

Intertek

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EVALUATION CENTER
Intertek Testing Services NA Inc.
16015 Shady Falls Road
Elmendorf, TX 78112

RENDERED TO

Flame Safe Wood Products, Inc.
2653 Warfield Avenue
Fort Worth, TX 76106

Report of Testing "Flame Safe Thatch Safe Fire Retardant Coating" for compliance with the applicable requirements of the following criteria: ASTM E84-14 TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS (UL 723, UBC 8-1, NFPA 255)

TEST REPORT

ABSTRACT


Specimen I. D.	"Flame Safe Thatch Safe Fire Retardant Coating"	
Test Standard:	ASTM E84-14 TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS (UL 723, UBC 8-1, NFPA 255)	
Test Date:	March 5, 2015	
Client:	Flame Safe Wood Products, Inc.	
Test Results:		
	FLAME SPREAD INDEX	0
	SMOKE DEVELOPED INDEX	85

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Joseph Martinez
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Reviewed and approved:



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Intertek

I. INTRODUCTION

This report describes the results of the ASTM E84-14 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:

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.

II. 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. The fiber cement board which complies with Annex A3 of the ASTM E 84 standard forms the zero point for both flame spread and smoke developed indexes, while the red oak flooring smoke developed index is set as 100.

III. 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
March 13, 2015	Original

V. DESCRIPTION OF TEST SPECIMENS

Date Received:	2/25/2015
Date placed in the conditioning room:	2/25/2015
Conditioning (73°F & 50% R.H.):	8 days
Specimen Width (in):	22.25
Specimen Length (ft):	24
Specimen Thickness (in):	1.5 (nominal)
Total Specimen Weight (lbs):	153

Specimen Description:

The specimen was described by the client as "Flame Safe Thatch Safe fire retardant coating applied to natural roof thatching one coat at 150 square feet per gallon".

The 24ft. long test specimen consisted of three 8ft. long sections of thatch material bounded to wood panels with metal wire.

The product was received by our personnel in good condition and given an identification number of SAT1502251714-004.

Mounting Method:

The specimen was self-supporting. The thatch side was exposed towards the flames.

VI. TEST RESULTS & OBSERVATIONS

The test was conducted on March 5, 2015, and witnessed by Louis Jacobini of Flame Safe Wood Products, Inc.

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 Safe Thatch Safe Fire Retardant Coating"	0	85

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
0:00	The test burners were turned on.
0:23	Transient ignition was observed.
1:23	The specimen began to flake.
3:31	Steady ignition was observed.
10:00	The test burners were shut off.

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

Distance (FEET)	Damage Descriptions
0 – 12	The coating was observed to be heavily charred.
12 – 24	The coating was observed to be charred.

APPENDIX A
ASTM E84
DATA SHEETS

FLAME SAFE CHEMICAL CORPORATION

TEST RESULTS

FLAMESPREAD INDEX: 0
SMOKE DEVELOPED INDEX: 85

SPECIMEN DATA . . .

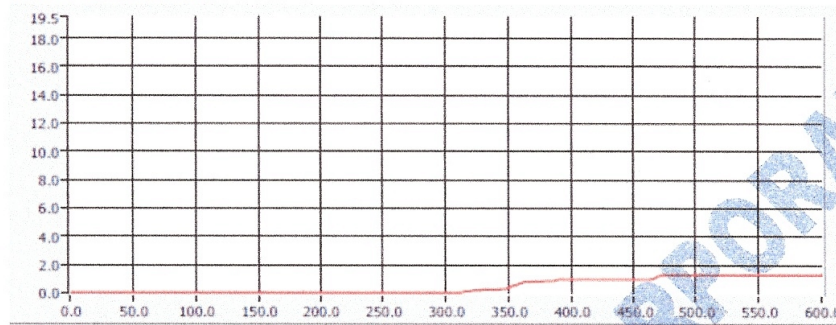
Time to Ignition (sec): 211
Time to Max FS (sec): 474
Maximum FS (feet): 1.3
Time to 980 F (sec): Never Reached
Time to End of Tunnel (sec): Never Reached
Max Temperature (F): 572
Time to Max Temperature (sec): 595
Total Fuel Burned (cubic feet): 47.05

FS*Time Area (ft*min): 4.7
Smoke Area (%A*min): 54.6
Unrounded FSI: 2.4

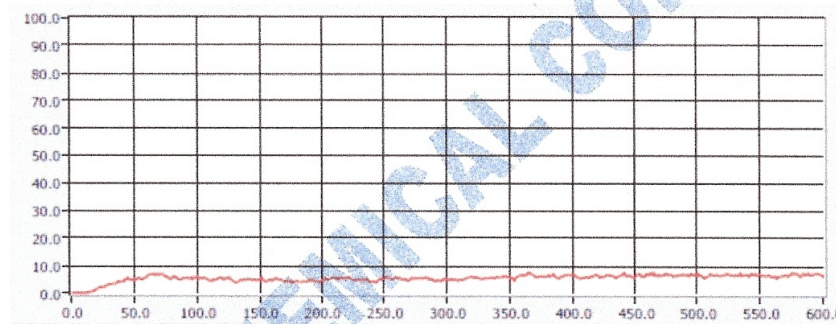
CALIBRATION DATA . . .

Time to Ignition of Last Red Oak (Sec): 47.0
Red Oak Smoke Area (%A*min): 65.9

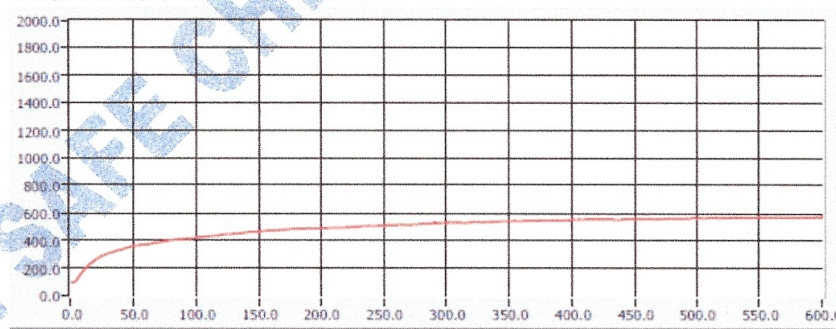
FLAME SPREAD (ft)



Smoke (%A)



Temperature (F)



Time (sec)

600

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Testing - Consulting - Evaluation - Compliance

FPT

ASTM D2898 METHOD A (ASTM E108)

ACCELERATED WEATHERING FIRE RETARDANT TREATED BUILDING MATERIALS FOR FIRE TESTING

1.0 MATERIAL TO BE TESTED

Wall and roof natural thatch

The three test specimens are comprised of thatching material attached to 2' x 8' x 3/4" Flame Safe XT treated CDX southern yellow pine exterior plywood and then treated with Flame Safe's Thatch Safe fire retardant coating at the rate of 150 square feet per gallon. The three treated specimens were allowed to air dry for 24 hours.

Commencement Date: September 9, 2014

2.0 PREPARATION OF TEST PANELS

The three 2' x 8' test specimens were set side by side to form a simulated roof deck measuring 6' x 8'.

3.0 TEST APPARATUS was fabricated to conform to the requirements set forth in the ASTM D2898, Method A. The slope of the simulated roof deck was set at 4 inches in 12 inches. Half inch copper water lines were installed four feet above and common to the surface of the simulated roof deck. Each water line had two copper T's spaced two and one-half feet on either side of the centerline at 90 degrees common to the centerline of the roof deck, and two Y's inverted downwards attached to each T to accommodate four (4) adjustable spray nozzles.

4.0 EXPOSURE CYCLE

The simulated roof deck was subjected to 12 one week cycles, each cycle consisting of 96 hours of water exposure and 72 hours of drying. The water was applied using four adjustable spray nozzles positioned above each panel to exhibit a uniform spray over the entire exposed surface of the simulated roof deck at the rate of .438 gallons per hour per square foot (.0073 gal/min•ft²). The water used for the water exposure of each cycle was accumulated in the tank below the specimen panels*. The water was not re-circulated or re-used.

Each test panel was dried in a gas fired forced air kiln at a temperature of 136°F to 138°F measured 1" above the surface of each panel for 72 hours per cycle. The air movement above each panel was maintained at seventy-two feet per minute measured at the centerline longitudinally.

* A sample of the exposure water was recovered after each cycle for testing to determine if any leaching occurred. The ph of the water used for exposure was in the range of 6.97 to 7.03. No measurable amount of leaching could be determined.

Note: After completion, the test panels were stored uncovered in the storage yard before being shipped to Intertek on February 25, 2015 for testing.

Eric T Jackson

Technician: Eric Jackson

Project number: 90814-astmd2898