

# SOUTHWEST RESEARCH INSTITUTE®

6220 CULEBRA RD. 78238-5166 • P.O. DRAWER 28510 78226-0510 • SAN ANTONIO, TEXAS, USA • (210) 684-5111 • WWW.SWRI.ORG

CHEMISTRY AND CHEMICAL ENGINEERING DIVISION  
DEPARTMENT OF FIRE TECHNOLOGY  
WWW.FIRE.SWRI.ORG  
FAX (210) 522-3377



**INVESTIGATION OF THE SURFACE BURNING  
CHARACTERISTICS OF A TWO-COAT FLAME  
STOP INTUMESCENT PAINT, APPLIED TO 0.75 IN.  
THICK DOUGLAS FIR WOOD PANEL  
MATERIAL ID: FLAME STOP INTUMESCENT  
PAINT**

**FINAL REPORT**

**Consisting of 6 Pages**

**SwRI Project No.: 01.10932.01.195**

**Test Date: June 17, 2005**

**Report Date: July 12, 2005**

**Prepared for:**

**FLAME STOP, INC.  
924 BLUEMOUND ROAD  
FT. WORTH, TX 76131**

Prepared by:

Anthony L. Saucedo  
Senior Engineering Technologist  
Material Flammability Section

Approved by:

Gladys M. Miller, M.S., M.B.A.  
Acting Manager  
Material Flammability Section

This report is for the information of the client. It may be used in its entirety for the purpose of securing product acceptance from duly constituted approval authorities. This report shall not be reproduced except in full, without the written approval of SwRI. Neither this report nor the name of the Institute shall be used in publicity or advertising.



HOUSTON, TEXAS (713) 977-1377 • WASHINGTON, DC (301) 881-0226

## **INTRODUCTION**

This report presents the results of a modified NFPA 255 test (extended to 30 minutes) on a specimen submitted by the Client and tested at Southwest Research Institute's (SwRI's) Department of Fire Technology, located in San Antonio, Texas. The test is conducted in general accordance with the procedure outlined in NFPA 255-00, "Standard Method of Test of Surface Burning Characteristics of Building Materials" (ASTM E 84, ANSI/UL 723 and UBC 8-1) and NFPA 703-00, "Standard for Fire Retardant Impregnated Wood and Fire Retardant Coatings for Building Materials."

Normally, these requirements detail a method of test intended to evaluate fire performance of metallic and nonmetallic roof deck constructions subjected to an internal (under deck) small scale fire exposure for 30 minutes for the purpose of determining the contribution of the roof covering material, insulation, and other components of the roofing system to the spread of fire within a building. As the extent of flame propagation, thermal degradation, and combustive damage are determined after roof deck construction are exposed to controlled laboratory fire conditions as provided by a horizontal tunnel furnace, these requirements are not intended for use in describing or defining the fire hazard or risk of fire under actual fire conditions.

The purpose of this test method is to determine the relative burning behavior of the material by observing the flame spread along the specimen. Flame Spread and Smoke Developed index are reported. However, there is not necessarily a relationship between these two measurements.

The specimen may consist of a continuous, unbroken length, or of sections joined end-to-end. When requested by the Client, specimens are prepared at SwRI following the Client's instructions. Unless otherwise indicated by the Client, test specimens are conditioned as appropriate in an atmosphere maintained between 68 and 78°F and 45 to 55% relative humidity.

Immediately prior to the test, the specimen is placed into the furnace and centered on the interior width so that the flame is evenly distributed over the width of the specimen and engulfs the test specimen at the fire end.

The flame front position and light obscuration are recorded throughout the 30-minute test. The Flame Spread and Smoke Developed indices are calculated only during the first 10 minutes of the test. The temperature at 24 ft is also recorded.

The Flame Spread and Smoke Developed indices reported herein are relative to the results obtained for mineral fiber-reinforced cement board and select grade red oak (moisture content between 6 and 8%). The mineral fiber-reinforced cement board is the calibration material used to obtain 0 values for Flame Spread and Smoke; red oak decks are used to obtain 100 values for Flame Spread and Smoke.

The results apply specifically to the specimens tested, in the manner tested, and not to the entire production of these or similar materials, nor to the performance when used in combination with other materials.

**This standard should be used to measure and describe the properties of materials, products, or assemblies in response to heat and flame under controlled conditions and should not be used to describe or appraise the fire-hazard or fire-risk of materials, products, or assemblies under actual fire conditions. However, results of the test may be used as elements of a fire-hazard assessment or a fire-risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard or fire risk of a particular end use.**

## MODIFIED NFPA 255-00 REPORT

CLIENT: FLAME STOP, INC.  
SWRI PROJECT NO: 01.10932.01.195  
TEST DATE: JUNE 17, 2005  
DAILY TEST NO: 1

### DESCRIPTION OF SPECIMEN

DATE RECEIVED:	17-Jun-2005 (received ready-to-test)
MATERIAL ID:*	Flame Stop Intumescent Paint
TRADE NAME:*	Flame Stop IM
DESCRIPTION:	Two coats of intumescent paint applied to 0.75 in. thick Douglas fir wood panels
CONSTRUCTION:*	Flame Stop IM applied to 0.75 in. thick Douglas fir wood at a coverage rate of 200 sq ft/gal (two coats)
THICKNESS:	0.75 in. thick wood panel (nominal)
UNIT WEIGHT:	34.0 lbs per panel
COLOR:	White (paint)
SPECIMEN SIZE:	Three panels, 21.0 in. wide x 96.25 in. long
CONDITIONING TIME:*	0 day at 70°F and 50% relative humidity
SUPPORT USED:	None
WITNESSED BY:	Mr. James Bower, Jr. and Ms. Amy Marie representing Flame Stop, Inc.

---

\* From Client's material description

<sup>1</sup> Data acquired during first 10 minutes of the test

<sup>2</sup> Data acquired during the entire 30 minutes of the test

## MODIFIED NFPA 255-00 REPORT

CLIENT: FLAME STOP, INC.  
SWRI PROJECT NO: 01.10932.01.195  
TEST DATE: JUNE 17, 2005  
DAILY TEST NO: 1

### TEST RESULTS (ROUNDED TO NEAREST 5)

FLAME SPREAD INDEX (FSI): 0<sup>1</sup>  
SMOKE DEVELOPED INDEX (SDI): 110<sup>1</sup>

### TEST DATA

UNROUNDED FSI: 2.1<sup>1</sup>  
UNROUNDED SDI: 112.3<sup>1</sup>  
FS\*TIME AREA (Ft\*Min): 4.1<sup>1</sup>  
SMOKE AREA (%\*Min): 117.3<sup>1</sup>  
AVERAGE OPTICAL DENSITY: 0.067<sup>2</sup>  
MAXIMUM OPTICAL DENSITY (@Min:Sec): 0.140 @ 11:33<sup>2</sup>  
FUEL AREA (°F\*Min): 17865.1<sup>2</sup>

### OBSERVATIONS DURING TEST

IGNITION TIME (Min:Sec): 0:37 (spotty)  
MAXIMUM FLAME FRONT ADVANCE (Ft.): 0.6 Ft<sup>1</sup>  
TIME TO MAXIMUM ADVANCE (Min:Sec): 3:09<sup>1</sup>  
30-MINUTE MAXIMUM FLAME FRONT (Ft @ Min:Sec): 2.2 @ 26:33<sup>2</sup>  
MAXIMUM TEMP. AT EXPOSED TC (°F): 660°F<sup>2</sup>  
TIME TO MAXIMUM TEMP. (Min:Sec): 23:21<sup>2</sup>  
TOTAL FUEL BURNED (Cu. Ft.): 156 Cu Ft<sup>2</sup>

DRIPPING (Min:Sec): None  
FLAMING ON FLOOR (Min:Sec): None  
AFTERFLAME TOP (Min:Sec): 3:00+  
AFTERFLAME FLOOR (Min:Sec): None

### CALIBRATION DATA (LAST RED OAK)

RED OAK SMOKE AREA (%\*Min): 100.2  
RED OAK FUEL AREA (°F\*Min): 8358.4  
GRC BOARD FUEL AREA (°F\*Min): 5149.9

<sup>1</sup> Data acquired during first 10 minutes of the test

<sup>2</sup> Data acquired during the entire 30 minutes of the test

## MODIFIED NFPA 255-00 REPORT

CLIENT: FLAME STOP, INC.

SWRI PROJECT NO: 01.10932.01.195

TEST DATE: JUNE 17, 2005

DAILY TEST NO: 1

