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SGS

Tested For:		**Phone:**		**Received:**	8/11/2023
	FlameOff Coating, Inc.	**Fax:**		**Completed:**	8/15/2023
	3915 Beryl Road, Suite 130	**Mobile:**		**Code:**	A
	Raleigh, NC 27607	**PO#:**		**Test Report:**	3-52671-0-DU
	USA	**Email:**			

Key Test: **ASTM E2768 , ASTM E84 (Extended)** 375

Client's Identification:

Product Name: FR Clear. Applied to 2 x 4 Wood Deck.

Test Category: Tunnel Test ASTM E84: LE 2018b; V 01/19; ASTM E2768: LE 2011(18); V 03/19 PC:ME /dl /dv

TEST PERFORMED: ASTM E2768 - Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials

The ASTM E2768 test is conducted using the same equipment, apparatus, recording devices, calibration, and calculation of flame spread index and smoke developed index as the ASTM E84 test. The only difference is that the ASTM E2768 test is extended for an additional 20 minutes (30 minutes total) and the maximum distance of surface flame spread is measured (from the centerline of the burner outward) during the 30-minute test.

ASTM E2768 REFERS TO: ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials

APPROXIMATE THICKNESS OF SPECIMEN (as measured by SGS NORTH AMERICA): 1.475"

SPECIMEN WEIGHT (to include substrate when applicable):

Prior to Conditioning:	176.4 lbs.
Stabilized Weight (taken twice within 24 hours):	176.4 lbs.

PRODUCT CATEGORY:
☐ Textile Type Product
☐ Vinyl Type Product
☒ Other than Textile Type or Vinyl Type Product: see client's Identification section above

BRIEF DESCRIPTION OF TEST: This test method is used to determine the relative burning behavior of a material under defined test conditions. The test is performed in a 25 ft. long tunnel/duct-like apparatus and is often referred to as the "tunnel test". The test contemplates a calibration where Red Oak burns to the 24 ft. mark in 5.5 minutes ± 15 seconds. During the actual test, a 24 ft. long x 23" wide specimen rests horizontally in a ceiling configuration inside the test chamber facing downward and toward two upward oriented burners. A furnace lid that rests in a water trough seals the chamber tight. A cement board placed on the backside of each specimen assembly protects the furnace lid during the test. The near face of the specimen is subjected to a 4.5 ft. flame insult of approximately 88 kW for ten minutes during which the time and distance of the spread of flame along the length of the specimen and the smoke developed as read by the photometric system are all recorded, followed by an additional insult of 20 minutes under the same conditions where the measurement of flame travel distance is recorded. The Flame Spread and Smoke Developed (the reporting of smoke is optional in ASTM E2768) are reported as an Index, while the final flame travel distance is also recorded.

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Key Test: **ASTM E2768 , ASTM E84 (Extended)** 375

ALL SPECIMEN SURFACES ARE HOMOGENOUS AND SYMETRICAL ABOUT THE LONGITUDINAL AXIS:

☒ YES; ☐ NO (describe surface tested): _____

SPECIMEN MOUNTING:

☒ Self-supporting: The test specimen was rigid enough to be self-supporting when placed into test position. No additional support was required.

☐ Adhered to IRC: The test specimen was bonded to ¼" Inorganic Reinforced Cement (IRC) boards.

☐ Adhered to Gypsum: The test specimen was adhered to $^{5}/_{8}$" thick Type X gypsum board.

☐ Unadhered: The specimen was not adhered to any substrate. Instead, it was laid over a 2" hexagonal wire mesh screen and ¼" rods.

☐ Other: ____

SPECIMEN LENGTH: The 24 ft. length was comprised of:

☐ Continuous unbroken 24 ft. length
☒ Sections: ☒ Three 8 ft. sections butted end to end
☐ Three 8 ft. sections positively joined
☐ Other: _____

ADHESIVE (applied by SGS North America): ☒ No; ☐ Yes - (specify): _____

OBSERVATIONS:

☒ No unusual observations
☐ Burning Drips to Floor further qualified as: ☐ Minor; ☐ Moderate; ☐ Major
☐ Delamination
☐ Sagging
☐ Shrinkage
☐ Fallout (specimen displacement from ceiling mount)
☐ Other: _____

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REMARKS:

☒ None
☐ Other: _____

RESULTS TO ASTM E84 (10 minute):

Flame Spread Index: 5
Smoke Developed: 90

ROUNDING (As Per ASTM E84 Reporting Requirements):

Flame Spread Index value has been rounded to the nearest multiple of 5.
Smoke Developed value has been rounded to:

Raw Data	Rounded
Less than 200	Nearest multiple of 5
200 or more	Nearest multiple of 50

CONCLUSION: Based on the reported Results and cited Code Classification System, for the ASTM E84 ten-minute portion of the ASTM E2768 test, the item tested is assigned a:

☒ Class I or A rating
☐ Class II or B rating
☐ Class III or C rating
☐ Fails to achieve a minimum classification thereby rendering the product unsuitable in terms of code requirement
☐ Based on product performance*, ASTM E84 is not a suitable test method for the material.

* Severe melt, drip, delamination, or other behaviour that destroys the continuity of the flame front such that a valid flame spread is unobtainable (See "Remarks")

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USA	**Email:**		

Key Test: ASTM E2768 , ASTM E84 (Extended) 375

DATA SUMMARY:

Time to Ignition (minutes:seconds): 01:15
Maximum Flame Spread "Distance" (feet): 1.7
Maximum Flame Spread "Time" (seconds): 226

CODE CLASSIFICATION SYSTEM (Please see "ASTM E84 Limitations"):

Flame Spread Index		Smoke Developed
Class I or A:	0 - 25	450 or less
Class II or B:	26 - 75	450 or less
Class III or C:	76 - 200	450 or less

BUILDING CODE CITATION FOR THE CLASSIFICATION SCHEME:

(1) 2015 edition, NFPA 101 Life Safety Code, para. 10.2.3.4
(2) 2015 edition, NFPA 5000 Building Construction & Safety Code, para. 10.4.2
(3) 2018 edition, International Building Code, para. 803.1.2

RESULTS TO ASTM E2768 (30 minutes):

30 minute maximum Flame Travel distance (from centerline of burner): 7 ft.6 in.
10 minute Flame Spread Index: 5
10 minute Smoke Index (optional): 90

CLASSIFICATION: The following conditions of classification are cited as requirements for "meeting the conditions of classification of ASTM E2768" (* Note: the conclusion applies to that surface tested only unless all surfaces are homogenous and symmetrical about their longitudinal axis):

1. Flame spread of 25 or less during the 10-minute test period.
2. The flame front shall not progress more than 10.5 ft (3.2 m) beyond the centerline of the burners during the 30-minute test.
3. No Significant Progressive Combustion (defined as flame progression no greater than 10.5 ft)
4. Smoke (no requirements cited, and this component of the test is optional)

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CONCLUSION: Based on the above Results and cited Classification Criteria, the item tested:

- ☒ Complies for all surfaces of the product
- ☐ Complies for that surface tested only as the specimen was not symmetrical and homogenous about its longitudinal axis
- ☐ Does not comply

LIMITATIONS OF THE ASTM E84 CLASSIFICATION SCHEME: Most building codes will accept the ASTM E84 classifications when the interior finish product is used in a sprinklered area. Certain local authorities such as NYC have more stringent requirements, i.e. Smoke Developed ranges from a maximum 25 to 100.

If the interior finish product is a textile or vinyl wall covering used in a non-sprinklered area, the NFPA 265 room corner fire test applies.

Certain products which give off excessive heat such as but not limited to cellular plastics, cellular foam (either with or without coverings as applicable), polypropylene, and high density polyethylene should be tested by NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth. In SGS North America's opinion, the codes require NFPA 286 for such products, even in sprinklered areas.

CERTIFICATION: I certify that the reported results were obtained after testing specimens in accordance with the procedures and equipment specified above.

DocuSigned by:
Bobby Brown
F7FE1AA2EFE84EE...
AUTHORIZED SIGNATURE
SGS NORTH AMERICA
/gb /ab

9/19/2023

DU.09.15.23 /tm

Test Engineer: Jimmy Rosinsky

DS
BB

Enclosure: Graphs

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Program: Steiner Tunnel (Version 1.0.3.0)

Test Method	:	ASTM E84
Report #	:	3-52671-0-DU-A
Test Date	:	8/15/2023
Client	:	FlameOff Coating, Inc.
Operator	:	Jimmy Rosinsky
Details of Preparation	:	The test specimen was rigid enough to be self-supporting when placed into test position. The 24 ft. length was comprised of three 8 ft. sections butted end to end.
Observations	:	No unusual observations

Results

Area Under Flame Curve (ft min)	:	11.67
Raw Flame Spread Index	:	6.01
Ignition Time (mm:ss)	:	01:15
Area Under Smoke Curve (%A min)	:	71.19
Raw Smoke Developed Index	:	90.22
Total Gas Flow (ft^3)	:	56.9
Maximum Flame Front Achieved (ft)	:	1.7 @ 226s
Flame Spread Index	:	**5**
Smoke Developed Index	:	**90**
Material Classification	:	**A**

CERTIFICATION : I certify that the above results were obtained after testing the specimens in accordance with the procedures and equipment specified by ASTM E84

Jimmy Rosinsky

AUTHORIZED SIGNATURE

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Program: Steiner Tunnel (Version 1.0.3.0)

Test Method : ASTM E84
Test Report # : 3-52671-0-DU-A