RMIS View/Print Document Cover Sheet

This document was retrieved from the Boeing ISEARCH System.

Accession #: D196071803

Document #: SD-WM-DRD-004

Title/Desc:

FUNCTIONAL & DESIGN REQUIREMENTS FOR CONSTRUCTION
OF FRAMED FABRIC STRUCTURES IN THE CENTRAL WASTE
COMPLEX

Sta 4. 1
OCT 18 1995

ENGINEERING DATA TRANSMITTAL

Page 1 of 1
1. EDT No 612441

2. To: (Receiving Organization) Solid Waste Management Facility Engineering		3. From: (Originating Organization) Solid Waste Management Facility Engineering		4. Related EDT No.: N/A	
5. Proj./Prog./Dept./Div.: Solid Waste Management		6. Cog. Engr.: RM Irwin		7. Purchase Order No.: N/A	
8. Originator Remarks: Functional and Design Requirements for Construction of Framed Fabric Structures for Equipment and Material Storage				9. Equip./Component No.: n/A	
				10. System/Bldg./Facility: CWC	
11. Receiver Remarks:				12. Major Assm. Dwg. No.: N/A	
				13. Permit/Permit Application No.: N/A	
				14. Required Response Date: Oct. / May 8, 1995	

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Design- ator	Reason for Trans- mittal	Orig- inator Dispo- sition	Receiv- er Dispo- sition
1.	WHC-SD-WM-DRD-004		0	Design Requirements for Construction of Framed Fabric Structures in CWC	S	1,2		

16. KEY		
Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec. 12.7)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)										(G)	(H)
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
1	1	Cog. Eng. RM Irwin T4-03	<i>RM Irwin</i>	9/24/95							
1	1	Cog. Mgr. DB Powell T4-03	<i>DB Powell</i>	9/27/95							
		QA									
1	1	Safety <i>RB</i>	<i>RB</i>	9/27/95							
		Env.									
1	1	Operations R Durfee T4-03	<i>R Durfee</i>	10/17/95							
1	1	Peer Review <i>Victor E. Renard</i>	<i>Victor E. Renard</i>	9/26/95							

18. RM Irwin <i>RM Irwin</i> Signature of EDT Originator Date 9/26/95		19. N/A Authorized Representative Date for Receiving Organization		20. DB Powell <i>DB Powell</i> Cognizant Manager Date 9/27/95		21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments	
---	--	---	--	--	--	---	--

RELEASE AUTHORIZATION

Document Number: WHC-SD-WM-DRD-004, REV 0

Document Title: Functional and Design Requirements for Construction of Framed Fabric Structures in the CWC

Release Date: 10/17/95

**This document was reviewed following the
procedures described in WHC-CM-3-4 and is:**

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Kara Broz

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

This report has been reproduced from the best available copy. Available in paper copy. Printed in the United States of America. To obtain copies of this report, contact:

Westinghouse Hanford Company - Document Control Services
P.O. Box 1970, Mailstop H6-08, Richland, WA 99352
Telephone: (509) 372-2420; Fax: (509) 376-4989

SUPPORTING DOCUMENT1. Total Pages **19**

2. Title

Functional and Design Requirements for
Construction of Framed Fabric Structures in the
CWC.

3. Number

WHC-SD-WM-DRD-004

4. Rev No.

0

5. Key Words

CWC

6. Author

Name: **RM Irwin**Signature *RM Irwin* **9/26/95**Organization/Charge Code **87250\A4D38**

7. Abstract

The purpose of this document is to supply the applicable functional and design requirements associated with construction and use of framed fabric structures in the Central Waste Complex.

8.

RELEASE STAMP

OFFICIAL RELEASE
BY WHC
DATE **OCT 18 1995**
Sta 4.

1.0 INTRODUCTION

Solid Waste Management currently owns a 60' X 200' framed fabric structure residing in convenient storage. A need has been identified to assemble the framed fabric structure into 2 60' X 90' units for storage of facility materials and equipment. This document defines the design criteria for assembly and use of 2 60' X 90' framed fabric structures assembled within the Central Waste Complex.

2.0 FACILITY DESCRIPTION

The two proposed framed fabric structures will provide approximately 4,650 square feet (oval in shape) of covered storage space for Solid Waste Management vehicles, materials and equipment. Examples of items to be stored in the structures include snowblowers, manlifts, cargo trucks, trailers, empty overpack (polyethylene materials not allowed due to potential fire load) drums and boxes and any other equipment and materials used to support operations of the Central Waste Complex. Each structure will be equipped with 3 personnel access doors, 1 end sliding cargo door, 3 air intake ducts, 2 20" turbo roof vents, anchor materials, the necessary framing beams and the fabric panels. Interior lighting shall be provided by skylights which extend the length of the roof. Access to each structure will be provided by asphalt or concrete extended from the existing CWC roadway. Each pad will be sited to mitigate potential runoff and also graded to direct and contain internal drainage. Neither structure shall be supplied with any other utilities.

3.0 FUNCTIONAL REQUIREMENTS

The functional requirements that must be satisfied for the assembly and operation of 2 framed fabric structures in the Central Waste Complex are as follows:

- Satisfy the Occupancy Requirements of the Uniform Building Code, Group S, Division 3 as described in Section 311.1
- Meet the Fire Retardancy Standards of UBC Standard 31-1 or equivalent NFPA-701.
- Satisfy UBC floor construction requirements.
- Satisfy the UBC structural requirements.
- Meet the exiting requirements of UBC Chapter 10, Section 1001.1
- Meet the fire hydrant requirements of UBC Section 903
- Satisfy the ventilation requirements of UBC Section 311.5 and 1202.2.6.

4.0 FACILITY DESIGN CRITERIA

4.1 Occupancy Classification

Per UBC, for Group S "Division 3 Occupancies shall include repair garages where work is limited to exchange of parts and maintenance requiring no open flame or welding, motor vehicle fuel dispensing stations, and parking garages..." Thus, these structures are limited to 8,000 square feet which exceeds the expected size of 4,650 square feet.

4.2 Construction Type

The construction type for the framed fabric structures is Type V-Nonrated (3112.1). Fabric shall be fire retardant conforming to NFPA-701. NFPA-701 test data for these structures is included as Attachment 1.

4.3 Floor

In accordance with section 311.2.3.1 floor surfaces shall be of noncombustible, nonabsorbent materials. Floors shall drain to an approved oil separator or trap discharging to sewers in accordance with the plumbing code." An exception is provided that floors may be surfaced or waterproofed with asphaltic paving materials in areas where motor vehicles or airplanes are stored or operated. For these framed fabric structures, the pads will be waterproofed or asphaltic per the exception for stored vehicles and leakage shall be directed, collected, identified and disposed of properly.

4.4 Automatic Sprinkler Protection Requirements

UBC Section 904.2.2.1 states that an automatic sprinkler system shall be installed when the floor area exceeds 1,500 square feet and there is not provided at least 20 square feet of opening entirely above the adjoining ground level in each 50 lineal feet or fraction thereof of exterior wall in the story. These openings are supplied for the framed fabric structures using the 3 single personnel doors (3'x6'8") and the end sliding door (10'x14'). Thus, the framed fabric structures do not require installation of an automatic sprinkler system.

4.5 Fire Hydrants

Section 903 of the Uniform Fire Code Appendix III specifies that fire hydrant supply for a Type V-nonrated building less than 4,800 square feet requires at least a single hydrant with at least 1,750 gpm for at least 2 hours. Appendix III also specifies an average spacing between hydrants of 500 feet. Structures shall be sited to ensure they are within 250 feet of the nearest fire hydrant which is located West of 2402-W building.

4.6 Exiting System

For occupancies of a parking garage greater than 30, the requirements for exiting are a minimum of two exits. Openings shall have a minimum dimension of not less than 30 inches to allow exit and access by fire fighting personnel. The maximum travel distance shall not exceed 150 feet. The framed fabric structure contains a minimum of 3 personnel exits. The exits are arranged with one exit on each side of the structure with the third door located at one end of the building. The maximum travel distance to an exit is less than 55 feet. The framed fabric personnel exit doors are each 3 feet in width and 6 feet 8 inches in height which meets the requirements of UBC Section 1004.6. Each exit shall be at floor level, open in the direction of exit and openable from the inside without the use of a key. Self luminous exit signs shall be installed above each of the three personnel exit doors for each structure.

4.7 Ventilation

Section 1202.2.6 of the UBC states "the mechanical ventilating system required by Section 1202.2.1 may be omitted when, in the opinion of the building official, the building is supplied with unobstructed openings to the outer air which are sufficient to provide the necessary ventilation. The requirements for mechanical ventilation are specified for areas occupied customarily with human beings. The framed fabric structures are equipped with 4 2'x4' supply ducts and 2 20" turbo vents. Since the structures will only be occupied to store or retrieve vehicles or equipment in storage the end door will be open during vehicle movement and this ventilation will meet the UBC requirements.

4.8 Structural Requirements

Section 20 of the UBC defines the structural requirements for the framed fabric structures. Certified PE drawings of the structures will be issued and controlled by SWM facility engineering.

4.9 Building Spacing Requirements

Per the requirements of Table 5-A in Chapter 5 of the UBC, each structure shall be at least 40 feet from one another and from any other buildings. The framed fabric structures shall be sited to comply with this requirement.

EXISTING BUILDING

SECTION

Attachment 1
Page A-1

Representing Sprung Instant Structures
KEN MIZELL ASSOCIATES

2627 88TH AVE. N. E.
BELLEVUE, WA. 98004
(206) 453-9416
FAX (206) 837-1870

FOR INDICATION ONLY. NOT FACTORY DRAWING.

AREA:	DATE: 4-4-95	JOB #	REVISIONS:	PAGE #
WESTINGHOUSE			COPYRIGHT © 1995 KEN MIZELL ASSOCIATES	
WAREHOUSE PROJECT			drawn by: KEM	
			SCALE: 1"=32'	

FROM : KEN MIZELL ASSOCIATES

APR. 4. 1995 10:31PM P 3
PHONE NO. : 206 637 1870

WHC-SD-WM-DRD-004, RevC
Attachment 1
Page A-2

CALIFORNIA STATE FIRE MARSHAL REGISTERED FLAME RESISTANT PRODUCT

Product:
VERNOTEX

Registration No.
FA-38601

Product Marketed By:
VERNON PLASTICS
SHELLEY RD/P.O. BOX 8248
HAVERHILL MA 01835-0748

This product meets the minimum requirements of flame resistance established by the California State Fire Marshal for products identified in Section 13115, California Health and Safety Code.

The scope of the approved use of this product is provided in the current edition of the CALIFORNIA APPROVED LIST OF FLAME RETARDANT CHEMICALS AND FABRICS, GENERAL AND LIMITED APPLICATIONS CONCERNS published by the California State Fire Marshal.

E. Van Th. Shelton

Deputy State Fire Marshal

Expires: 06/30/96

FR-4

WHC-50-WM-DRD-004
Attachment 1 Rev D
Page A-3

Certificate of Flame Resistance

REGISTERED FABRIC
OR
CONCERN NUMBER

F-365-01

ISSUED BY

VERNON PLASTICS

DIVISION, BORDEN INC.

Date treated or
manufactured

This is to certify that the materials described on the reverse side hereof have been flame-retardant treated (or are inherently nonflammable).

FOR SPRINKLING STRUCTURES ADDRESS 1001 Tenth Avenue S.W.
CITY CALGARY STATE ALBERTA, CANADA

Certification is hereby made that: (Check "a" or "b")

- ☐ (a) The articles described on the reverse side of this Certificate have been treated with a flame-retardant chemical approved and registered by the State Fire Marshal and that the application of said chemical was done in conformance with the laws of the State of California and the Rules and Regulations of the State Fire Marshal.

Name of chemical used _____ Chem. Reg. No. _____

Method of application _____

- ☒ (b) The articles described on the reverse side hereof are made from a flame-resistant fabric or material registered and approved by the State Fire Marshal for such use.

Trade name of flame-resistant fabric or material used VERNOLEX Reg. No. M-11614The Flame Retardant Process Used will not Be Removed By Washing

Name of Applicator or Production Superintendent

By David Mose TECHNICAL MANAGER
Name Title

FR-8

BEST COPY AVAILABLE

WHC-50-WM-DRD-004
Attachment
Page 44

NFPA 701 SMALL SCALE TEST FOR FLAME RESISTANT TEXTILES & FILMS

The Govmark
Organization, Inc.P.O. BOX 807, BELLMORE, NY 11710
TEL: (516) 293-8944
FAX: (516) 293-8956COMPANY SUBMITTING SAMPLESName: Vernon Plastics Co
Address: Shelly Road - Ward Hill
Haverhill, MA 01830-0548
Telephone #: 508-373-1551
David Morse

FAX: 508-373-6562

TEST IDENTIFICATION: Sprung Structures, Inc.
18 oz/sq yd
Industrial FabricSAMPLES RECEIVED: 9/20/91 TEST REPORT #: 96277-RVPERFORMED: NFPA 701 Small Scale Test for Flame Resistant Textiles & FilmsGOVMARK TEST RESULTS

<u>specimen #</u>	<u>After Flame Seconds</u>	<u>Flaming Drip Seconds</u>	<u>Char Length Inches</u>
1	<u>1</u>	<u>0</u>	<u>2.0</u>
2	<u>1</u>	<u>0</u>	<u>2.7</u>
3	<u>1</u>	<u>0</u>	<u>2.7</u>
4	<u>0</u>	<u>0</u>	<u>2.6</u>
5	<u>1</u>	<u>0</u>	<u>3.0</u>
6	<u>2</u>	<u>0</u>	<u>3.0</u>
7	<u>2</u>	<u>0</u>	<u>2.9</u>
8	<u>1</u>	<u>0</u>	<u>2.9</u>
9	<u>2</u>	<u>0</u>	<u>3.2</u>
10	<u>2</u>	<u>0</u>	<u>2.7</u>
Average:			<u>2.8</u>

RKS:

REQUIREMENTS:

<u>Spec Weight</u>	<u>After Flame Seconds</u>	<u>Flaming Drip Seconds</u>	<u>Char Length Inches</u>
<u>Sq. Yd.</u>	<u>Max. Ind. Specimen</u>	<u>Max. Ind. Specimen</u>	<u>Max. Avg. - Max. Ind.</u>
<u>Over 10</u>	<u>2.0</u>	<u>0</u>	<u>3.5 4.5 [xx]</u>
<u>Over 6</u>	<u>2.0</u>	<u>0</u>	<u>4.5 5.5 []</u>
<u>6 and under</u>	<u>2.0</u>	<u>0</u>	<u>5.5 6.5 []</u>

CONCLUSION: The above results indicate compliance with the stated requirements.

CERTIFICATION: I certify that the above results were obtained after testing specimens in accordance with the procedures and equipment specified by NFPA 701 Small Scale Test for Flame Resistant Textiles & Films 1989 Edition.

TESTING COMPLETED 9/20/91

jd

SIGNATURE OF TEST SUPERVISOR
THE GOVMARK ORGANIZATION, INC.

WHC-SD-NM-DDD-004
Attachment 1 Rev0
Page A-5
N

VERTICAL FLAMMABILITY TEST - DATA SHEET

The
Govmark
Organization, Inc.
P.O. Box 807
Baltimore, New York 11710
Tel: 516/293-8044

COMPANY SUBMITTING SAMPLES

Name: Vernon Plastics Co
Address: Shelly Road - Ward Hill
Haverhill, MA 01830-0548
Telephone #: 508-373-1551
David Morse

TESTER'S IDENTIFICATION:

Sample #1
Sprung Structures
18 oz. White
Lot #30443

PO # 84289

E SAMPLES RECEIVED: 8/29/91 TEST REPORT #: 96101-1

TEST PERFORMED: NFPA 701: Large Scale (Single Strip Specimens)

GOVMARK TEST RESULTS

SPECIMEN #	AFTER FLAME SECONDS	DRIP BURN SECONDS	CHAR LENGTH INCHES	SPECIMEN #	AFTER FLAME SECONDS	DRIP BURN SECONDS	CHAR LENGTH INCHES
1	0	0	1.0	6	0	0	1.5
2	0	0	2.0	7	0	0	3.0
3	0	0	0.5	8	0	0	3.0
4	0	0	2.0	9	0	0	1.0
5	0	0	2.5	10	0	0	4.5

REMARKS:

REQUIREMENTS:

For each specimen:

AFTER FLAME SECONDS: 2.0 Maximum
DRIP BURN SECONDS: 0.0 Maximum
CHAR LENGTH INCHES: 10.0 Maximum

CONCLUSION: The above results indicate compliance with the stated requirements.

Verify that the above results were obtained after testing specimens in accordance with procedures and equipment specified by NFPA 701 Large Scale for Single Strip Specimens.

TESTING COMPLETED 9/5/91

jd

SIGNATURE OF TEST SUPERVISOR
THE GOVMARK ORGANIZATION, INC.

United States Testing Company, Inc.

291 FAIRFIELD AVENUE • FAIRFIELD, NEW JERSEY 07004 • 201-575-6252 • Fax: 201-575-6271

REPORT OF TEST

Engineering Services

CLIENT: Vernon Plastics Co.
Shelly Road - Ward Hill
Haverhill, Massachusetts
01835-0848

NUMBER: 023167
CR109384
November 2, 1993

SUBJECT: Flammability

REFERENCE:

Vernon Plastics Co., Purchase Order Number 32370 dated
September 24, 1993.

Sample Rec'd.: 10/22/93

Test Date: 10/22/93
11/2/93

SAMPLE IDENTIFICATION:

One (1) sample was submitted and identified by the
Client as:

Sprung Instant Structures 18 Oz. White
Lot #39346

TEST PERFORMED:

The submitted sample was tested for Flammability in
accordance with the procedures outlined in Uniform
Building Code Standard No. 55-1, 1991.

Testing supervised by:

Stava caldarola
Senior Supervisor
Fire Technology

SIGNED FOR THE COMPANY

BY John Thomas
Vice President

Page 1
of 2
lv

© 1993 United States Testing Company, Inc.

• Micrology • Chemistry • Environmental • Materials • Facilities in Principal Cities •
The United States Testing Company, Inc. is a leading national laboratory and testing organization. We are located in the heart of the United States, with a network of regional offices and a central headquarters in Fairfield, New Jersey. Our facilities are equipped with the latest testing equipment and staffed with highly trained and experienced personnel. We provide a wide range of testing services, including mechanical, chemical, physical, and environmental testing. Our services are used by a variety of industries, including automotive, aerospace, construction, and manufacturing. We are committed to providing our clients with the highest quality testing services and the most accurate and reliable results. We are also committed to providing our clients with the most cost-effective testing solutions. We are a member of the American Society for Testing and Materials (ASTM) and the International Organization for Standardization (ISO). We are also a member of the National Fire Protection Association (NFPA). We are a leader in the field of testing and are proud to be a part of the United States Testing Company, Inc.

FROM : KEN MIZELL ASSOCIATES

APR. 4. 1995 10:34PM P 8
PHONE NO. : 206 637 1870

WHC-SD-WM-DRD-004
Attachment 1 Rev D

11-02-1988 1/100

NOV 02 : : : U.S.

United-States Testing Company, Inc.

P. 2 2

Page A-7

CLIENT: Vernon Plastics Co.

NUMBER: 023167
CR109384

TEST RESULTS:

<u>Specimen</u>	<u>Direction</u>	<u>Dimensions, Inches</u>	<u>Char Length Inches</u>	<u>Afterburn Seconds</u>
1	Machine	5 X 84	0	0
2	Machine	5 X 84	0	0
3	Machine	5 X 84	0*	0*
4	Machine	5 X 84	0*	0*
5	Machine	5 X 84	0*	0*
6	Cross Machine	5 X 84	1	0
7	Cross Machine	5 X 84	2	0
8	Cross Machine	5 X 84	0*	0*
9	Cross Machine	5 X 84	0*	0*
10	Cross Machine	5 X 84	0*	0*

Observations: Charring, melting, shrinking.

REQUIREMENTS:

A material tested in single sheets shall not continue flaming for more than two seconds after the test flame is removed. The vertical spread of burning shall not exceed 10 inches above the tip of the test flame. Portions of residues of textiles or films which break or drip from the test specimen shall not continue to flame after they reach the floor of the tester.

CONCLUSION:

The submitted sample (weathered and unweathered specimens) meets the requirements when tested per UBC 55-1 as indicated above.

NOTE: Weathered specimens.

WTC-SD-WM-DR0-004
Attachment 1 Rev D
Page A8

United States Testing Company, Inc. Engineering Services Division

291 FAIRFIELD AVENUE • FAIRFIELD NEW JERSEY 07004-0000 • 201-575-3252

REPORT OF TEST

CLIENT: Sprung Instant Structures Ltd.
1001 - 10th Avenue S.W.
Calgary, Alberta, T2R 0B7 Canada

NUMBER: 101586-2

July 10, 1991

SUBJECT: Flammability

REFERENCE:

Sprung Instant Structures Ltd., letter of authorization dated July 3, 1991 per R.E. Smith.

SAMPLE IDENTIFICATION:

Two (2) samples were submitted and identified by the client as:

- 1) Vernon White Opaque White
- 2) Shelter-Rite White Opaque White

TEST PERFORMED:

The submitted samples were tested for Flammability in accordance with the procedures outlined in Underwriters Laboratories Inc., Tests for Flame Propagation of Fabrics & Films (Large Scale Flame Test, Single Sheets) UL-214.

Testing Supervised by:

Page 1
of 3
lv

Steve Caldarola
Senior Supervisor
Fire Technology Section

SIGNED FOR THE COMPANY

BY
John Lomaash
Vice President

Offices in: New York • Chicago • Los Angeles • Richmond • Tulsa • Modesto • Orlando

UNITED STATES TESTING COMPANY, INC. REPORTS AND LETTERS ARE FOR THE EXCLUSIVE USE OF THE CLIENT TO WHOM THEY ARE ADDRESSED AND THEY ARE THE PROPERTY OF THE CLIENT. NO PART OF THIS REPORT IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF UNITED STATES TESTING COMPANY, INC. THE TESTS CONDUCTED AND THE RESULTS REPORTED ARE THE PROPERTY OF UNITED STATES TESTING COMPANY, INC. AND ARE NOT TO BE USED FOR ANY OTHER PURPOSE. THE TESTS CONDUCTED AND THE RESULTS REPORTED ARE THE PROPERTY OF UNITED STATES TESTING COMPANY, INC. AND ARE NOT TO BE USED FOR ANY OTHER PURPOSE. THE TESTS CONDUCTED AND THE RESULTS REPORTED ARE THE PROPERTY OF UNITED STATES TESTING COMPANY, INC. AND ARE NOT TO BE USED FOR ANY OTHER PURPOSE.

WHC-SD-WM-BRD-004, Rev 0
Attachment 1
*page A-9***United States Testing Company, Inc.****CLIENT:** Sprung Instant Structures Ltd.**NUMBER:** 101586-2**TEST RESULTS:****Sample:** Vernon

<u>Specimen</u>	<u>Direction</u>	<u>Dimensions, Inches</u>	<u>Char Length Inches</u>	<u>After Burn Seconds</u>
1	Machine	5 x 84	4-1/2	0
2	Machine	5 x 84	6	0
3	Machine	5 x 84	5	0
4	Machine	5 x 84	6	0
5	Machine	5 x 84	4-1/2	0
6	Cross Machine	5 x 84	4	0
7	Cross Machine	5 x 84	4	0
8	Cross Machine	5 x 84	5	0
9	Cross Machine	5 x 84	6	0
10	Cross Machine	5 x 84	7	0

Observations: Charring, melting, shrinking.**REQUIREMENTS:**

A material tested in single sheets shall not continue flaming for more than two seconds after the test flame is removed. The vertical spread of burning shall not exceed 10 inches above the tip of the test flame. Portions of residues of textiles or films which break or drip from the test specimen shall not continue to flame after they reach the floor of the testar.

CONCLUSION:

The submitted sample meets the requirements when tested per UL-214 (Single Sheets) as indicated above.

United States Testing Company, Inc.
Engineering Services Division

251 FAIRFIELD AVENUE • FAIRFIELD NEW JERSEY 07004-0000 • 201-575-5252

REPORT OF TEST

CLIENT: Sprung Instant Structures Ltd. NUMBER: 101490
1001 - 10th Avenue S.W.
Calgary, Alberta T2R 0B7 Canada July 2, 1991

SUBJECT: Surface Burning Characteristics of Building Materials

REFERENCE:

Sprung Instant Structures Ltd., Purchase Order Number
31196 dated June 24, 1991.

TEST PERFORMED:

The submitted sample was tested for Flammability in
accordance with the procedures outlined in
ASTM E-84-89a.

SAMPLE IDENTIFICATION:

One (1) sample of white flexible sheet material was
submitted and identified by the Client as:

Vernon White Blackout Fabric
White Opaque White

Testing Supervised by:

Steve Calderola
Senior Supervisor
Fire Technology Section

SIGNED FOR THE COMPANY

BY
John Romash
Vice President

Page 1
of 6
lv

Offices in: New York • Chicago • Los Angeles • Richmond • Tulsa • Modesto • Orlando

UNITED STATES TESTING COMPANY, INC. REPORTS AND TESTS ARE FOR THE EXCLUSIVE USE OF THE CLIENT TO WHOM THEY ARE ADDRESSED AND THEY AND THE NAME OF THE
UNITED STATES TESTING COMPANY, INC. AS ITS SEAL OR INDEMNITY ARE NOT TO BE USED IN ANY MANNER OR FOR ANY PURPOSES IN ADVERTISING TO THE GENERAL PUBLIC AND THESE
SUBMISSIONS TO ANY OTHERS OR THE USE OF THE NAME OF UNITED STATES TESTING COMPANY, INC. MUST RECEIVE OUR PRIOR WRITTEN APPROVAL. OUR REPORTS APPLY ONLY TO THE
STANDARD OR SPECIFICATIONS IDENTIFIED, TO THE TESTS CONDUCTED, AND TO THE SAMPLE(S) TESTED AND/OR INSPECTED. UNLESS OTHERWISE SPECIFIED, THE TEST AND/OR
INSPECTION RESULTS ARE NOT INDICATIVE OR REPRESENTATIVE OF THE QUALITY OF THE LOT FROM WHICH THE SAMPLE WAS TAKEN OR OF APPARENTLY IDENTICAL OR SIMILAR PRO-
DUCTS AND NOTHING CONTAINED IN OUR REPORTS SHALL BE TAKEN TO IMPLY OR REAR THAT UNITED STATES TESTING COMPANY, INC. CONDUCTS ANY QUALITY CONTROL PROGRAM FOR
THE CLIENT TO WHOM THE REPORT IS ISSUED. SAMPLES NOT DESTROYED IN TESTING ARE RETURNED A MAXIMUM OF THIRTY DAYS.

WHC-SD-WM-DRO-004
Rev 0

Attachment 1
page A-11

United States Testing Company, Inc.

CLIENT: Sprung Instant Structures Ltd.

NUMBER: 101490

INTRODUCTION:

This report presents test results of Flame Spread and Smoke Developed Values per ASTM E-84-89a. The report also includes Material Identification, Method of Preparation, Mounting and Conditioning of the specimens.

The tests were performed in accordance with the specifications set forth in ASTM E-84-89a, "Standard Test Method for Surface Burning Characteristics of Building Materials", both as to equipment and test procedure. This test procedure is similar to UL-723, ANSI No. 2.5, NFPA NO. 255 and UBC 42-1.

The test results cover two parameters: Flame Spread and Smoke Developed Values during a 10-minute fire exposure. Inorganic cement board and red oak flooring are used as comparative standards and their responses are assigned arbitrary values of 0 and 100, respectively.

PREPARATION AND CONDITIONING:

Two (2) 2' x 12' sections of material were placed end to end to form a 2' x 24' specimen. The material was laid on a 2-inch hexagonal wire mesh supported by steel rods spanning the width of the tunnel. The material was tested at a thickness of 0.021".

The sample was conditioned at $73^{\circ} \pm 5^{\circ}$ Fahrenheit and $50 \pm 5\%$ relative humidity.

TEST PROCEDURE:

The tunnel was thoroughly pre-heated by burning natural gas. When the brick temperature, sensed by a floor thermocouple, had reached the prescribed 105° Fahrenheit $\pm 5^{\circ}$ Fahrenheit level, the sample was inserted in the tunnel and test conducted in accordance with the standard ASTM E-84-89a procedures.

The operation of the tunnel was checked by performing a 10-minute test with inorganic board on the day of the test.

WHE-SD-WM-DR0-004
Attachment 1 Per
Page A12

United States Testing Company, Inc.

CLIENT: Sprung Instant Structures Ltd.

NUMBER: 101490

TEST RESULTS:

The test results, calculated in accordance with ASTM E-84-89a for Flame Spread and Smoke Developed Values are as follows:

Test Specimen: Vernon White Blackout Fabric

Flame Spread Index*: 10

Smoke Developed Value*: 240

*Graphs of the Flame Spread, Smoke Developed and Time-Temperature are shown in Figures 1, 2 and 3 at the end of this report.

OBSERVATIONS:

Ignition was noted at 14 seconds along with charring and melting of the specimen directly exposed to the flame. Also observed were shrinking, slight flaking and flaking embers as the flamefront advanced a maximum distance of 2 feet at 26 seconds. Afterglow was evident upon test completion.

UNITED STATES TESTING COMPANY, INC.

FLAME SPREAD

Sample Vernon White Blackout Fabric

Red Oak 0 0

Test No. 101490

Test Date July 2, 1991

I.C. Board

FROM : KEN MIZELL ASSOCIATES

APR. 4, 1995 10:36PM P14
PHONE NO. : 206 637 1870

WHC-SD-WM-DRD-004
Rev 0

Attachment page AB

Figure 1

BEST COPY AVAILABLE

UNITED STATES TESTING COMPANY, INC.

FROM : KEN MIZELL ASSOCIATES

APR. 4, 1995 10:37PM P15
PHONE NO. : 206 637 1870

WHC-SD-WM-DRD-001
Attachment 1 Log
Page 14

TIME TEMPERATURE CURVE OF EXPOSED THERMOCOUPLE

SAMPLE Vernon White Blackout Fabric TEST NO. 101490
RED ONK + + TEST DATE July 2, 1991
I.C. BOARD

Figure 3

FROM : KEN MIZELL ASSOCIATES

04/04/95 10:00

4032291980

SPRUNG H 0

APR. 4. 1995 10:37PM P16
PHONE NO. : 206 637 1870
WHC-SD-WM-DDD-004 015/015

Attachment 1 Rev 0
PAGE A-15

UNITED STATES TESTING COMPANY, INC.

SMOKE DEVELOPED

SAMPLE Vernon White Blackout Fabric

TEST NO. 101490

TEST DATE July 2, 1991

RED OAK

+

+