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**EVALUATION CENTER**  
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**RENDERED TO**

**Flame Stop, Inc.**  
**924 Blue Mound Road**  
**Ft. Worth, Texas 76131, USA**


Report of Testing "Flame Stop II" for compliance with the applicable requirements of the following criteria: ASTM E84-00a TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS (ANSI 2.5, UL 723, UBC 8-1, NFPA 255)

**TEST REPORT**

### ABSTRACT

Specimen I. D.	"Flame Stop II"	
Test Standard:	ASTM E84-00a TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS (ANSI 2.5, UL 723, UBC 8-1, NFPA 255)	
Test Date:	March 27, 2001	
Client:	Flame Stop, Inc.	
Test Results:		
	<b>FLAME SPREAD INDEX</b>	<b>25</b>
	<b>SMOKE DEVELOPED INDEX</b>	<b>25</b>

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Darrell Gonzales  
Technician 2

August 29, 2011

Reviewed and approved:



Servando Romo  
Project Manager

August 29, 2011

## I. INTRODUCTION

This report describes the results of the ASTM E84-00a TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS a method for determining the comparative surface burning behavior of building materials. This test is applicable to exposed surfaces, such as ceilings or walls, provided that the material or assembly of materials, by its own structural quality or the manner in which it is tested and intended for use, is capable of supporting itself in position or being supported during the test period.

The purpose of the method is to determine the relative burning behavior of the material by observing the flame spread along the specimen. Flame spread and smoke density developed are reported, however, there is not necessarily a relationship between these two measurements.

“The use of supporting materials on the underside of the test specimen may lower the flame spread index from that which might be obtained if the specimen could be tested without such support... This method may not be appropriate for obtaining comparative surface burning behavior of some cellular plastic materials... Testing of materials that melt, drip, or delaminate to such a degree that the continuity of the flame front is destroyed, results in low flame spread indices that do not relate directly to indices obtained by testing materials that remain in place.”

This test method is also published under the following designations:

ANSI 2.5  
NFPA 255  
UL 723  
UBC 8-1

***This standard should be used to measure and describe the properties of materials, products, or assemblies in response to heat and flame under controlled laboratory 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 this test may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use.***

#### IV. PURPOSE

The ASTM E84 (25 foot tunnel) test method is intended to compare the surface flame spread and smoke developed measurements to those obtained from tests of mineral fiber cement board and select grade red oak flooring. The test specimen surface (18 inches wide and 24 feet long) is exposed to a flaming fire exposure during the 10 minute test duration, while flame spread over its surface and density of the resulting smoke are measured and recorded. Test results are presented as the computed comparisons to the standard calibration materials.

The furnace is considered under calibration when a 10 minute test of red oak decking will pass flame out the end of the tunnel in five minutes, 30 seconds, plus or minus 15 seconds. Mineral fiber cement board forms the zero point for both flame spread and smoke developed indexes, while the red oak flooring smoke developed index is set as 100.

#### IV. TEST PROCEDURE

The tests were conducted in accordance with the procedures outlined in the ASTM E84. The specimens are placed directly on the tunnel ledges. As required by the standard, one or more layers of 0.25 inch thick reinforced concrete board are placed on top of the test sample between the sample and the tunnel lid. After the test, the samples are removed from the tunnel, examined and disposed of.

#### IV. REVISION SUMMARY

DATE	SUMMARY
Darrell Gonzales <i>Darrell Gonzales</i>	The specimen name was changed from "Flame Stop II (Modified)" to "Flame Stop II".
Servando Romo <i>Servando Romo</i>	<b>Note:</b> This report was originally created by Guy A. Haby from Omega Point Laboratories. The name of the laboratory changed to Intertek in 2005.
August 29, 2011	

## V. DESCRIPTION OF TEST SPECIMENS

Date Received:	3/23/2001
Date Prepared:	3/23/2001
Conditioning (73°F & 50% R.H.):	4 days
Specimen Width (in):	24
Specimen Length (ft):	24
Specimen Thickness (in):	1 in.
Material Weight:	N/A
Total Specimen Weight (lbs):	114.6
Adhesive or coating application rate:	N/A

### **Mounting Method:**

The specimen was self-supporting and was placed directly on the inner ledges of the tunnel.

### **Specimen Description:**

The specimen was described by the client as "Flame Stop II, Flame Stop II applied over Douglas Fir Wood at 125 square feet per gallon".

The specimen consisted of a clear FR coating applied to (3) 24 in. wide x 8 foot long x 1 in. (nominal) thick Douglas Fir decks. The decks were constructed from (21) 1 in. x 4 in. (nominal) x 8 foot pieces of Douglas Fir lumber.

The product was received by our personnel in good condition.

## VI. TEST RESULTS & OBSERVATIONS

The test results, computed on the basis of observed flame front advance and electronic smoke density measurements are presented in the following table.

Test Specimen	Flame Spread Index	Smoke Developed Index
"Flame Stop II"	25	25

The data sheets are included in Appendix A. These sheets are actual print-outs of the computerized data system which monitors the tunnel furnace, and contain all calibration and specimen data needed to calculate the test results.

## VII. OBSERVATIONS

During the test, the specimen was observed to behave in the following manner.

Time (min:sec)	Observations
0:36	Steady ignition
10:00	Test ended.

After the burners were turned off, a 60+ second after flame was observed.

Note: The specimen appeared to be self-extinguishing.

After the test, the specimen was observed to be damaged as follows:

Distance (FEET)	Damage Descriptions
0 - 8	The specimen was charred.
8 - 24	The specimen had a light black discoloration.

**APPENDIX A**  
**ASTM E84**  
**DATA SHEETS**

## TEST RESULTS

**FLAMESPREAD INDEX: 25**  
**SMOKE DEVELOPED INDEX: 25**

## SPECIMEN DATA . . .

Time to Ignition (sec): 36  
Time to Max FS (sec): 296  
Maximum FS (feet): 5.2  
Time to 980 °F (sec): Never Reached  
Max Temperature (°F): 682  
Time to Max Temperature (sec): 594  
Total Fuel Burned (cubic feet): 40.06

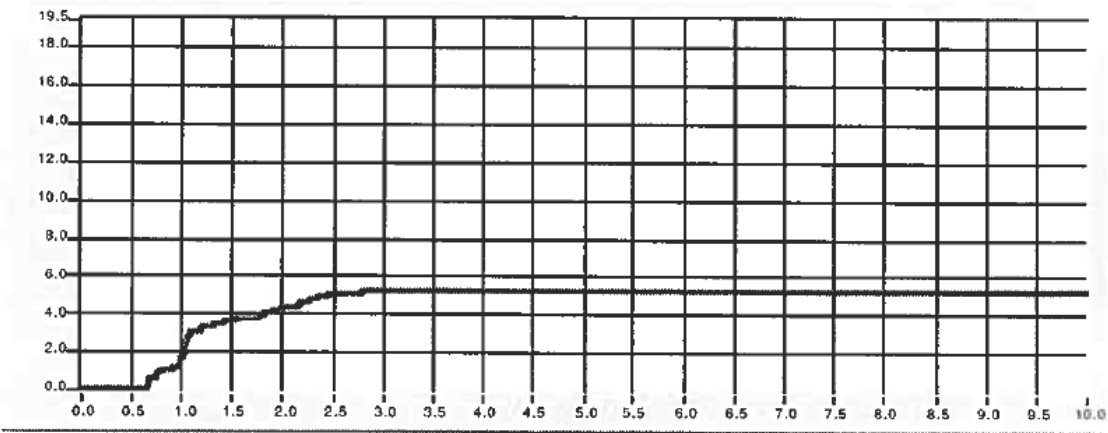
FS\*Time Area (ft\*min): 45.1  
Smoke Area (%A\*min): 24.4  
Fuel Area (°F\*min): 6040.9  
Fuel Contributed Value: 14  
Unrounded FSI: 23.2

## CALIBRATION DATA . . .

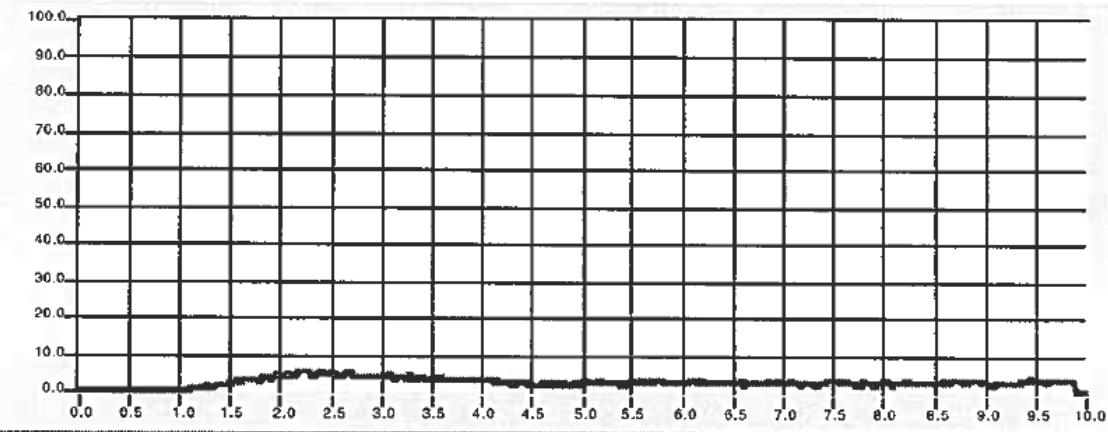
Time to Ignition of Last Red Oak (sec): 47  
Red Oak Smoke Area (%A\*min): 101.00  
Red Oak Fuel Area (°F\*min): 9318  
Glass Fiber Board Fuel Area (°F\*min): 5486



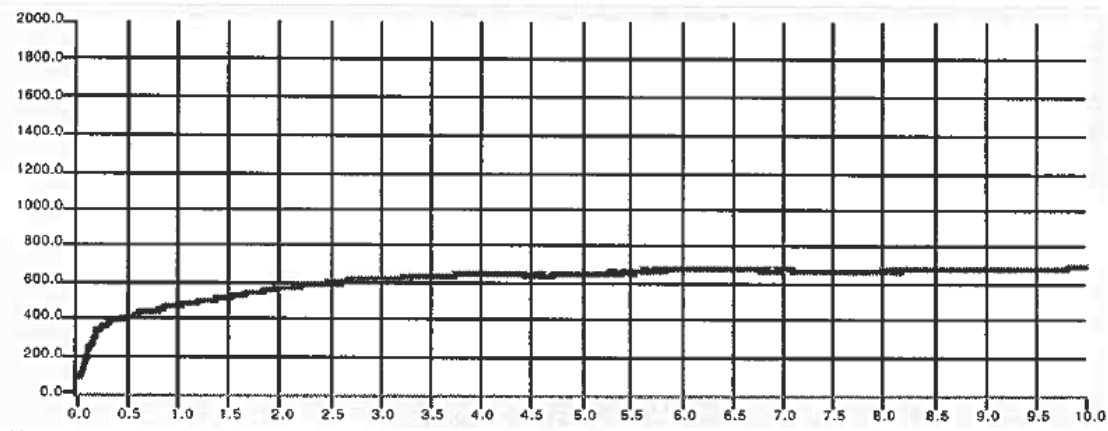
FLAME SPREAD (ft)



Smoke (%A)



Temperature (°F)



Time (min)

