



## HPVA LABORATORIES

42777 Trade West Drive, Sterling, VA 20166 703-435-2900

Report On  
Surface Burning Characteristics of Flooring, Floor Coverings, and  
Miscellaneous Materials and Assemblies  
As Determined By  
**CAN/ULC S102.2 Test Method**

Prepared For:  
**Armstrong Flooring Inc.**  
Lancaster, PA

2.0mm Heterogeneous Vinyl Sheet

Test Number: T-15685 R1

Date of Issue:  
01/29/2018



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### I. SCOPE

This report contains the reference to the test method, purpose, test procedure, rounding procedures, preparation and conditioning of specimens, description of materials, test and post test observation data, and test results.

### II. TEST METHOD

The test was conducted in accordance with CAN/ULC S102.2-10; "Standard Method of Test For Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies."

### III. PURPOSE

The purpose of the test is to determine the relative surface burning characteristics of the test material under specific test conditions. Results are given for flame spread and smoke developed indicies. The values obtained from burning the test material represent a comparison with that of 6mm inorganic reinforced cement board expressed as zero and red oak flooring expressed as 100.

The flame spread results of these tests are frequently used by building code officials and regulatory agencies in the acceptance of interior finish material for various applications. This flame spread classification system is based on the premise that the higher the flame spread numbers, the greater the fire spread potential. The actual relationship between the numbers developed under this test and life safety from fire has not been adequately established.

### IV. TEST PROCEDURE NOTES

The furnace was preheated to a minimum of 85°C as measured by an 18 AWG thermocouple embedded in cement 3mm" below the wall surface of the chamber, 7090mm from the centerline of the ignition burners. The furnace was then cooled to 40°C (+/- 3°C) as measured by a thermocouple embedded 3mm below the wall surface of the test chamber 4000mm from the fire end. Prior 10-minute tests with 6mm inorganic reinforced cement board provided the zero reference for flame spread. At least once a year 10-minute tests with unfinished select grade red oak flooring provided for the 100 reference for flame spread and smoke developed as noted in Section III.

#### A. FLAME SPREAD

The flame spread distance is observed and recorded at least every 15 seconds or every 2 feet of progression. The peak distance is noted at the time of occurrence. The flame spread distance is plotted over time. The total area under the flame spread distance-time curve is determined; flame front recessions are ignored. The flame spread is then calculated as a function of the area under the curve relative to the standard red oak curve area. The value for flame spread classification for the tested material may be compared with that of inorganic reinforced cement board and select grade red oak flooring.

#### B. SMOKE DEVELOPED

The smoke developed during the test is determined by the reduction in output of a photoelectric cell. A light beam vertically orientated across the furnace outlet duct is attenuated by the smoke passing through the duct. The output of the photoelectric cell is related to the obscuration of the light source through the duct caused by the smoke. A curve is developed by plotting photoelectric cell output against time. The value of smoke developed is derived by calculating the net area under the curve for the test material and comparing this area with the net area under the curve for unfinished select grade 18mm red oak flooring.

### V. FLAME SPREAD RATING AND SMOKE DEVELOPED CLASSIFICATION

Single test calculated flame spread and smoke developed values are averaged and rounded to the nearest multiple of 5 and reported as the Flame Spread Rating and Smoke Developed Classification. Actual test values are available on request.

### VI. PREPARATION AND CONDITIONING OF TEST SAMPLES

Three or four sections are generally used in the preparation of a complete test specimen which is 432 mm - 444 mm wide and 7315mm long. Materials 2438mm in length may be tested by using three sections 432mm wide by 2438 long for a total specimen length of 7315mm. A 350mm length of uncoated 16 gauge steel sheet is used to make up the remainder of the test specimen; it is placed at the fire end of the test chamber. Prior to testing, three 2438mm long sections of 6mm inorganic reinforced cement board with a density of 1445 +/- 160kg/m<sup>3</sup> are placed on the upper ledges of the tunnel to protect the furnace lid assembly. Test specimens are conditioned at a controlled temperature of 23°C (+/- 3°C) and a controlled relative humidity of 50 +/- 5 percent.



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**Test Number:** T-15685 R1

**Test End Date:** 01/22/2018

<b>Report Prepared For:</b>	<b>Armstrong Flooring Inc.</b> Lancaster, PA
<b>Material Tested:</b>	2.0mm Heterogeneous Vinyl Sheet

Sample Information:	
<b>Detailed Product Description:</b>	2.0mm Heterogeneous Vinyl Sheet. Vinyl Sheet with a 0.55mm wear layer, Width: 2000mm, Gauge: 2.0mm. Production Date: 12/04/17, Lot Number: 1712045151.
<b>Mounting Method:</b>	The material was adhered to a 1/4" cement board backer by the manufacturer using Armstrong S240 adhesive.
<b>Sample Selection:</b>	Manufacturer
<b>Number of Samples Per Test:</b>	6
<b>Surface Exposed:</b>	Face Side
<b>Average Thickness (in.):</b>	0.345
<b>Test Start Date:</b>	01/22/2018
<b>Conditioning Days:</b>	10
<b>Sample Color:</b>	Brown
<b>Average Weight (lbs.):</b>	86.67

Test Data			
	Run 1	Run 2	Run 3
<b>Preheat Time (min):</b>	2:00	2:00	2:00
<b>Starting Temp. (°F):</b>	108	109	109
<b>Ignition Time (sec):</b>	46	44	47
<b>Burn Length (feet):</b>	3.38	0.62	4.56
<b>Time to Max Burn Length (min):</b>	10.00	3.68	8.37

Test Results			
	Run 1	Run 2	Run 3
<b>Flamespread Value:</b>	4	2	6
<b>Smoke Developed Value:</b>	75	68	65
<b>Flame Spread Rating:</b>			5
<b>Smoke Developed Classification</b>			70

<b>Observations:</b>	Run 1: Charring to 5', cracking and discoloration to 9'. Run 2: Charring to 3', cracking to 5'. Run 3: Charring to 8', cracking to 9'.		
<b>Remarks:</b>	The sample for each burn consisted of six 17" x 48" panels butted end-to-end. Reported weights and thicknesses include the 1/4" cement board backer. Revision 1 issued 05/07/2024 - Product name changed to "2.0mm Heterogeneous Vinyl Sheet" at the request of the client. "Comparable Products" removed from Detailed Product Description section on page 3.		
<b>Test Operator:</b>	CK	<b>Reader:</b>	CP

Report Prepared By: \_\_\_\_\_

Report Reviewed By: \_\_\_\_\_

  
Laboratory Technician - Fire

 2024.05.08  
15:56:11 -04'00'  
Sr. Manager of Product Testing

This is a factual report of the results obtained from laboratory tests of sample products. The results may be applied only to the products tested and should not be construed as applicable to other similar products of the manufacturer. The HPVA does not verify the description of the materials and products when the description is provided by the client. This report is not a recommendation or a disapprobation by the HPVA of the material or product tested. While this report may be used for obtaining product acceptance, it may not be used in advertising.



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Test Method  Project #  Date  Time (Test Start)  Test No.

Specimen ID

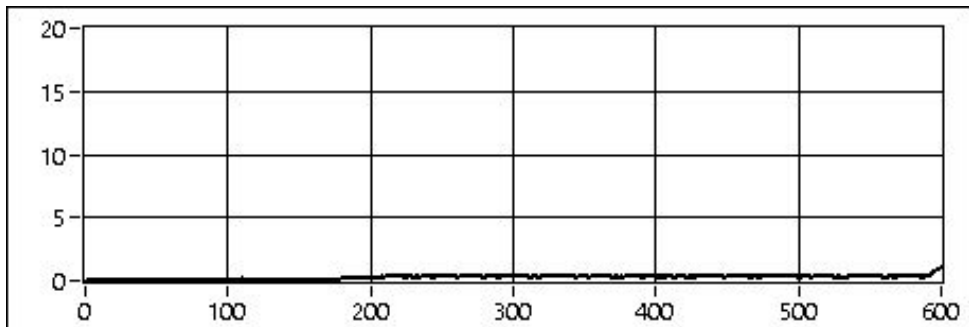
Specimen Description

Mounting Procedure

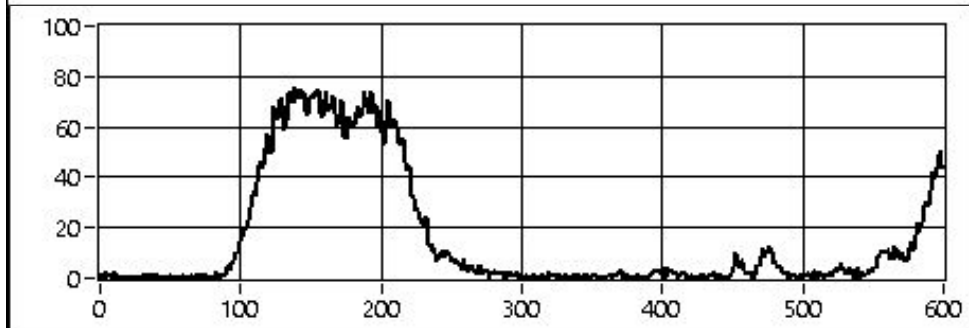
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FS Area  Maximum FS  MAX FS Time (min)

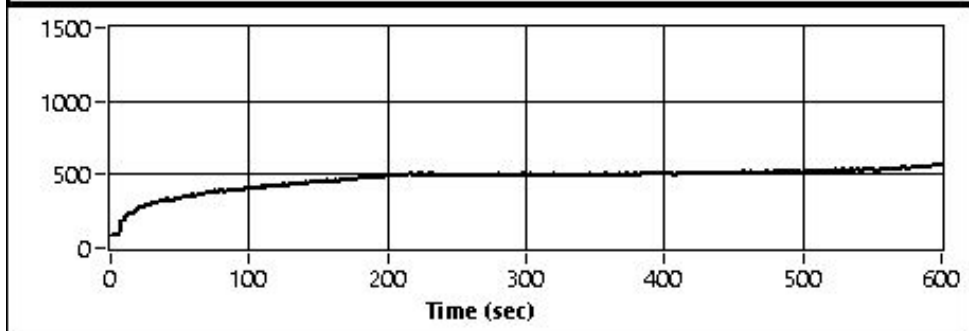
Smoke Area (%A min)  RO Smk Area  Raw SD  Raw FSI



FI Spread



Smoke (%A)



23 ft Temp

Final FSI  Final SD

Flame Spread values on this page are reported in meters.



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Specimen ID

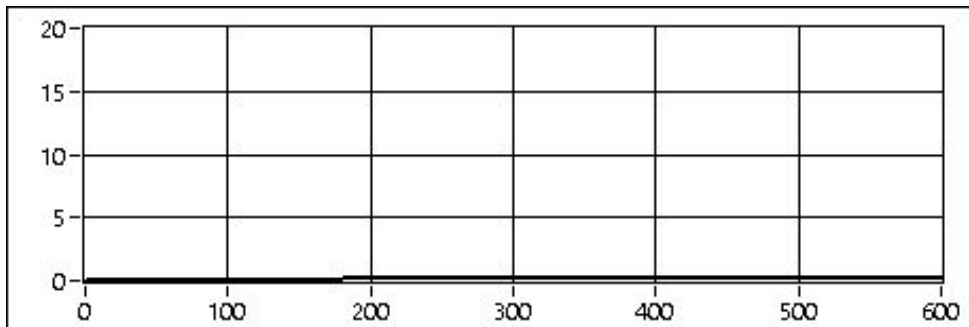
Specimen Description

Mounting Procedure

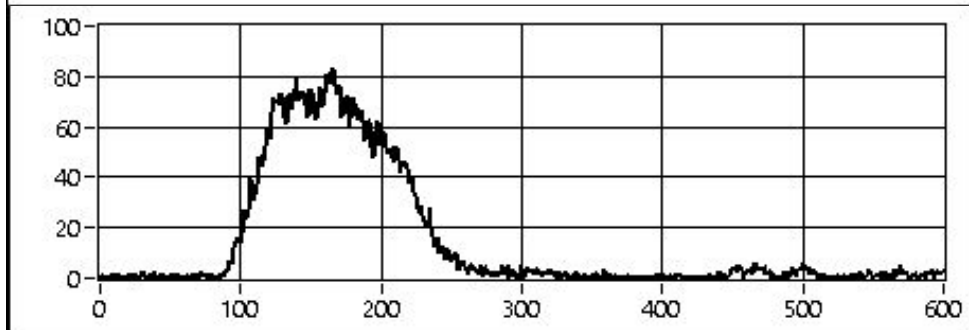
Fuel (CF)  Time to 980F (min)  Max Temp (F)  Time to Max Temp (min)

FS Area  Maximum FS  MAX FS Time (min)

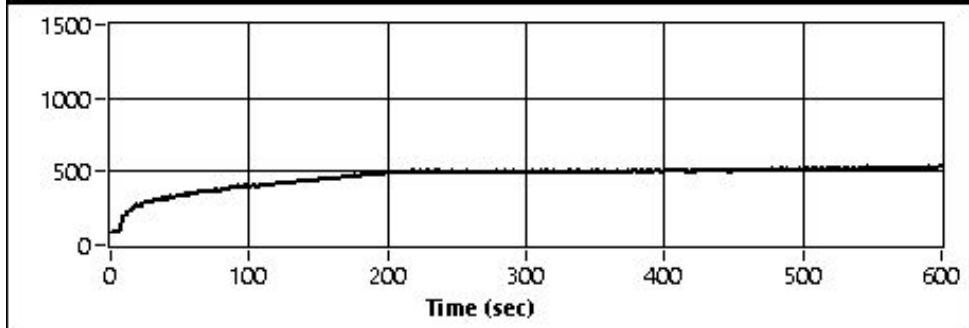
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Smoke (%A)



23 ft Temp

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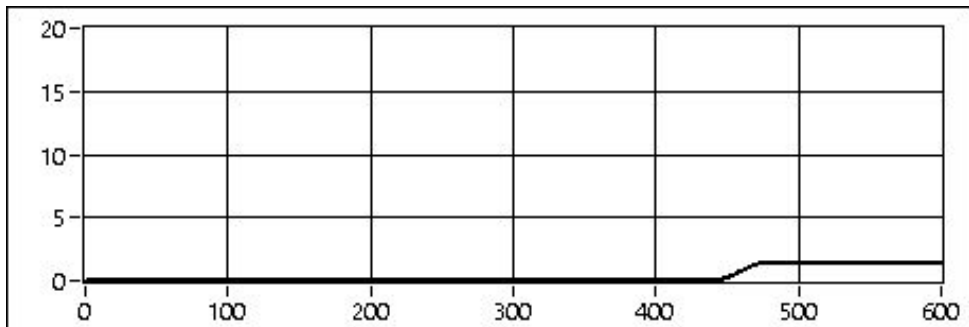
Specimen Description

Mounting Procedure

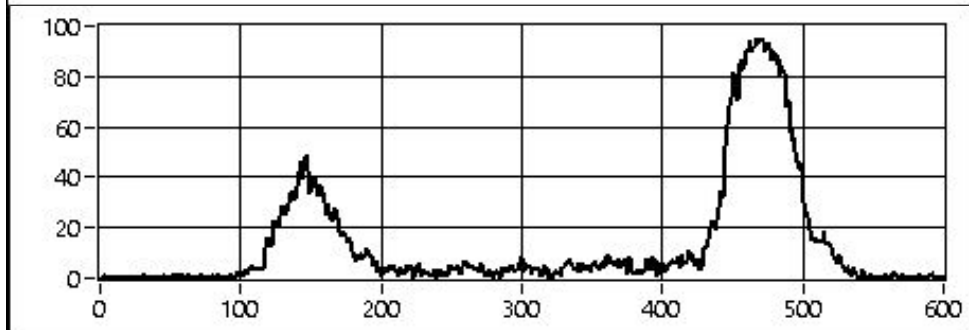
Fuel (CF)  Time to 980F (min)  Max Temp (F)  Time to Max Temp (min)

FS Area  Maximum FS  MAX FS Time (min)

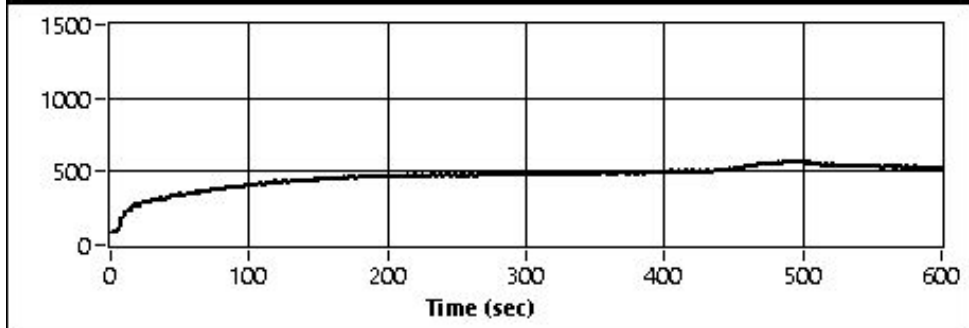
Smoke Area (%A min)  RO Smk Area  Raw SD  Raw FSI



FI Spread



Smoke (%A)



23 ft Temp

Final FSI  Final SD

Flame Spread values on this page are reported in meters.