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FIRE PERFORMANCE EVALUATION IN ACCORDANCE WITH ASTM E84-23d, *STANDARD TEST METHOD FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS*

MATERIAL ID: *CLBBLKWP*

**FINAL REPORT
Consisting of 9 Pages**

**SwRI® Project No.: 01.28889.01.002a
Test Date: July 17, 2024
Report Date: August 28, 2024**

Prepared for:

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EXECUTIVE SUMMARY

This report presents the test results for a specimen submitted by Plaskolite, LLC, located in Columbus, Ohio, and tested at Southwest Research Institute's (SwRI's) Fire Technology Department, located in San Antonio, Texas. The test was conducted in accordance with the procedure outlined in ASTM E84-23d, *Standard Test Method for Surface Burning Characteristics of Building Materials*. The results for Flame Spread Index (FSI) and Smoke Developed Index (SDI) are presented below in Table i.

Table i. Classification and Summary of Test Results.

Classification per Section 803.1.2 of International Building Code		
Rating	FSI	SDI
A	0 – 25	0 – 450
B	26 – 75	0 – 450
C	76 – 200	0 – 450
Test Results		
Material ID	FSI	SDI
<i>CLBBLKWP</i>	35	175

1.0 INTRODUCTION

This report describes a fire performance evaluation conducted for Plaskolite, LLC in accordance with ASTM E84-23d, *Standard Test Method for Surface Burning Characteristics of Building Materials*. Testing was conducted at the Fire Technology Department of Southwest Research Institute (SwRI), located in San Antonio, Texas.

This standard should be used to measure and describe the response of materials, products, or assemblies 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 that are pertinent to an assessment of the fire hazard or fire risk of a particular end use.

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.

2.0 SAMPLE DESCRIPTION

SwRI received one panel of the material for E84 testing. The material was cut into two equal panels prior to testing. The samples are described below in Table 1. The panels were conditioned to a constant mass at an ambient temperature of $23\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ and a relative humidity of $50\% \pm 5\%$. Constant mass was achieved on July 15, 2024.

Table 1. Sample Description.

Material ID	<i>CLBBLKWP</i>
Trade Name	Class B sheet
Sample Description	Fire retardant HDPE
Nominal Received Dimensions	One panel measuring: $3683 \times 1397 \times 25\text{ mm}$
Nominal Tested Dimensions*	Two panels, with overall dimensions $7314 \times 610 \times 25\text{ mm}$
Test Side	Either
Color	Black

*Assessed by SwRI personnel.

3.0 TEST PROCEDURE AND SETUP

This test procedure exposes a material in a horizontal, rectangular apparatus that is $25\text{ ft} \times 17\text{-}^3\text{/}_4\text{ in} \times 12\text{ in}$ (L \times W \times H). The apparatus is equipped with two gas burners at one end that direct a flame onto the surface of the material under a controlled airflow. As the test progresses, the possibility of flame spread along the surface of the material may occur. The distance of flame travel and the rate at which the flame front advances during the 10 min exposure determines the calculated flame spread index. The smoke developed measurement is calculated based on a photometer system consisting of a white light source and photocell mounted in the apparatus. The output of the photoelectric cell is

proportional to the smoke, soot particulate, and other effluent passing between the light source and photocell.

4.0 TEST RESULTS

Testing occurred on July 17, 2024, for the material identified as *CLBBLKWP*. The results for Flame Spread Index and Smoke Developed Index are presented below in Table 2. Detailed test results can be found in Appendix A and photographic documentation is provided in Appendix B. The ASTM E84 standard does not contain a performance criteria, however; the two model building codes (International Building Code®, Chapter 8 *Interior Finishes*, Section 803 *Wall and Ceiling Finishes*; NFPA 5000, Chapter 10 *Interior Finish*, Section 10.2.3.3, *Interior Wall and Ceiling Finish Materials Tested in Accordance with ASTM E84 or UL 723*.) classify materials based on the Flame Spread and Smoke Developed indices, however, there is not necessarily a relationship between these two measurements.

Table 2. Classification and Summary of Test Results.

Classification per Section 803.1.2 of IBC		
Rating	FSI	SDI
A	0 – 25	0 – 450
B	26 – 75	0 – 450
C	76 – 200	0 – 450
Test Results		
Material ID	FSI	SDI
<i>CLBBLKWP</i>	35	175

APPENDIX A
TEST RESULTS
(CONSISTING OF 2 PAGES)

TEST RESULTS

Rounded FSI:	35
Rounded SDI:	175

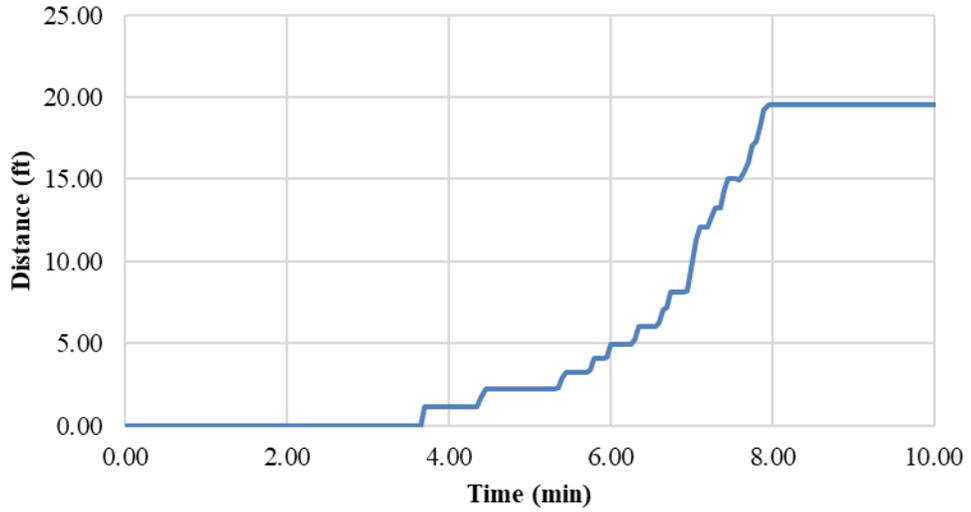
TEST DATA

Unrounded FSI:	36
Unrounded SDI:	174
FS*Time Area (ft*Min):	70
Smoke Area (%*Min):	181
Fuel Area (°F*Min):	5256

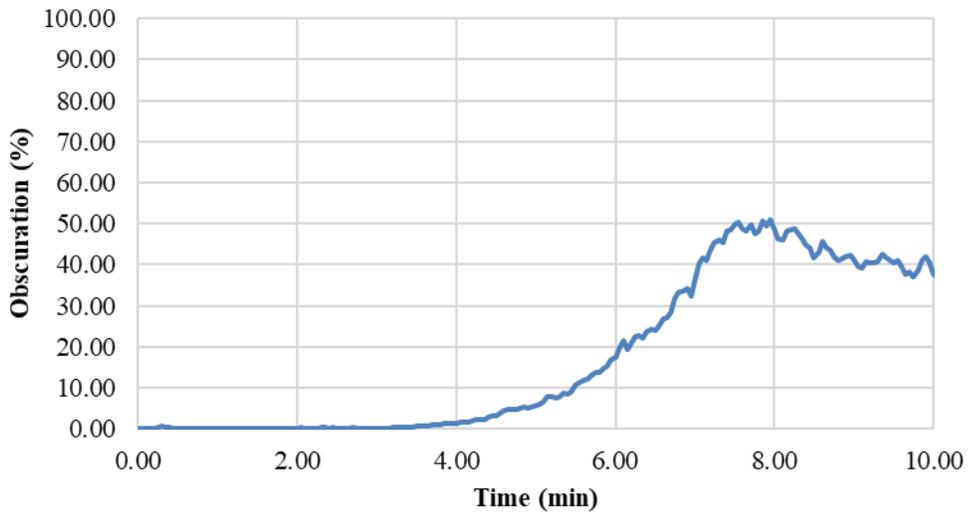
OBSERVATIONS DURING TEST

Ignition Time (min: s):	3:00
Maximum Flame Front Advance (ft):	19.5
Time to Maximum Advance (min: s):	7:57
Maximum Temp. at Exposed TC (°F):	1134
Time to Maximum Temp. (min: s):	10:15
Dripping (min: s):	4:29
Flaming on Floor (min: s):	5:00
Flaming on Floor Out (min: s):	None
After-flame Top Beyond 10-minute Test (min: s):	Yes
After-flame Floor Beyond 10-minute Test (min: s):	Yes
Sagging (min: s):	None
Delamination (min: s):	None
Peeling (min: s):	None
Shrinkage (min: s):	None
Cracking (min: s):	None
Pieces Falling (min: s):	4:33
Charring (min: s):	None
Flashing (min: s):	2:16
Melting (min: s):	4:29
Blistering (min: s):	None

Flame Spread



Obscuration



APPENDIX B
PHOTOGRAPHIC DOCUMENTATION
(CONSISTING OF 1 PAGE)



Figure B-1. Exposed side of the material before fire exposure.



Figure B-2. Exposed side of the material after fire exposure.