

UPPER

METHOD USED

LIMITS

LOWER

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Strychnine Sulfate

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

0.15 mg/C.M.

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION slight

REVELANT SYMPTOMS OF EXPOSURE Increase in deep reflexes, stiffening of knees, extension spasms in arms and legs, death by respiratory failure.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

If symptoms have begun, avoid trying to make vomit; keep quiet, artificial respiration as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

357-2708B

PRODUCT DESIGNATION

03-357-3908
SuccinonitrileMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Ethylene dicyanide

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Succinonitrile

FORMULA

CN(CH₂)₂CN

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
					rat	

SECTION III PHYSICAL DATA MW - 80.09

BOILING POINT 267°C.	° F.	VAPOR PRESSURE at 100°C	mm Hg.
			2
MELTING POINT 58°C	° F.	VAPOR DENSITY (Air = 1)	
		2.1	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.02			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
12.8			

APPEARANCE AND ODOR

Colorless, odorless, waxy material.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 270°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED Closed Cup		LOWER

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical - water or foam may cause frothing.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Succononitrile

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TWA-TLV-6 PPM, 20 mg/c.m. (NIOSH Value)

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE Dizziness, rapid respiration, headache, drowsiness, drop in blood pressure, rapid pulse, unconsciousness.

EFFECTS OF CHRONIC EXPOSURE Dizziness, weakness, hoarseness, lung congestion, eye irritation, loss of weight and appetite.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - amyl nitrite inhalation, get medical aid; if swallowed - give emetic, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

With acid may yield HCN

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

357-3908B

CAS:000543204

WH49000

PRODUCT DESIGNATION

03-357-4108
Succinyl ChlorideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Succinyl Chloride

FORMULA

 $\text{ClOC}(\text{CH}_2)_2\text{COCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Intraperitoneal - mouse	LD50 - 62 mg/kg					

SECTION III PHYSICAL DATA

MW - 154.99

BOILING POINT

193°C

° F.

VAPOR PRESSURE

mm Hg.

MELTING POINT

17°C

° F.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

1.38

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

decomposes

VOLATILE

% Vol.

% Wt

APPEARANCE AND ODOR

Fuming, highly refractive liquid.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

none available

FLAMMABLE
(EXPLOSIVE)

UPPER

METHOD USED

LIMITS

LOWER

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical - do not use foam or water.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

HCl is produced with water addition.

PRODUCT DESIGNATION Succinyl Chloride	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL None available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion	SKIN AND EYE IRRITATION Severe
RELEVANT SYMPTOMS OF EXPOSURE Cyanosis, headache, coughing, dizziness, weakness, pulmonary edema; on skin contact - severe pain, burns.	
EFFECTS OF CHRONIC EXPOSURE Erosion of teeth, jaw necrosis, bronchial irritation and chronic cough.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - artificial respiration as needed; if swallowed - drink water, milk of magnesia, get medical aid; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID) Avoid water	
HAZARDOUS DECOMPOSITION PRODUCTS Produces HCl.	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR Self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Store in cool, dry well-ventilated place inside storage in flammable liquids storage cabinet.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

357-4108B

CAS-000063741

W084000

PRODUCT DESIGNATION

03-357-5009
SulfanilamideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

P-Aminobenzenesulfonamide

CHEMICAL NAME AND SYNONYMS

FORMULA

Sulfanilamide

 $4-(\text{NH}_2)\text{C}_6\text{H}_4\text{SO}_2\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human LDLO 500 mg/kg			3900		Rat	
			2000		Dog	
			3700		Mouse	
			2000		Rabbit	

SECTION III PHYSICAL DATA MW - 172.22

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

166° C.

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

1.08

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

.75

APPEARANCE AND ODOR

White to yellow powder.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

None available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Sulfanilamide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

Yes

PRINCIPLE ROUTES OF ABSORPTION

Ingestion

SKIN AND EYE

IRRITATION

No

RELEVANT SYMPTOMS OF EXPOSURE Diarrhea, jaundice, cyanosis, headache, dizziness,
crystalluria, nausea, vomiting.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

Ingestion - large quantities - induce vomiting, drink
large quantities of water, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

357-5009B

CAS:000079276

KI82250

PRODUCT DESIGNATION

Tetra bromoethane
(acetylene tetrabromide)

03-365-0839

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,1,2,2 Tetrabromo Ethane

FORMULA

 $\text{CHBr}_2\text{CHBr}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			400		rabbit	
			400		guinea pig	

SECTION III PHYSICAL DATA

MW 345.7

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

decomposition 239° to 242°C

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

11.92

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

2.9638 (20°/4°C)

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Colorless to yellow liquid with chloroform-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

--

FLAMMABLE
(EXPLOSIVE)

UPPER

METHOD USED

LIMITS

LOWER

EXTINGUISHING MEDIA

Use water for cooling containers.

SPECIAL FIRE FIGHTING PROCEDURES

Full protective clothing

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Tetrabromoethane

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL TLV - 1 ppm, 14 mg/.M. CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION SKIN AND EYE
Inhalation of vapor IRRITATION yes

REVELANT SYMPTOMS OF EXPOSURE Narcotic properties; is a c.n.s. and respiratory depressant;
drowsiness, etc. Possibility of liver and kidney damage.

EFFECTS OF CHRONIC EXPOSURE
--

EMERGENCY AND FIRST AID PROCEDURES Remove from exposure, give artificial respiration (if necessary)
rest and keep warm. Do not give stimulants.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS
Toxic fumes of carboynl bromide.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION Full protection

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR W/Appropriate filter

OTHER PROTECTIVE EQUIPMENT
(face shield), rubber apron.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE
Be sure there is adequate ventilation.

OTHER PRECAUTIONS

SIGNATURE	DATE
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365-0839B

PRODUCT DESIGNATION

03-365-1809
Tetrabromophthalic Anhydride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Tetrabromophthalic Anhydride	FORMULA C_6Br_4COOCO

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 463.74

BOILING POINT --	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 280°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O very slightly soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR crystalline		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA water, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Tetrabromophthalic Anhydride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation (mainly)

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE Coughing, sneezing, respiratory system irritation, dermatitis, eye irritation.

EFFECTS OF CHRONIC EXPOSURE Bronchitis, eye irritation, inflammation of respiratory tract; bloody nasal discharge. Sensitization

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, oxygen to relieve respiratory distress; wash skin & eyes; get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

365-1809B

PRODUCT DESIGNATION

03-365-2309
Tetra-N-Butylammonium Iodide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tetra-N-Butylammonium Iodide

FORMULA

 $(C_4H_9)_4NI$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			1990		Rat	

SECTION III PHYSICAL DATA MW - 369.38

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
148°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
slightly soluble			
APPEARANCE AND ODOR			
crystal leaves			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		
METHOD USED		LOWER
EXTINGUISHING MEDIA		
Water, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Tetra-N-Butylammonium Iodide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE Irritates eyes & skin, nausea, vomiting, dizziness, central nervous system depression.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

365-2309B

CAS:000079345

K185750

PRODUCT DESIGNATION

1,1,2,2-Tetrachloroethane
03-365-2809MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,1,2,2-Tetrachloroethane

FORMULA

 $\text{CHCl}_2\text{CHCl}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
lowest published toxic dose						
oral - human 30 mg/kg.						
LDLO - oral - human 50 mg/kg						
lowest published lethal concentration in air -						
inhalation - rat 1000 PPM						

SECTION III PHYSICAL DATA MW - 167.86

BOILING POINT	° F.	VAPOR PRESSURE	
146.3°C		at 21°C.	5 mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-36°C.		5.79	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.6 at 20°C/4°C.			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
0.29 g/100 g water			

APPEARANCE AND ODOR

Heavy, colorless, mobile liquid, chloroform-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
Probably noncombustible		LOWER
METHOD USED		
EXTINGUISHING MEDIA		

SPECIAL FIRE FIGHTING PROCEDURES

Use water for cooling containers exposed by fire. Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Upon heating may decompose to produce flammable and toxic materials.

PRODUCT DESIGNATION

1,1,2,2 Tetrachloroethane

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 5 PPM, 35 mg/CM

CARCINOGENIC No

PRINCIPAL ROUTES OF ABSORPTION

Inhalation of vapor, percutaneous absorption of liquid

SKIN AND EYE

IRRITATION

Severe

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of eyes and nose, followed by headache and nausea.
Jaundice, cyanosis and C.N.S. depression may appear.

EFFECTS OF CHRONIC EXPOSURE

Headache, tremor, dizziness, peripheral paresthesia, hypesthesia,
or anesthesia. Can produce severe damage to liver and kidneys.

EMERGENCY AND FIRST AID PROCEDURES

Give
artificial respiration until consciousness returns. Remove clothing if contaminated.
Rest and keep warm. Obtain medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Nitrogen tetroxide, potassium, potassium hydroxide, sodium.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb spills on paper towels; evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety glasses

MECHANICAL (GENERAL)

GLOVES

Solvent proof synthetic

SPECIAL

Apron (solvent proof synthetic)

RESPIRATOR

Self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

>20000 ppm self-contained breathing apparatus.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in dark, cool place.

OTHER PRECAUTIONS

SIGNATURE

DATE

365-2809B

PRODUCT DESIGNATION

03-365-3310
03-365-3309
Tetrachloroethylene
(Perchloroethylene)

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Ethylene Tetrachloride

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tetrachloroethylene Perchloroethylene

FORMULA

 $\text{Cl}_2\text{C}=\text{CCl}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			200		rat	
LDLO oral - human 500 mg/kg			8890		mouse	
Lowest published toxic concentration in air						
inhalation - human 260 ppm	Systemic					
" " 280 "	Eye					
" " 600 "	CNS					

SECTION III PHYSICAL DATA

MW - 165.85

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
121.2		22°C	15.8
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-22.4°C		5.83	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.631			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
1			

APPEARANCE AND ODOR

colorless liquid, chloroform-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
nonflammable		LOWER
METHOD USED		

EXTINGUISHING MEDIA

water spray, CO₂ or dry chemical -

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated to decomposition point (above 140°C) emits highly toxic fumes of chlorides.

PRODUCT DESIGNATION

Tetrachloroethylene (Perchloroethylene)

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 100 PPM, 670 mg/C.M.

teratogen CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion, skin

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Dizziness, nausea, vomiting, loss of weight, muscular weakness,
acute gastrointestinal distress.

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage, weight loss, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, remove from exposure; if swallowed -
wash mouth, induce vomiting, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

Upon decomposition, gives off toxic chloride fumes.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels; evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

In hood

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in closed container in cool place.

OTHER PRECAUTIONS

SIGNATURE

DATE

365-3309B

CAS:000087876

MX77000

PRODUCT DESIGNATION

03-365-3809

Tetrachlorohydroquinone

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tetrachlorohydroquinone

FORMULA

 $C_6Cl_4(OH)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose intraperitoneal - mouse	25 mg/kg.					

SECTION III PHYSICAL DATA MW - 245.88

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
240°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
insoluble			
APPEARANCE AND ODOR			
yellow crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
Water, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Tetrachlorohydroquinone

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION

Severe

REVELANT SYMPTOMS OF EXPOSURE

Tremors, convulsions, shortness of breath, respiratory

system irritation.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - drink water, epsom salts solution, get medical aid; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber gloves

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

365-3809B

PRODUCT DESIGNATION

03-365-4309
Tetrachlorophthalic Anhydride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Tetrachlorophthalic Anhydride	FORMULA C_6Cl_4COOCO

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 285.92

BOILING POINT 371 ⁰ C	⁰ F.	VAPOR PRESSURE mm Hg.
MELTING POINT 256 ⁰ C	⁰ F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O decomposes	VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR needle-like crystals.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION Tetrachlorophthalic Anhydride	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL none available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION Ingestion, inhalation (mainly)	SKIN AND EYE IRRITATION Moderate
RELEVANT SYMPTOMS OF EXPOSURE Coughing, sneezing, respiratory irritation, dermatitis, eye irritation.	
EFFECTS OF CHRONIC EXPOSURE Bronchitis, eye irritations, inflammation of respiratory tract; bloody nasal discharge.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest, oxygen to relieve respiratory distress; wash skin & eyes; get medical aid.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Safety goggles
MECHANICAL (GENERAL)	GLOVES
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

365-4309B

PRODUCT DESIGNATION

03-365-4809
03-365-4819
Tetrahydrofuran

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

1,4 Epoxy butane

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Cyclotetramethylene Oxide

FORMULA

 C_4H_8O

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral human LDLO 50 mg/kg						
Lowest published lethal dose						
Oral - rat 3000 mg/kg						
Intraperitoneal - rat 500 mg/kg						
TCLO human 25,000 ppm CNS						

SECTION III PHYSICAL DATA

MW - 72.10

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
65°C.		at 15°C.	114
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-109°C		2.5	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.89			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
soluble			
APPEARANCE AND ODOR			

Colorless liquid, ether-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 11.8%
6°F.		LOWER 2%
METHOD USED		

EXTINGUISHING MEDIA

Alcohol foam, carbon dioxide, dry chemical. Water may be ineffective.

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles & self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
Tetrahydrofuran	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
200 PPM, 590 mg/C.M.	no
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Ingestion, inhalation	IRRITATION Severe
RELEVANT SYMPTOMS OF EXPOSURE	
Eye and mucous membrane irritation, headache.	
EFFECTS OF CHRONIC EXPOSURE	
Liver and kidney damage - by ingestion.	
EMERGENCY AND FIRST AID PROCEDURES	
If swallowed - give emetic, get medical aid; inhalation - rest, oxygen as needed; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATIBILITY (MATERIALS TO AVOID)	
May form explosive mixture with sodium aluminum hydride.	
HAZARDOUS DECOMPOSITION PRODUCTS	
May form peroxide when exposed to light or air.	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Absorb on paper towels; evaporate in hood.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	With proper filter
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Store in cool, dark well-ventilated area. If inside, store in standard flammable liquids cabinet.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

365-4809B

PRODUCT DESIGNATION

03-365-5809
Tetramethylammonium Bromide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tetramethylammonium Bromide

FORMULA

 $(\text{CH}_3)_4\text{NBr}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

MW - 154.06

BOILING POINT

° F.

subl. > 360°C.

VAPOR PRESSURE

mm Hg.

MELTING POINT

° F.

d > 230°C.

VAPOR DENSITY (Air = 1)

SPECIFIC GRAVITY (H₂O = 1)

EVAPORATION RATE (_____ = 1)

1.56

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

55

APPEARANCE AND ODOR

Crystalline

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

None available

FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER

LOWER

METHOD USED

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Tetramethylammonium Bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Moderate

RELEVANT SYMPTOMS OF EXPOSURE

Central nervous system depression, irritation of respiratory system.

EFFECTS OF CHRONIC EXPOSURE

Possible liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting,
get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

Self-contained breathing apparatus.

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

365-5809B

PRODUCT DESIGNATION

03-365-5909

Tetramethylammonium Chloride

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
---------------------	-------------------------

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tetramethylammonium Chloride

FORMULA

 $(\text{CH}_3)_4\text{N Cl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
				40	mouse	
Lowest published lethal dose -				See Note		
Subcutaneous - rabbit - 6 mg/kg.						

SECTION III PHYSICAL DATA

MW - 109.62

BOILING POINT > 300°C. sublimes	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 425°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.17		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O soluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless crystal.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION	
Tetramethylammonium Chloride	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	
None available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION	
Inhalation, ingestion	SKIN AND EYE IRRITATION moderate
REVELANT SYMPTOMS OF EXPOSURE Central nervous system depression, irritation of respiratory system.	
EFFECTS OF CHRONIC EXPOSURE possible liver and kidney damage.	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

365-5909B

PRODUCT DESIGNATION

03-365-6009

Tetramethylammonium Hydroxide

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tetramethylammonium Hydroxide

FORMULA

 $(\text{CH}_3)_4\text{NOH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose						
subcutaneous - mouse 20	mg/kg					

SECTION III PHYSICAL DATA MW - 91.15

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
decomposes			
MELTING POINT	° F.	VAPOR DENSITY: (Air = 1)	
25°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
~ 1.0			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
151			
APPEARANCE AND ODOR			
a liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Water, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Tetramethylammonium Hydroxide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL none available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION inhalation, ingestion SKIN AND EYE IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Severe irritation of eyes and respiratory system; if swallowed - alkali attack on digestive system.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - drink milk, get medical aid, gastric lavage; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
SPECIAL	GLOVES
OTHER PROTECTIVE EQUIPMENT	RESPIRATOR
	Self-contained

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE	DATE
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365-6009B

CAS:000075581

PA10500

PRODUCT DESIGNATION

03-365-6109
Tetramethylammonium IodideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tetramethylaminonium Iodide

FORMULA

 $(CH_3)_4NI$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose -						
1. Intraperitoneal - mouse - 40 mg/kg						
2. Subcutaneous - mouse 33 mg/kg						
3. Intravenous - mouse 3 mg/kg						

SECTION III PHYSICAL DATA

MW - 201.06

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
Decomposes 230°C		EVAPORATION RATE (_____ = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		VOLATILE	% Vol. % Wt.
1.84			
SOLUBILITY IN WATER Ptc/100 ptc H ₂ O			
slightly soluble			
APPEARANCE AND ODOR			
pale yellow crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
none available		
METHOD USED		
EXTINGUISHING MEDIA		
water, carbon dioxide, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES		
Wear full protective clothing		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

Tetramethylammonium Iodide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE

Nausea, vomiting, diarrhea, slurred speech, visual disturbances, drowsiness, coma.

EFFECTS OF CHRONIC EXPOSURE

Neurotoxic effects.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

365-6109B

PRODUCT DESIGNATION

03-365-7309
Tetramethylene Chloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS <u>1,4 Dichlorobutane</u>	FORMULA <u>ClC₂H₄Cl</u>

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 127.02

BOILING POINT <u>155°C</u>	° F.	VAPOR PRESSURE at 20°C	4 mm Hg.
MELTING POINT <u>-39°C</u>	° F.	VAPOR DENSITY (Air = 1)	4.4
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt

APPEARANCE AND ODOR

Colorless, mobile liquid with mild, pleasant odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT <u>126°F</u>	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED <u>closed cup</u>		LOWER
EXTINGUISHING MEDIA <u>carbon dioxide, dry chemical</u>		

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Tetramethylene Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion

SKIN AND EYE
IRRITATION moderate

REVELANT SYMPTOMS OF EXPOSURE
Eye irritation, headache, vomiting, drowsiness,
narcosis.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES
Inhalation - rest; if swallowed - give emetic, get
medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear self-contained breathing apparatus.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

365-7309B

CAS:000062555

AC89250

PRODUCT DESIGNATION

03-365-8509
ThioacetamideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Thioacetamide

FORMULA

 CH_3CSNH_2

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose - oral - rat 200 mg/kg.						

SECTION III PHYSICAL DATA MW - 75.13

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
16.3			

APPEARANCE AND ODOR

Colorless leaflets, slight odor of mercaptans.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Thioacetamide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Slight

REVELANT SYMPTOMS OF EXPOSURE

Drowsiness, fatigue, nausea, acidosis, skin eruptions.

EFFECTS OF CHRONIC EXPOSURE

Liver damage

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - induce vomiting, get medical aid;
inhalation - rest.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Rubber

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

365-8509B

CAS:007719097

XM51500

PRODUCT DESIGNATION

03-365-9309
Thionyl ChlorideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Sulfurous Oxychloride

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Thionyl Chloride

FORMULA

SOCl₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 118.97

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
79°C		at 21.4°C	100
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-105°C		4.1	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.64			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
decomposes			
APPEARANCE AND ODOR			

Colorless to yellow to red liquid.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
Not flammable		
METHOD USED		LOWER
EXTINGUISHING MEDIA		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Thionyl Chloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION

severe

REVELANT SYMPTOMS OF EXPOSURE

respiratory tract.

Irritation of skin, eyes, mucous membranes and

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - drink water, milk of
magnesia, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Water

HAZARDOUS DECOMPOSITION PRODUCTS

Reacts with water to produce HCl and SO₂.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Cover with bicarbonate

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

365-9309B

CAS:000908185

DC05250

PRODUCT DESIGNATION

03-365-9709
ThiophenolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Phenyl Mercaptain

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Thiophenol

FORMULA

 C_6H_5SH

SECTION II HAZARDOUS INGREDIENTS 6 5

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ PPM	
			ORAL	PERCUT.	SPECIES	CONC.
			24		Bird	
			46		Rat	
					Mouse	28
					Rat	33
				300	Rat	
				134	Rabbit	

SECTION III PHYSICAL DATA MW - 110.2

BOILING POINT 168°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -15°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.07		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O very slightly soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR liquids, penetrating odor.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
none available		
METHOD USED		LOWER
EXTINGUISHING MEDIA		
carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Thiophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC
no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION severe

REVELANT SYMPTOMS OF EXPOSURE

Skin and mucous membrane irritation, headache, dizziness, dermatitis.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - artificial respiration as necessary; if swallowed - induce vomiting, get medical aid, gastric lavage; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

REGGINATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

365-9709B

CAS:000079196

VT42000

PRODUCT DESIGNATION

03-366-0401
ThiosemicarbazideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

3 Thiosemicarbazide

FORMULA

 $\text{NH}_2\text{CSNHNH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			9		bird	
			9		rat	
			10		dog	
			20		cat	
Intraperitoneal - mouse LD ₅₀ 1 mg/kg						
Intraperitoneal - guinea pig - LD ₅₀ 24 mg/kg						

SECTION III PHYSICAL DATA MW - 91.13

BOILING POINT sublimes	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 183°C	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O S		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Thiosemicarbazide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC NO

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion, skin

SKIN AND EYE
IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE
Irritation of skin, eyes and mucous membranes, gastroentric disturbances, anemia.

EFFECTS OF CHRONIC EXPOSURE
Blood and liver damage, loss of appetite.

EMERGENCY AND FIRST AID PROCEDURES
Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

MECHANICAL (GENERAL)

Goggles
GLOVES

SPECIAL

Rubber
RESPIRATOR
Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

366-0401B

CAS: 000062566

YU28000

PRODUCT DESIGNATION

Thiourea
03-366-0901MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Thiocarbamide	FORMULA $\text{NH}_2\text{-CS-NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			125		rat	
			11,500		mouse	
TCLO oral - woman	1600 mg/kg - 5 weeks		6,985		rabbit	

SECTION III PHYSICAL DATA

MW - 76.12

BOILING POINT ° F. d	VAPOR PRESSURE mm Hg.
MELTING POINT ° F. 180-2°C.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 1.41	EVAPORATION RATE (____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O 9.2	VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Rhombic crystals.	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS Burns to form SO ₂ fumes.		

PRODUCT DESIGNATION
Thiourea

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC
neoplastic effects

PRINCIPLE ROUTES OF ABSORPTION
Ingestion, inhalation of dust

SKIN AND EYE
IRRITATION slight

RELEVANT SYMPTOMS OF EXPOSURE
Dermatitis

EFFECTS OF CHRONIC EXPOSURE
Ingestion - depression of bone marrow, anemia, leukopenia, allergic skin eruptions.

EMERGENCY AND FIRST AID PROCEDURES
Inhalation - rest; if swallowed - induce vomiting, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS
Oxides of sulfur and nitrogen.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES
SPECIAL	RESPIRATOR
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

366-0901B

PRODUCT DESIGNATION

03-366-1501
O-Tolidine Dihydrochloride

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS O-Tolidine Dihydrochloride	FORMULA (HClNH ₂ (CH ₃)C ₆ H ₄) ₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.

SECTION III PHYSICAL DATA

MW - 285.22

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
>340°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
0.9			
APPEARANCE AND ODOR			
Scales			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER LOWER
None available		
METHOD USED		
EXTINGUISHING MEDIA		
Carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		
Wear full protective clothing.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

O-Toluidine Dihydrochloride

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Slight

REVELANT SYMPTOMS OF EXPOSURE

Cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions.

EFFECTS OF CHRONIC EXPOSURE

Weight loss, anemia, weakness.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

366-1501B

CAS:000108883

XS52500

PRODUCT DESIGNATION

Toluene
03-366-2401
03-366-2431

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Toluol

FORMULA

 $C_6H_5CH_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ P.P.M.	
			ORAL	PERCUT.	SPECIES	CONC.
					Mouse	5300
Oral - human LDLO 50 mg/kg			5000		Rat	
TCLO inhalation - human - 200 PPM CNS				14,000	Rabbit	
TCLO inhalation - man 100 ppm PSY						

SECTION III PHYSICAL DATA

MW - 92.13

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
110.4°C.		at 30°C.	36.7
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-95°C. to -94.5°C.		3.14	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Colorless liquid; benzol-like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
40°F.		7.1
METHOD USED		LOWER
C.C.		1.2

EXTINGUISHING MEDIA

Use carbon dioxide, dry chemical or foam. Water may be ineffective.

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Vapors form explosive mixtures with air.

PRODUCT DESIGNATION
Toluene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV 100 PPM, 375 mg/C.M.

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation of vapor, ingestion

SKIN AND EYE

IRRITATION moderate

RELEVANT SYMPTOMS OF EXPOSURE Dizziness, headache, nausea, vomiting, shallow, rapid respiration; paralysis, unconsciousness, convulsions, deliriums; tightness in chest.

EFFECTS OF CHRONIC EXPOSURE Headache, loss of appetite, drowsiness, nervousness, pallor, anemia, petechiae, and abnormal bleeding.

EMERGENCY AND FIRST AID PROCEDURES Remove from exposure; give artificial respiration with oxygen, do not give epinephrine or ephedrine or related drugs. Obtain medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Potentially hazardous reaction with mixture of nitric and sulfuric acids.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb on paper towels, evaporate in hood.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Neoprene

RESPIRATOR

W/appropriate filter

OTHER PROTECTIVE EQUIPMENT

In high concentrations positive pressure air mask.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect against physical damage. Storage should be in a standard flammable liquids storage room or cabinet.

OTHER PRECAUTIONS

SIGNATURE

DATE

366-2401B

PRODUCT DESIGNATION

03-366-3401
Toluhydroquinone

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tolyl Hydroquinone

FORMULA

$$\text{CH}_3\text{C}_6\text{H}_3(\text{OH})_2$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO - oral - rat 200 mg/kg						

SECTION III PHYSICAL DATA MW - 124.13

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
--			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
129°C.			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
soluble			
APPEARANCE AND ODOR			
leaflets			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		
METHOD USED		LOWER
EXTINGUISHING MEDIA		
Carbon dioxide, dry chemical, water.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Toluhydroquinone

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

None available

SKIN AND EYE

Inhalation, ingestion, skin

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE Nausea, dizziness, increased respiration, headache, cyanosis, delirium and collapse, depigmentation of eyes and skin.

EFFECTS OF CHRONIC EXPOSURE

Eye damage, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - induce vomiting, gastric lavage, medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

366-3401B

CAS:000108441

XU28000

PRODUCT DESIGNATION

03-366-3901
M-ToluidineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS 3-Amino Toluene	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 3-Methyl Aniline	FORMULA $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			974		rat	
1. Lowest published lethal dose						
intraperitoneal - mouse 150 mg/kg						

SECTION III PHYSICAL DATA MW - 107.2

BOILING POINT 203.4°C.	° F.	VAPOR PRESSURE at 41°C.	mm Hg.
MELTING POINT -31.3°C.	° F.	VAPOR DENSITY (Air = 1) 3.90	
SPECIFIC GRAVITY (H ₂ O = 1) 0.989		EVAPORATION RATE (____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR
Colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT N/A	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical, foam or water spray.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated emits highly toxic fumes.

PRODUCT DESIGNATION

M-Toluidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

Not available

CARCINOGENIC Neoplastic

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Yes

REVELANT SYMPTOMS OF EXPOSURE Cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions.

EFFECTS OF CHRONIC EXPOSURE

Weight loss, anemia, weakness.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - gash mouth, give emetic, get medical aid; wash from skin & eyes, skin may be washed with 5% acetic acid to aid removal.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

May react vigorously with oxidizing materials.

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Cover with a 9:1 mixture of sand and soda ash, put in cardboard box for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Outside or detached storage is preferred; store in dry, well-ventilated, cool location away from fire hazards.

OTHER PRECAUTIONS

SIGNATURE

DATE

366-3901B

CAS:000095534

XU29750

PRODUCT DESIGNATION

03-366-4001
O-ToluidineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

2-Methyl Aniline

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 Amino Toluene

FORMULA

 $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			900		Rat	
				3250	Rabbit	

SECTION III PHYSICAL DATA MW - 107.2

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
200.4°C.		at 44°C	1
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-16.4°C.		3.7	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.004			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
1.5			
APPEARANCE AND ODOR			
Colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE)	UPPER
185°F.	LIMITS	LOWER
METHOD USED		
C.C.		
EXTINGUISHING MEDIA		
Carbon dioxide, dry chemical, foam or water spray.		

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits toxic fumes when heated.

PRODUCT DESIGNATION

O-Toluidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 5 PPM, 22 mg/C.M.

CARCINOGENIC

neoplastic

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Yes

REVELANT SYMPTOMS OF EXPOSURE Cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions.

EFFECTS OF CHRONIC EXPOSURE

Weight loss, anemia, weakness.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash skin and eyes, skin may be washed with 5% acetic acid to aid removal.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Can react with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Add mixture (9:1) sand to soda ash. Put into cardboard box for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber (butyl)

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect container against physical damage. Outside or detached storage is preferred. Store in a cool, dry, well-ventilated area.

OTHER PRECAUTIONS

SIGNATURE

DATE

366-4001B

CAS:000106490

XU31500

PRODUCT DESIGNATION

03-366-4101
P-ToluidineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

P-Methyl Aniline

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Amino Toluene

FORMULA

 $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2\cdot\text{HCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
LDLO oral - human	50 mg/kg		656		Rat	
			42		Bird	

SECTION III PHYSICAL DATA MW - 107.2

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
200.6°C.		at 42°C.	1
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
43.8°C.		3.90	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.046			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
0.74			
APPEARANCE AND ODOR			

crystals

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
188°F.		
METHOD USED		LOWER
C.C.		

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical, foam and water spray.

SPECIAL FIRE FIGHTING PROCEDURES

Wear full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Emits toxic fumes when heated.

PRODUCT DESIGNATION
P-Toluidine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
Not available

CARCINOGENIC
yes

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion, skin

SKIN AND EYE
IRRITATION Yes

RELEVANT SYMPTOMS OF EXPOSURE
Cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions.

EFFECTS OF CHRONIC EXPOSURE
Weight loss, anemia, weakness.

EMERGENCY AND FIRST AID PROCEDURES
Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash from skin & eyes, skin may be washed with 5% acetic acid to aid removal.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react vigorously with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Cover with a (9:1) sand to soda ash mixture. Transfer to box for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Safety goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter

OTHER PROTECTIVE EQUIPMENT

Protective clothing with self-contained breathing apparatus.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect container from physical damage, outside or detached storage preferred. Store in cool, dry, well-ventilated area.

OTHER PRECAUTIONS

SIGNATURE

DATE

366-4101B

CAS:000540238

XU75250

PRODUCT DESIGNATION

03-366-4401
P-Toluidine HydrochlorideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

P-Amino toluene hydrochloride

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

P-Methyl analine hydrochloride

FORMULA

 $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2\cdot\text{HCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Note: LD50 intraperitoneal - rat	399 mg/kg		1285		rat	

SECTION III PHYSICAL DATA MW - 143.63

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
257.5°C.			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
243°C.			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
22.9			
APPEARANCE AND ODOR			
Grey white crystals.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
N/A		LOWER
METHOD USED		
EXTINGUISHING MEDIA		
Carbon dioxide, dry chemical, foam or water spray.		
SPECIAL FIRE FIGHTING PROCEDURES		
Wear full protective clothing.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		
Emits toxic fumes when heated.		

PRODUCT DESIGNATION	
P-Toluene hydrochloride	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL	CARCINOGENIC
Not available	yes
PRINCIPLE ROUTES OF ABSORPTION	SKIN AND EYE
Inhalation, ingestion, skin	IRRITATION Slight
REVELANT SYMPTOMS OF EXPOSURE	Cyanosis, air hunger, nausea, vomiting, low blood pressure, convulsions.
EFFECTS OF CHRONIC EXPOSURE	Weight loss, anemia, weakness.
EMERGENCY AND FIRST AID PROCEDURES	Inhalation - rest; if swallowed - wash mouth, give emetic, get medical aid; wash from skin & eyes, skin may be washed with 5% acetic acid to aid removal.
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
May react vigorously with oxidizing materials.	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Cover with a (9:1) sand to soda ash mixture. Transfer to box for disposal.	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Safety goggles
	GLOVES
SPECIAL	Rubber
	RESPIRATOR
With proper filter	
OTHER PROTECTIVE EQUIPMENT	
Protective clothing with self-contained breathing apparatus.	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Protect container from physical damage, outside or detached storage preferred. Store in cool, dry, well-ventilated area.	
OTHER PRECAUTIONS	
SIGNATURE	DATE

366-4401B

CAS: 000147820

BZ01750

PRODUCT DESIGNATION

03-366-7401

2,4,6-Tribromoaniline

MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2,4,6-Tribromoaniline

FORMULA

 $\text{Br}_3\text{C}_6\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose						
intraperitoneal - mouse	500 mg/kg.					

SECTION III PHYSICAL DATA

MW - 329.84

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
300°C			
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
122°C			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR			
Needle-like crystals.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Dry chemical or carbon dioxide. Water or foam may cause frothing.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

2,4,6 Tribromoaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Low

REVELANT SYMPTOMS OF EXPOSURE

Headache, nausea, vomiting, jaundice, convulsions.

EFFECTS OF CHRONIC EXPOSURE

Severe kidney damage, liver damage, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; wash skin & eyes; if swallowed -
remove by gastric lavage; give oxygen as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Mix with (9:1) sand to soda ash mixture, sweep into cardboard carton
for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR
Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect container against physical damage, separate from oxidizing materials.

OTHER PRECAUTIONS

SIGNATURE

DATE

366-7401B

PRODUCT DESIGNATION

03-366-7901
1,3,5 Tribromobenzene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,3,5 Tribromobenzene	FORMULA C₆H₃Br₃

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None Available			

SECTION III PHYSICAL DATA MW ~ 31.483

BOILING POINT 271°C at 765 mm	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT 120°C.	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Crystalline, aromatic odor.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water may be used to blanket fire, alcohol foam, carbon dioxide.		
SPECIAL FIRE FIGHTING PROCEDURES Self-contained mask.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

1,3,5 Tribromobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Skin, eye and throat irritation, CNS stimulation,

headache, dermatitis.

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - remove by gastric

lavage or emesis; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

May react with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb the spill with paper towels; evaporate in hood; then burn towels.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in cool, dark and well-ventilated area.

OTHER PRECAUTIONS

SIGNATURE

DATE

366-7901B

PRODUCT DESIGNATION

03-366-8401
1,2,3 Tribromopropane

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	

TRADE NAME AND SYNONYMS Glycerol Tribromohydrin	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 1,2,3-Tribromopropane	FORMULA $\text{CH}_2\text{BrCHBrCH}_2\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None	available		

SECTION III PHYSICAL DATA MW - 280.82

BOILING POINT 221	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT. 17°C.	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1) 2.44		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Crystalline		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA
Foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES
Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Tribromopropane

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion, skin

IRRITATION

Severe

REVELANT SYMPTOMS OF EXPOSURE

lungs, narcosis.

Eye and throat irritation, edema and hemorrhaging in

EFFECTS OF CHRONIC EXPOSURE

Heart and liver damage.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation - artificial respiration if needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

366-8401B

PRODUCT DESIGNATION

03-366-9401
2,4,6 - Trichloroaniline

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS 2,4,6 - Trichloroaniline	FORMULA $\text{Cl}_3\text{C}_6\text{H}_2\text{NH}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
		None available				

SECTION III PHYSICAL DATA MW - 196.47

BOILING POINT 262°C at 746 mm	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 78°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Needle-like crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Dry chemical or carbon dioxide. Water or foam may cause frothing.		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION

2,4,6 - Trichloroaniline

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Low

RELEVANT SYMPTOMS OF EXPOSURE Headache, nausea, vomiting, jaundice, convulsions.

EFFECTS OF CHRONIC EXPOSURE

Severe kidney damage, liver damage, dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; wash skin & eyes; if swallowed -
remove by gastric lavage; give oxygen as needed.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Mix with (9:1) sand to soda ash mixture, sweep into cardboard
carbon for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES
Rubber

SPECIAL

RESPIRATOR
Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Protect container against physical damage. Separate from oxidizing materials.

OTHER PRECAUTIONS

SIGNATURE

DATE

366-9401B

CAS-000120821

DC21000

PRODUCT DESIGNATION

03-366-9611
1,2,4-TrichlorobenzeneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,2,4 Trichlorobenzene

FORMULA

 $C_6H_3Cl_3$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			756		Rat	
			766		Mouse	

SECTION III PHYSICAL DATA MW - 181.44

BOILING POINT 213°C.	° F.	VAPOR PRESSURE at 38°C.	mm Hg.
MELTING POINT 17°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O Insoluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR Colorless liquid, aromatic odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
210		
METHOD USED		LOWER
OC		
EXTINGUISHING MEDIA		
Water may be used to blanket fire.		

SPECIAL FIRE FIGHTING PROCEDURES

Self-contained mask.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

1,2,4 Trichlorobenzene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV-5 PPM, 40 mg/C.M. ceiling value

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Skin irritation; eye and throat irritation, CNS stimulation, headache, dermatitis.

EFFECTS OF CHRONIC EXPOSURE

Liver damage, kidney damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - remove by gastric lavage or emesis; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Reacts vigorously with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb the spill with paper towels; evaporate in hood; then burn towels

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store in well-ventilated, dark, cool area.

OTHER PRECAUTIONS

SIGNATURE

DATE

366-9611B

PRODUCT DESIGNATION
Cement T-339
1,1,2 Trichloroethane
03-367-0084

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

Vinyl Trichloride

CHClCHCl2

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			1140		Rat	
				3730	Rabbit	
Oral - human LDLO 50 mg/kg						
Lowest published lethal concentration in air						
Inhalation - rat 500 PPM/8 hours.						

SECTION III PHYSICAL DATA

MW - 133.4

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
114°C.		at 35.2°C.	40
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
-35°C.		4.6	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.4416			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
0.44			
APPEARANCE AND ODOR			

Liquid, pleasant odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
None available		LOWER
METHOD USED		

EXTINGUISHING MEDIA

Information not available.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Cement T-339 1,1,2 Trichloroethane

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 10 PPM, 45 mg/C.M.

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

IRRITATION

Moderate

Inhalation or skin absorption.

REVELANT SYMPTOMS OF EXPOSURE

Irritation of eyes and nose, headache, nausea, cyanosis and

C.N.S. depression.

EFFECTS OF CHRONIC EXPOSURE

Headache, tremor, dizziness, peripheral paresthesia, hypesthesia,
or anesthesia.

EMERGENCY AND FIRST AID PROCEDURES

Artificial respiration, remove contaminated clothing. (Do
not give stimulants), 5% glucose I.V. (to maintain blood pressure)

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

If MAC < 2×10^4 PPM

OTHER PROTECTIVE EQUIPMENT

> 20000 PPM self-contained

Apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

367-0084B

PRODUCT DESIGNATION

Trichloroethylene
03-367-0102
03-367-0118
03-367-0143

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Acetylene Trichloride	FORMULA $\text{CHCl} = \text{C Cl}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			4920		Rat	
LDLO oral - human 50 mg/kg						
Lowest published toxic concentration in air						
inhalation - human 160 PPM - 83 minutes						
inhalation - man 110 PPM - 8 hrs.						
Lowest published lethal concentration in air						
inhalation - human 3000 PPM - 10 months.						

SECTION III PHYSICAL DATA MW - 131.38

BOILING POINT 87°C.	° F.	VAPOR PRESSURE at 25°C.	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	77
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
1.4556			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
0.1		--	
APPEARANCE AND ODOR Colorless liquid with aromatic odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 90°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, CO ₂		
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained gas mask.		
UNUSUAL FIRE AND EXPLOSION HAZARDS Reacts explosively with powdered aluminum.		

Trichloroethylene

TOXIC LEVEL

TLV - 100 PPM, 535 mg/C.M.

CARCINOGENIC **yes**

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Yes

RELEVANT SYMPTOMS OF EXPOSURE	Inhalation - headache, dizziness, nausea, unconsciousness; ingestion - same as inhalations; eye irritation.
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EFFECTS OF CHRONIC EXPOSURE

Anemia, liver damage, respiratory trouble.

EMERGENCY AND FIRST AID PROCEDURES	Inhalation - remove from exposure, rest, keep warm; ingestion - wash mouth, give emetic, get medical aid; wash from eyes.
------------------------------------	--

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

Reacts explosively with aluminum powder.

HAZARDOUS DECOMPOSITION PRODUCTS

Decomposes with heat or UV arc to produce phosgene.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Mop up

WASTE DISPOSAL METHOD

Burial - call safety department.

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Call industrial hygiene dept.

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety glasses

MECHANICAL (GENERAL)

11 11

GLOVES	
--------	--

Rubber gloves

SPECIAL

11 11

RESPIRATOR	
------------	--

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

367-0102B

CAS:000088062

SN15750

PRODUCT DESIGNATION

03-367-0602
2,4,6 TrichlorophenolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2,4,6 Trichlorophenol

FORMULA

 $\text{Cl}_3\text{C}_6\text{H}_2\text{OH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			820		Rat	

SECTION III PHYSICAL DATA MW - 197.44

BOILING POINT 246°C.	° F.	VAPOR PRESSURE at 77°C.	1 mm Hg.
MELTING POINT 69°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.09		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Needle-like crystal, colorless to yellow, phenol like odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Carbon dioxide, alcohol foam.

SPECIAL FIRE FIGHTING PROCEDURES

Self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

2,4,6 Trichlorophenol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC Yes

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Irritation or severe burns on skin & eyes; ingestion -
irritation of digestive system.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give epsom salts,
get medical aid; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Neutralize with sodium bicarbonate or mixture of sand and soda ash. Put
into carton for disposal.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Rubber
RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

Protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

367-0602B

PRODUCT DESIGNATION

03-367-1102
1,2,3 Trichloropropane

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Glycerol Trichlorohydrin

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,2,3 Trichloropropane

FORMULA

 $(\text{ClCH}_2)_2\text{CHCl}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal concentration in air inhalation - rat 1000 PPM /4 hr.			320		rat	
				1770	rabbit	

SECTION III PHYSICAL DATA

MW - 147.44

BOILING POINT
157°C.

°F.

VAPOR PRESSURE
at 46°C.

10 mm Hg.

MELTING POINT
-15°C.

°F.

VAPOR DENSITY (Air = 1)
5.1SPECIFIC GRAVITY (H₂O = 1)
1.39

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O
<0.1

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR
colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT
180°C.FLAMMABLE
(EXPLOSIVE)
LIMITS

UPPER
12.6%
LOWER
3.2%

METHOD USED
O.C.

EXTINGUISHING MEDIA

Water may be used to blanket the fire, foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

1,2,3 - Trichloropropane

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

50 PPM, 300 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Eye and throat irritation, edema and hemorrhaging in
lungs, narcosis.

EFFECTS OF CHRONIC EXPOSURE

Heart and liver damage.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic, get medical aid; inhalation -
rest, artificial respiration if needed; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

367-1102B

CAS - 000121448

YE01750

PRODUCT DESIGNATION

03-367-2102
TriethylamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS
TriethylamineFORMULA
(C₂H₅)₃N

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			460		rat	
			546		mouse	
				570	rabbit	
Lowest published lethal concentration in air - inhalation - rate, 1000 PPM/4 hrs.						

SECTION III PHYSICAL DATA MW - 101.19

BOILING POINT 90°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -115°C.	° F.	VAPOR DENSITY (Air = 1) 3.48
SPECIFIC GRAVITY (H ₂ O = 1) 0.73		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O ∞		VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR

Colorless oil

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 20°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED O.C.		LOWER

EXTINGUISHING MEDIA

Water may be ineffective - alcohol foam, carbon dioxide,
dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Triethylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

25 PPM, 100 mg/C.M.

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Ingestion, inhalation -

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE Eye and skin burns, eye irritation and corneal edema,
mucous membrane irritation.

EFFECTS OF CHRONIC EXPOSURE Lung irritation, liver and kidney damage, heart
damage and edema.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - drink water, get medical aid;
inhalation - rest; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Can react with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

367-2102B

PRODUCT DESIGNATION

03-367-3102
TrimethylamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

NN dimethyl, methyl amine

FORMULA

 $(CH_3)_3N$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
#1 lowest published lethal dose -						
intraperitoneal - mouse	75 mg/kg					
subcutaneous - mouse	1000 mg/kg					
subcutaneous - rabbit	800 mg/kg					

SECTION III PHYSICAL DATA MW - 59.13

BOILING POINT 2.87°C.	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -124°C	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.662 at -5°C		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O V.S.		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR Colorless gas, fish-like odor.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 38°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 11.6
METHOD USED (25% solution)		LOWER 2
EXTINGUISHING MEDIA Dry chemical or CO ₂ .		

SPECIAL FIRE FIGHTING PROCEDURES Stop flow of gas - wear self-contained mask and protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Trimethylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Irritating to the lungs, upper respiratory tract and eyes.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, keep warm, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Face shield, rubber apron.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

367-3102B

CAS - 000109648

TX85750

PRODUCT DESIGNATION

03-367-3502
Trimethylene BromideMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

FORMULA

1,3 - Dibromopropane

 $\text{CH}_2\text{BrCH}_2\text{CH}_2\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose Intraperitoneal - mouse	750 mg/kg		See Note			

SECTION III PHYSICAL DATA MW - 201.91

BOILING POINT 167°C.	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -36°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.97		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 0.02		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR colorless liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Trimethylene bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

none available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

inhalation, ingestion

SKIN AND EYE

IRRITATION

moderate

REVELANT SYMPTOMS OF EXPOSURE

Eye irritation, narcosis, sleepiness, headache,

vomiting.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give emetic, get medical aid; wash from skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

367-3502B

PRODUCT DESIGNATION

03-367-3902
Trimethylene GlycolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

1,3 dihydroxy propane

CHEMICAL NAME AND SYNONYMS

FORMULA

Trimethylene Glycol

 $\text{HOCH}_2\text{CH}_2\text{CH}_2\text{OH}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 76.11

BOILING POINT

° F.

VAPOR PRESSURE

mm Hg.

211°C.

at 125°C.

30

MELTING POINT

° F.

VAPOR DENSITY (Air = 1)

2.6

SPECIFIC GRAVITY (H₂O = 1)

1.05

EVAPORATION RATE (_____ = 1)

SOLUBILITY IN WATER Pts/100 pts H₂O

VOLATILE

% Vol.

% Wt.

APPEARANCE AND ODOR

Colorless, odorless liquid.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT

None available

FLAMMABLE
(EXPLOSIVE)

UPPER

METHOD USED

LIMITS

LOWER

EXTINGUISHING MEDIA

Water, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Trimethylene Glycol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion

SKIN AND EYE
IRRITATION Slight

REVELANT SYMPTOMS OF EXPOSURE Coldness, spastic contraction of muscles, loss of reflexes, coma, death; pulmonary edema, eye irritation.

EFFECTS OF CHRONIC EXPOSURE
Kidney damage, rapid weight loss, weakened reflexes.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - give emetic; get medical aid;
inhalation - rest; wash from eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

367-3902B

CAS:000082735

VH35400

PRODUCT DESIGNATION

03-367-5602
2,4,6 - TrinitroresorcinolMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Styphnic acid, 4 dihydroxy-1,3,5 trinitrobenzene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2,4,6 - Trinitroresorcinol

FORMULA

 $(\text{NO}_2)_3\text{C}_6\text{H}(\text{OH})_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			None available			

SECTION III PHYSICAL DATA MW 245.12

BOILING POINT	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
176°C.			
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
0.6			
APPEARANCE AND ODOR			
Yellow crystals			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	FLAMMABLE (EXPLOSIVE)	UPPER
None available	LIMITS	LOWER
METHOD USED		

EXTINGUISHING MEDIA Explosive - do not fight fire except for unmanned equipment - use water.

SPECIAL FIRE FIGHTING PROCEDURES

Full protective clothing for rescue operations.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Severe explosion hazard. Dot class A explosive

PRODUCT DESIGNATION
2,4,6 - Trinitroresorcinol

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL	None available	CARCINOGENIC	no
PRINCIPLE ROUTES OF ABSORPTION	Inhalation, ingestion, skin	SKIN AND EYE IRRITATION	Moderate
RELEVANT SYMPTOMS OF EXPOSURE	Temperature elevation, dermatitis.		
EFFECTS OF CHRONIC EXPOSURE	Dermatitis, headache.		
EMERGENCY AND FIRST AID PROCEDURES	If swallowed - drink water, epsom salts solution, get medical aid; inhalation - rest; wash skin & eyes.		

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID) Explosive (keep from oxidizing materials) inorganic nitrates and chlorates, ammonium nitrate.

HAZARDOUS DECOMPOSITION PRODUCTS

Oxides of nitrogen.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep from oxidizing materials, combustibles and source of heat.

OTHER PRECAUTIONS

SIGNATURE	DATE
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367-5602B

CAS: 000102692

PRODUCT DESIGNATION

03-367-8102
Tri-N-PropylamineMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Tri-N-Propylamine

FORMULA

 $(C_3H_7)_3N$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			96		rat	
				570	rabbit	

LDLO inhalation - rat 250 PPM/4 hr.

SECTION III PHYSICAL DATA MW - 143.31

BOILING POINT 157°C.	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT -94°C.	° F.	VAPOR DENSITY (Air = 1) 4.9
SPECIFIC GRAVITY (H ₂ O = 1) 0.76		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O very slightly soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR colorless liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 105°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED open cup		LOWER
EXTINGUISHING MEDIA Carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Tri-N-Propylamine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL None available CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion SKIN AND EYE IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Eye and skin burns; eye irritation and corneal edema, mucous membrane irritation.

EFFECTS OF CHRONIC EXPOSURE Lung irritation, liver and kidney damage, heart damage and edema.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting; get medical aid; inhalation - rest; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR With proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

367-8102B

PRODUCT DESIGNATION

03-367-8602
Tribromoethylene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Acetylene Bromide	FORMULA CHBr = CBr ₂

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA MW - 264.78

BOILING POINT 164°C.	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT -	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 2.71		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR liquid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT not flammable	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
Tribromoethylene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
none available

CARCINOGENIC
no

PRINCIPLE ROUTES OF ABSORPTION
inhalation, ingestion

SKIN AND EYE
IRRITATION
yes

REVELANT SYMPTOMS OF EXPOSURE
inhalation - headache, dizziness, nausea, unconsciousness;
ingestion - same as inhalation; eye irritation.

EFFECTS OF CHRONIC EXPOSURE
Anemia, liver damage, respiratory trouble.

EMERGENCY AND FIRST AID PROCEDURES
Inhalation - rest, keep warm; ingestion - wash mouth,
give emetic, get medical aid; wash from eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)
Reacts explosively with aluminum powder.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Mop up

WASTE DISPOSAL METHOD
Burial - call safety department

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE safety glasses
MECHANICAL (GENERAL)	GLOVES rubber gloves
SPECIAL	RESPIRATOR with proper filter
OTHER PROTECTIVE EQUIPMENT	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

367-8602B

PRODUCT DESIGNATION

03-387-1425
XyleneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Methyl toluene

FORMULA
 $C_6H_4(CH_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			4300		Rat	
#1 Lowest published toxic concentration in air - inhalation - human 200 PPM		irritant				

SECTION III PHYSICAL DATA MW - 106.18

BOILING POINT 139°C.	° F.	VAPOR PRESSURE @21°C.	6.72 mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 0.864		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Clear, colorless liquid.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 100°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical - water spray may be used to reduce rate of burning or cooling containers.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Xylene (mixture)

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 100 PPM, 435 mg/C.M.

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Irritation of respiratory tract, disturbance of vision, dizziness, nausea, collapse, coma; burning of skin or eyes.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, blood and liver damage.

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give saline cathartics and demulcents, get medical aid; wash skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Consult industrial hygiene department

MECHANICAL (GENERAL)

"

SPECIAL

"

OTHER PROTECTIVE EQUIPMENT

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

safety glasses

GLOVES

rubber

RESPIRATOR

self-contained breathing apparatus

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

387-1425B

CAS - 000108383

ZE22750

PRODUCT DESIGNATION

M-Xylene
03-387-1505MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

M-Methyl toluene

FORMULA

 $C_6H_4(CH_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			5000		Rat	
Lowest published lethal concentration in air - inhalation - rat 8000 PPM/4 hours.						
Lowest published lethal dose - intraperitoneal - rat 2000 mg/kg.						
subcutaneous - rat 5000 mg/kg						

SECTION III PHYSICAL DATA MW - 106.18

BOILING POINT 139°C.	° F.	VAPOR PRESSURE @ 28.3°C.	mm Hg.
			10
MELTING POINT -48°C.	° F.	VAPOR DENSITY (Air = 1)	
		3.66	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
0.864			
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.

APPEARANCE AND ODOR

Clear, colorless liquid.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 84°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 7.0%
METHOD USED		LOWER 1.1%

EXTINGUISHING MEDIA Foam, carbon dioxide, or dry chemical. Water spray may be used to reduce rate of burning or to cool containers.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

M-Xylene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 100 PPM, 435 mg/C.M.

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Irritation of respiratory tract, disturbance of vision, dizziness, nausea, collapse and coma; burning of skin or eyes.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, blood and liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, keep warm; if swallowed - give saline cathartics and demulcents, get medical aid; wash from skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Consult Industrial Hygiene Dept.

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety glasses

MECHANICAL (GENERAL)

"

GLOVES

SPECIAL

RESPIRATOR

Self-contained breathing apparatus.

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

387-1505B

PRODUCT DESIGNATION

03-387-1605
O-Xylene

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

O-Xylene

FORMULA

 $C_6H_4(CH_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose -						
intraperitoneal - rat	1500 mg/kg.					
oral - rat	5000 mg/kg					
subcutaneous - rat	2500 mg/kg					
Lowest published lethal concentration in air						
inhalation - mouse	6920 PPM					

SECTION III PHYSICAL DATA MW - 106.18

BOILING POINT 144°C.	° F.	VAPOR PRESSURE at 32°C.	10 mm Hg.
MELTING POINT -25.5°C.	° F.	VAPOR DENSITY (Air = 1) 3.66	
SPECIFIC GRAVITY (H ₂ O = 1) 0.88		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Clear, colorless liquid.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 90°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 6.0
METHOD USED		LOWER 1.0

EXTINGUISHING MEDIA

Foam, carbon dioxide or dry chemical. Water spray may be used to reduce rate of burning or cooling containers.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
O-Xylene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 100 PPM, 435 mg/C.M.

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Irritation of respiratory tract, disturbance of vision,
dizziness, nausea, collapse and coma; burning of skin or eyes.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, blood and liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest; if swallowed - give saline cathartic
and demulcents, get medical aid; wash from skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Consult Industrial Hygiene Dept.

MECHANICAL (GENERAL)

SPECIAL

OTHER PROTECTIVE EQUIPMENT

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety glasses

GLOVES

RESPIRATOR

Self-contained breathing apparatus.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

387-1605B

CAS - 000106423

ZE26250

PRODUCT DESIGNATION

03-387-1705
P-XyleneMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

P-Xylene

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

1,4 Dimethylbenzene

FORMULA

 $C_6H_4(CH_3)_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose			5000		rat	
Intraperitoneal - rat - 2000 mg/kg						
subcutaneous - rat 5000 mg/kg						
Lowest published lethal concentration in air						
inhalation - mouse 3460 PPM						

SECTION III PHYSICAL DATA MW - 106.18

BOILING POINT 138°C.	° F.	VAPOR PRESSURE at 27°C.	10 mm Hg.
MELTING POINT 13.2°C.	° F.	VAPOR DENSITY (Air = 1) 3.66	
SPECIFIC GRAVITY (H ₂ O = 1) 0.8611		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

Clear, colorless liquid.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 103°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 7.0
METHOD USED		LOWER 1.1

EXTINGUISHING MEDIA Foam, carbon dioxide and dry chemical. Water spray may be used to reduce rate of burning or to cool containers.

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
P-Xylene

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
TLV - 100 PPM

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Irritation of respiratory tract, disturbance of vision,
dizziness, nausea, collapse, coma; burning of skin or eyes.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis, blood and liver damage.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, keep warm; if swallowed - give saline
cathartics and demulcents, get medical aid; wash from skin or eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

Consult industrial hygiene department.

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety glasses

MECHANICAL (GENERAL)

GLOVES

"

SPECIAL

RESPIRATOR

"

Self-contained breathing apparatus.

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

387-1705B

PRODUCT DESIGNATION

03-387-2905
O-Xylylene Bromide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS A, A'-Dibromo-O-Xylene	FORMULA $\text{CH}_3\text{C}_6\text{H}_4\text{CHBr}_2$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA - STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
			none	available		

SECTION III PHYSICAL DATA

MW - 263.97

BOILING POINT decomposes	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 93°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.96		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O 16.6		VOLATILE	% Vol. % Wt.
APPEARANCE AND ODOR solid			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Alcohol foam, carbon dioxide, dry chemical.		

SPECIAL FIRE FIGHTING PROCEDURES
Self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION O-Xylylene Bromide	
SECTION V HEALTH HAZARD DATA	
TOXIC LEVEL None available	CARCINOGENIC no
PRINCIPLE ROUTES OF ABSORPTION Inhalation, ingestion	SKIN AND EYE IRRITATION Severe
REVELANT SYMPTOMS OF EXPOSURE Eye and respiratory system irritation, severe internal irritation of digestive tract.	
EFFECTS OF CHRONIC EXPOSURE --	
EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash skin & eyes.	
SECTION VI REACTIVITY DATA	
CONDITIONS CONTRIBUTING TO INSTABILITY	
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION	
INCOMPATABILITY (MATERIALS TO AVOID)	
HAZARDOUS DECOMPOSITION PRODUCTS	
SECTION VII SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
WASTE DISPOSAL METHOD	
SECTION VIII SPECIAL PROTECTION INFORMATION	
VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
MECHANICAL (GENERAL)	Goggles
SPECIAL	GLOVES
	Rubber
	RESPIRATOR
	Self-contained
OTHER PROTECTIVE EQUIPMENT	
SECTION IX SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
OTHER PRECAUTIONS	
SIGNATURE	DATE

387-2905B

PRODUCT DESIGNATION

03-387-3405
M-Xyllyl Bromide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS M-Xyllyl Bromide	FORMULA $\text{CH}_3\text{C}_6\text{H}_4\text{CH}_2\text{Br}$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose inhalation - human 75 PPM/10 minutes						

SECTION III PHYSICAL DATA MW - 185.08

BOILING POINT 215°C.	° F.	VAPOR PRESSURE at 110°C.	mm Hg.
MELTING POINT -	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.37		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol.	% Wt.
APPEARANCE AND ODOR Colorless liquid.			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES Self-contained breathing apparatus.		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

PRODUCT DESIGNATION
M-Xylyl Bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion

SKIN AND EYE
IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE
Eye and respiratory system irritation; severe irritation
of digestive tract.

EFFECTS OF CHRONIC EXPOSURE

EMERGENCY AND FIRST AID PROCEDURES
Inhalation - rest; if swallowed - give emetic, get medical
aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE
	Goggles
MECHANICAL (GENERAL)	GLOVES
	Rubber
SPECIAL	RESPIRATOR
	Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

387-3405B

PRODUCT DESIGNATION

03-387-3505
O-Xylyl bromide

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

2 - Methylbenzyl bromide

FORMULA

CC(CBr)Cc1ccccc1

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Lowest published lethal dose -						
Inhalation - human 75 PPM/10 minutes.						

SECTION III PHYSICAL DATA MW - 185.07

BOILING POINT 224°C.	° F.	VAPOR PRESSURE at 103°C.	25 mm Hg.
MELTING POINT 21°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1) 1.38		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O insoluble		VOLATILE % Vol.	% Wt.

APPEARANCE AND ODOR

colorless liquid

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT none available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER

EXTINGUISHING MEDIA

Foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
O-Xylyl bromide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
None available

CARCINOGENIC

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion

SKIN AND EYE
IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE Eye and respiratory system irritation; severe irritation of digestive tract.

EFFECTS OF CHRONIC EXPOSURE

--

EMERGENCY AND FIRST AID PROCEDURES Inhalation - rest; if swallowed - give emetic, get medical aid; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

Rubber gloves

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

387-3505B

PRODUCT DESIGNATION

03-619-3032
Camphor GumMATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

2 Camphanone

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Camphor

FORMULA

 $C_{10}H_{16}O$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human LDLO 50 mg/kg						
(1) Intraperitoneal - rat LD ₅₀ 900 mg/kg						
(2) Lowest published toxic dose						
skin - mouse 84 mg/C.M.						

SECTION III PHYSICAL DATA MW - 152.23

BOILING POINT 204°C.	° F.	VAPOR PRESSURE	mm Hg.
MELTING POINT 177°C.	° F.	VAPOR DENSITY (Air = 1)	
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)	
SOLUBILITY IN WATER Pts/100 pts H ₂ O		VOLATILE	% Vol. % Wt.
Insoluble			
APPEARANCE AND ODOR	White transparent crystalline mass, aromatic odor.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 150°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 3.5%
METHOD USED C.C.		LOWER 0.6%
EXTINGUISHING MEDIA Foam, carbon dioxide, dry chemical		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Camphor Gum

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
TLV - 2 PPM, 12 mg/C.M.

CARCINOGENIC neoplastic

PRINCIPLE ROUTES OF ABSORPTION
Inhalation, ingestion

SKIN AND EYE
IRRITATION Moderate

REVELANT SYMPTOMS OF EXPOSURE
Rigidity of jaw muscles, headache, convulsive seizures, coma.

EFFECTS OF CHRONIC EXPOSURE
--

EMERGENCY AND FIRST AID PROCEDURES If swallowed - medical aid, gastric lavage, cathartics,
inhalation - rest; wash from eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION
--

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

619-3032B

PRODUCT DESIGNATION

03-623-5020
Cleaning Mixture #49

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)	
TRADE NAME AND SYNONYMS	CHEMICAL FAMILY
CHEMICAL NAME AND SYNONYMS Cleaning mixture #49	FORMULA

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Stoddard solvent	70%	100 PPM				
Methylene chloride	30%	100 PPM	See Note 1 -			
Note 1: Lowest published toxic concentration in air						
Inhalation - human	500 PPM/1 Yr.					
Note 2: Lowest published toxic concentration in air			See Note 2			
Inhalation - human	230 PPM					

SECTION III PHYSICAL DATA

BOILING POINT ° F.	VAPOR PRESSURE mm Hg.
Unknown	
MELTING POINT ° F.	VAPOR DENSITY (Air = 1)
Unknown	
SPECIFIC GRAVITY (H ₂ O = 1)	EVAPORATION RATE (_____ = 1)
Unknown	
SOLUBILITY IN WATER Pts/100 pts H ₂ O	VOLATILE % Vol. % Wt.
--	
APPEARANCE AND ODOR	
Volatile liquid	

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT Not available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA Water spray, carbon dioxide, dry chemical.		
SPECIAL FIRE FIGHTING PROCEDURES		

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Cleaning mixture #49

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 100 PPM

CARCINOGENIC
no

PRINCIPLE ROUTES OF ABSORPTION

SKIN AND EYE

Inhalation, ingestion, skin

IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE

Headache, giddiness, stupor, irritability, fatigue, eye
and respiratory passage irritation.

EFFECTS OF CHRONIC EXPOSURE

Liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES

If swallowed - give emetic, get medical aid; inhalation -
artificial respiration as needed; wash skin & eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Safety goggles

MECHANICAL (GENERAL)

GLOVES

Rubber

SPECIAL

RESPIRATOR

Self-contained

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

. 623-5020B

PRODUCT DESIGNATION

Fungicide
03-649-3001

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Betz-F-16

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Fungicide

FORMULA

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀		LC ₅₀	
			ORAL	PERCUT.	SPECIES	CONC.
Sodium Pentachlorophenate	20.2	0.5 mg/kg	227	72	Rat	
Sodium 2-4-5-Trichlorophenate	7.5	--				
Sodium salts of chlorophenols	3.5	--				
Dehydroabietylammmonium phenoyide	2.0	--				
Inert Materials	66.8%					

SECTION III PHYSICAL DATA

BOILING POINT None available	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1)
SPECIFIC GRAVITY (H ₂ O = 1)		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Yes		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Liquid		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT None available	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER
METHOD USED		LOWER
EXTINGUISHING MEDIA		

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION

Fungicide

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

None available

CARCINOGENIC

no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion

SKIN AND EYE

IRRITATION severe

RELEVANT SYMPTOMS OF EXPOSURE Eye and nose irritation, heart failure, respiratory problems, anesthesia, sweating, coma.

EFFECTS OF CHRONIC EXPOSURE

Dermatitis.

EMERGENCY AND FIRST AID PROCEDURES If swallowed - induce vomiting, get medical aid, gastric lavage, inhalation - rest; wash from skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) FYF

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

Rubber

RESPIRATOR

With proper filter

OTHER PROTECTIVE EQUIPMENT

Wear protective clothing.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

649-3001B

PRODUCT DESIGNATION

Pyridine
03-731-8305

MATERIAL SAFETY DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

Azine

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Azabenzene

FORMULA

$$\begin{matrix} C & H & N \\ 5 & 6 & \end{matrix}$$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg.		LC ₅₀ PPM	
			ORAL	PERCUT.	SPECIES	CONC.
Oral - human LDLO 500 mg/kg			891		Rat	
					Rat	4000 - 4 hr
				1121	Rabbit	

SECTION III PHYSICAL DATA MW 79.10

BOILING POINT 115.3°C.	° F.	VAPOR PRESSURE at 13.2°C.	10	mm Hg.
MELTING POINT -42°C.	° F.	VAPOR DENSITY (Air = 1) 2.73		
SPECIFIC GRAVITY (H ₂ O = 1) 0.982		EVAPORATION RATE (_____ = 1)		
SOLUBILITY IN WATER Pts/100 pts H ₂ O ∞		VOLATILE	% Vol.	% Wt.

APPEARANCE AND ODOR

Clear liquid with a fishy odor (odor threshold less than 1 PPM)

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 68°F.	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 12.4%
METHOD USED C.C.		LOWER 1.8%

EXTINGUISHING MEDIA

Use alcohol foam, carbon dioxide, or dry chemical. Water may be ineffective.

SPECIAL FIRE FIGHTING PROCEDURES

Wear goggles and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Vapor may travel a considerable distance to a source of ignition and flashback.

PRODUCT DESIGNATION

Pyridine

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL

TLV - 5 PPM, 15 mg/C.M.

CARCINOGENIC no

PRINCIPLE ROUTES OF ABSORPTION

Inhalation, ingestion, skin

SKIN AND EYE

IRRITATION Severe

REVELANT SYMPTOMS OF EXPOSURE

Narcosis, headache, nausea, giddiness, vomiting
oral - liver and kidney damage, skin irritation.

EFFECTS OF CHRONIC EXPOSURE

Occasional vomiting and diarrhea; weight loss and anemia,
ocular and facial paralysis.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation - rest, artificial respiration and oxygen if needed;
ingestion - wash mouth, give emetic, get medical aid; wash skin and eyes thoroughly.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

A 0.17% solution of pyridine in maleic anhydride at 185°C. gives exothermic decomposition.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE

Goggles

MECHANICAL (GENERAL)

GLOVES

SPECIAL

RESPIRATOR

Self-contained breathing apparatus

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

731-8305B

CAS:000074873

PA63000

PRODUCT DESIGNATION

Methyl Chloride
03-967-6070MATERIAL SAFETY
DATA SHEET

SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS

Chloro Methane

FORMULA

CH₃Cl

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD ₅₀ mg/kg		LC ₅₀ FPM	
			ORAL	PERCUT.	SPECIES	CONC.
			1800		Rat	
					Mouse	3146/2 H.

SECTION III PHYSICAL DATA Mol. Wt. 50.49

BOILING POINT -24°C	° F.	VAPOR PRESSURE mm Hg.
MELTING POINT	° F.	VAPOR DENSITY (Air = 1) 1.78
SPECIFIC GRAVITY (H ₂ O = 1) 0.918		EVAPORATION RATE (_____ = 1)
SOLUBILITY IN WATER Pts/100 pts H ₂ O Very soluble		VOLATILE % Vol. % Wt.
APPEARANCE AND ODOR Colorless gas with faintly sweet ethereal odor		

SECTION IV FIRE AND EXPLOSION HAZARD DATA % by Vol.

FLASH POINT <32°F	FLAMMABLE (EXPLOSIVE) LIMITS	UPPER 17.4
METHOD USED Open Cup		LOWER 10.7
EXTINGUISHING MEDIA Carbon dioxide, dry chemical, or water spray. Stop flow of gas.		

SPECIAL FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT DESIGNATION
Methyl Chloride (Delayed symptoms)

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL
TLV 100 ppm, 210 mg/C.M.

CARCINOGENIC No

PRINCIPLE ROUTES OF ABSORPTION Inhalation of gas or vapor;
absorption through skin. SKIN AND EYE
IRRITATION Severe

RELEVANT SYMPTOMS OF EXPOSURE Narcosis, nausea, vomiting, blurred vision, drowsiness, confusion,
coma, convulsions, pulmonary edema, bronchial pneumonia, frostbite.

EFFECTS OF CHRONIC EXPOSURE Blurring of vision, numbness of extremities, confusion, hallucina-
tions, fainting attacks, bronchospasms.

EMERGENCY AND FIRST AID PROCEDURES

Remove from exposure; antidote is dimercaprol; obtain medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATIBILITY (MATERIALS TO AVOID)

Aluminum, magnesium, potassium, sodium.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST	PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE Goggles
MECHANICAL (GENERAL)	GLOVES Rubber
SPECIAL	RESPIRATOR w/appropriate filter

OTHER PROTECTIVE EQUIPMENT

Self-contained breathing apparatus.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

967-6070B

4. APPENDIX

CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBERS

<u>Organic</u>	<u>CAS NO.</u>	<u>Page No.</u>
A,G-Dibromohydrin Glycerol	000096219	263-0606
Heptoyl Chloride	002528612	267-1707
Hexachloroethane	000067721	267-2407
Hexane	000110543	267-3207
Hydrazine Dihydrochloride	005341617	267-5507
Hydrazine Hydrate	007803578	267-5787
Hydrazine Sulfate	010034932	267-5947
Hydroquinone	000123319	267-6737
2 Hydroxy 1,4-Dimethylbenzene	000095874	267-8207
4 Hydroxy-1,2-Dimethylbenzene	000095658	267-8307
4 Hydroxy-1,3-Dimethylbenzene	000105679	267-8407
O-Hydroxydiphenyl	000090437	267-8647
P-Hydroxydiphenyl	000092693	267-8677
8-Hydroxyquinoline	000148243	267-9857
Indene	000095136	278-0308
P-Iodoaniline	000540374	278-1308
Iodobenzene	000591504	278-1808
O-Iodobenzoyl Chloride	000609676	278-2308
2 Iodo-1,3-Dimethylbenzene	000608286	278-2708
2-Iodo-1,4-Dimethylbenzene	001122425	278-2808
4-Iodo-1,3-Dimethylbenzene	004214282	278-2908
O-Iododiphenyl	002113511	278-3308
P-Iododiphenyl	001591317	278-3408
O-Iodophenol	000533584	278-4308
M-Iodotoluene	000625956	278-4708
P-Iodotoluene	000624317	278-4908
Isophorone	000078591	278-5808
2,4 Lutidine	000108474	278-2919
Mesityl Oxide	000141797	305-2601

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Mesitylene	000108678	305-2701
Methyl Acetate	000079209	305-5631
Methyl Acrylate	000096333	305-6101
Methylamine	000074895	305-7601
Methylamine Hydrochloride	000593511	305-7701
Methyl N-Amyl Ketone	000110430	305-9601
N-Methylaniline	000100618	306-0202
Methyl Bromoacetate	000096322	306-2702
Methyl B-Bromopropionate	003395913	306-3702
Methyl ISO-BUTYL Ketone	000108101	306-4702
Methyl Carbonate	000616386	306-6202
P-Methylcyclohexanol	000589913	307-0303
M-Methylcyclohexanone	000591242	307-0703
P-Methylcyclohexanone	000589924	307-0903
Methyl A,B-Dibromopropionate	001729675	307-1303
Methylene Bromide	000074953	307-2103
Methylene Chloride	000075092	307-2203
Methylene Iodide	000075116	307-2303
Methylethylamine Hydrochloride	000624602	307-2803
Methylethylaniline	000589082	307-3303
Methyl Ethyl Ketone	000078933	307-3843
Methylhydrazine Sulfate	000302158	307-5803
Methyl Iodide	000074884	307-7803
A-Methylnaphthalene	000090120	308-0404
B-Methylnaphthalene	000091576	308-0474
4 Methyl-2-Pentanol	000108112	308-4904
Methyl-P-Phenylenediamine Dihydrochloride	005395700	308-5904
A-Methyl-A-Phenylhydrazine	000618406	308-6404
Methyl-Iso-Propylcarbinol	000590754	308-8404
Methyl Iso-Propyl Ketone	000563804	308-8904
Methyl Sulfate	000077781	309-1605
Methyl Thiocyanate	000556649	309-2105

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Methyl-Iso-Thiocyanate	000556616	309-2205
Methyl-M-Toluidine	000696446	309-3605
Methyl-O-Toluidine	000611212	309-3705
Methyl P Toluidine	000623085	309-3805
Morpholine	000110918	309-8205
Myristoyl Chloride	000112641	309-9205
Amsco Diluent 125-82		314-0286
Naphthalene	000091203	314-0706
A-Naphthaleneacetonitrile	000132752	314-1206
A-Naphthol	000090153	314-2706
B-Naphthol	000135193	314-2806
A-Naphthonitrile	000086533	314-3706
A-Naphthylamine	000134327	314-5306
β -Naphthylamine Hydrochloride	000612522	314-5906
A-Naphthylhydrazine Hydrochloride	002243563	314-6306
1-Naphthyl Isocyanate	000086840	314-6806
B-Naphthyl Isocyanate	002243541	314-6906
3 Nitro-4 Acetylaminotoluene	000612453	315-0907
5 Nitro-2-Aminoanisole	000099592	315-1907
5 Nitro-4-Amino-1, 3-Dimethyl Benzene	001635843	315-2407
3-Nitro-4 Aminophenol	000616864	315-2907
3-Nitro-4-Aminotoluene	000089623	315-3407
4-Nitro-2-Aminotoluene	000099558	315-3507
M-Nitroaniline	000099092	315-3807
O-Nitroaniline	000088744	315-3907
P-Nitrobenzal Bromide	000619750	315-5407
Nitrobenzene	000098953	315-6857
P-Nitrobenzoyl Chloride	000122043	316-0208
P-Nitrobenzyl Bromide	000100118	316-0608
P-Nitrobenzyl Chloride	000100141	316-0808
M-Nitrobromobenzene	000585795	316-1108
O-Nitrobromobenzene	000577195	316-1208

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P-Nitrobromobenzene	000586787	316-1308
M-Nitrochlorobenzene	000121733	316-1708
O-Nitrochlorobenzene	000088733	316-1808
P-Nitrochlorobenzene	000100005	316-1908
2-Nitro-P-Cymene	000943157	316-2608
2 Nitro-1,4 Diaminobenzene	005307142	316-3108
4-Nitro-1,2-Diaminobenzene	000099569	316-3308
O-Nitrodiethylaniline	002216173	316 3700
M-Nitrodimethylaniline	000619318	316-4108
2-Nitro,1,4-Dimethylbenzene	000089587	316-4608
3-Nitro-1,2-Dimethylbenzene	000083410	316-4808
P-Nitrofluorobenzene	000350469	316-7108
M-Nitroiodobenzene	000645001	316-8108
O-Nitroiodobenzene	000609734	316-8208
P-Nitroiodobenzene	000636986	316-8308
Nitromesitylene	000603714	316-8608
Nitromethane	000075525	316-9108
P-Nitromethylaniline	000100152	316-9608
5 Nitro-1-Naphthylamine	003272911	317-1209
M-Nitrophenol	000534847	317-3239
P-Nitrophenol	000100027	317-3439
O-Nitrophenol Sodium Salt	000824395	317-3709
P-Nitrophenylhydrazine	000100163	317-4709
P-Nitrophenylhydrazine Hydrochloride	000636997	317-4909
1-Nitropropane	000108032	317-6209
2-Nitropropane	000079469	317-6309
2-Nitroresorcinol	000601898	317-7209
P-Nitrosodiethylaniline	000120229	317-8009
P-Nitrosodimethylaniline	000138896	317-8209
2-Nitroso 1-Naphthol	000132536	317-8809
Nitrosopiperidene	000100754	317-9409
Nitrosoresorcinol Sodium Salt		317-9609

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M-Nitrotoluene	000099081	317-9709
O-Nitrotoluene	000088722	317-9809
P-Nitrotoluene	000099990	317-9909
Oxalyl Chloride	000079378	321-0301
Palmitoyl Chloride	000112674	326-0402
Pentamethylene Bromide	000111240	326-3402
M-Phenetidine	000621330	326-5902
O-Phenetidine	000094702	326-6002
P-Phenetidine	000156434	326-6102
Phenol	000108952	326-6904
G-Phenoxybutyronitrile	002243438	326-7902
Phenylacetyl Chloride	000103800	327-0603
M-Phenylenediamine	000108452	327-2603
P-Phenylene Diamine	000106503	327-2813
M-Phenylenediamine Dihydrochloride	000541695	327-2903
B-Phenylethyl Bromide	000103639	327-3603
Phenylhydrazine	000100630	327-5103
Phenylhydrazine Hydrochloride	000059881	327-5203
Phenyl Isocyanate	000103719	327-5603
Phenyl Isothiocyanate	000103720	327-6103
P-Phenylphenacyl Bromide	000135739	327-7603
B-Phenylpropionyl Chloride	000645454	327-8103
1-Phenylsemicarbazide	039538937	328-0704
4 Phenylthiosemicarbazide	005351699	328-1704
Phenylthiourea	000103855	328-2204
Picoline	000109068	328-5704
B-Picoline	000108996	328-5804
G-Picoline	000108894	328-5904
Picramide	000489985	328-6204
Picryl Chloride	000088880	328-6404
Propionitrile	000107120	328-9504
Propionyl Chloride	000079038	329-0305

Iso-Propyl Acetate	000108214	329-1305
Iso-Propylamine	000075310	329-1805
N-Propylamine	000107108	329-1905
N-Propylaniline	000622800	329-2305
N-Propylbenzene	000103651	329-3305
N-Propyl Chlorocarbonate	000109615	329-4405
Propylene Bromide	000078751	329-4805
Propylene Bromohydrin	019888738	329-4905
Propylene Chloride	000078875	329-5105
Propylene Chlorohydrin	000127004	329-5205
Propylene Glycol	000057556	329-5605
Propylene Oxide	000075569	329-5805
Isopropyl Iodide	000075309	329-6305
Quinone	000106514	341-1906
Resorcinol	000108463	348-0607
Semicarbazide Hydrochloride	000563417	357-1708
Strychnine Sulfate	000060413	357-2708
Succinonitrile	000110612	357-3908
Succinyl Chloride	000543204	357-4108
Sulfanilamide	000063741	357-5009
Tetra Bromoethane (Acetylene Tetrabromide)	000079276	365-0839
Tetrabromophthalic Anhydride	000632791	365-1809
Tetra-N-Butylammonium Iodide	000311284	365-2309
1,1,2,2-Tetrachloroethane	000079345	365-2809
Tetrachloroethylene (Perchloroethylene)	000127184	365-3309
Tetrachlorohydroquinone	000087876	365-3809
Tetrachlorophthalic Anhydride	000117088	365-4309
Tetrahydrofuran	000109999	365-4809
Tetramethylammonium Bromide	000064200	365-5809
Tetramethylammonium Chloride	000075570	365-5909
Tetramethylammonium Hydroxide	000075592	365-6009

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Tetramethylammonium Iodide	000075581	365-6109
Tetramethylene Chloride	000110565	365-7309
Thioacetamide	000062555	365-8509
Thionyl Chloride	007719097	365-9309
Thiophenol	000108985	365-9709
Thiosemicarbazide	000079196	366-0401
Thiourea	000062566	366-0901
O-Tolidine Dihydrochloride	000612828	366-1501
Toluene	000108883	366-2401
Toluhydroquinone	000095716	366-3401
M-Toluidine	000108441	366-3901
O-Toluidine	000095534	366-4001
P-Toluidine	000106490	366-4101
P-Toluidine Hydrochloride	000540238	366-4401
2,4,6-Tribromoaniline	000147820	366-7401
1,3,5 Tribromobenzene	000626391	366-7901
1,2,3 Tribromopropane	000096117	366-8401
2,4,6-Trichloroaniline	000634935	366-9401
1,2,4-Trichlorobenzene	000120821	366-9611
1,1,2 Trichloroethane	000079005	367-0084
Trichloroethylene	000079016	367-0102
2,4,6 Trichlorophenol	000088062	367-0602
1,2,3 Trichloropropane	000096184	367-1102
Triethylamine	000121448	367-2102
Trimethylamine	000075503	367-3102
Trimethylene Bromide	000109648	367-3502
Trimethylene Glycol	000057556	367-3902
2,4,6-Trinitroresorcinol	000082713	367-5602
Tri-N-Propylamine	000102692	367-8102
Tribomoethylene	000598163	367-8602
Xylene	001330207	387-1425
M-Xylene	000108383	387-1505
O-Xylene	000095476	387-1605

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P-Xylene	000106423	387-1705
O-Xylylene Bromide	000091134	387-2905
M-Xylyl Bromide	000620133	387-3405
O-Xylyl Bromide	000089929	387-3505

Materials

Camphor Gum	000076222	619-3032
Cleaning Mixture #49		623-5020
Fungicide		649-3001
Pyridine	000110861	731-8305

Organic Gases

Methyl Chloride	000074873	967-6070
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