# TEST REPORT

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 X-T Plywood" for compliance with the applicable requirements of the following criteria: ASTM E2768-11 TEST FOR EXTENDED DURATION SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS (This standard uses the apparatus and procedure of test method ASTM E84 with the total test period extended to 30 minutes.)**

## ABSTRACT


| | |
|---|---|
| Specimen I. D. | "Flame Safe X-T Plywood" |
| Test Standard: | ASTM E2768-11 TEST FOR EXTENDED DURATION SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS |
| Test Date: | March 6, 2015 |
| Client: | Flame Safe Wood Products, Inc. |
| Test Results: | |
| | FLAME SPREAD INDEX* 0 |
| | SMOKE DEVELOPED INDEX* 75 |
| | MAXIMUM FLAME FRONT* 8.8ft. Beyond Burners Centerline |

*Note: The *Flame Spread* and *Smoke Developed Index* are based on the initial 10 minutes of the test which represents the standard ASTM E84 test period. The *Maximum Flame Front* is based on the 30 minute test period and is measured from the centerline of the burners to a point where flame travel stops or up to a maximum of 24 feet.


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Reviewed and approved:

Servando Romo
Project Engineer

Intertek

## I. INTRODUCTION

This report describes the results of the ASTM E2768-11 TEST FOR EXTENDED DURATION SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS a method for determining the comparative surface burning behavior of building materials, extended to a total of 30 minutes. This method uses the same equipment, apparatus, calibration of flame spread index and smoke develop index as test method ASTM E84. The flame spread index is calculated in accordance with ASTM E84 during the first 10 minutes and then extended by 20 minutes to a period of 30 minutes to determine the maximum flame travel from the burner centerline. This standard is based on a modification of Test Method E84 that has been used for many years in provisions in the building codes and related specifications pertaining to fire-retardant-treated wood. Such codes include the International Building Code (IBC) and International Residential Code (IRC) as well as other documents.

The purpose of the method is to determine the relative burning behavior of the material by observing the flame spread along the specimen for a period of 30 minutes. 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 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 E2768 test method is intended to compare the surface flame spread and smoke developed measurements to those obtained from tests of fiber cement board and select grade red oak flooring required by the ASTM E84. The 30 minute performance characteristics in the conditions of classification are intended to be used in specific applications as required by building codes or other regulatory requirements or specifications. The test specimen surface (18 inches wide and 24 feet long) is exposed to a flaming fire exposure during the 30 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 ASTM E84 standard calibration materials.

## III. TEST PROCEDURE

The tests were conducted in accordance with the procedures outlined in the American Society for Testing and Materials ASTM E84 except the test was continued for a total of 30 minutes. The self-supporting specimens were placed directly on the tunnel ledges. The *maximum flame front* is determined by adding 4.5 feet to the flame travel recorded by the *flame pointer* located on the exterior window side of the tunnel apparatus. The *flame pointer* starts recording flame travel at 4.5 feet from the burner centerline. The zero point for the *flame pointer* is 4.5 feet away from the burner centerline. The sample is exposed to 4.5 feet of flame and only propagation beyond 4.5 feet point is recorded by the *flame pointer*. The flame spread graph on page 10 represents the *flame pointer* position during the test and the *maximum FS (feet)* value on page 9 represents the *flame pointer* maximum recorded value. To determine the *maximum flame front*, 4.5 feet is added to the *maximum FS (feet)* value on page 9.

Example: If the *flame pointer* records a maximum flame distance of 5 feet then the *maximum flame front* from the burner centerline is 5 feet plus 4.5 feet. (9.5 feet)

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 tests, 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.): | 9 days |
| Specimen Width (in): | 24 |
| Specimen Length (ft): | 24 |
| Specimen Thickness (in): | 0.8 |
| Specimen Weight (lbs): | 130 |

**Specimen Description:**
The specimen was described by the client as "Flame Safe Exterior Fire Retardant Treated Plywood".

The 24ft. long test specimen consisted of three 8ft. long sections of fire treated plywood.

The product was received by our personnel in good condition and given an identification number of SAT1502251714-005.

**Mounting Method:**
The specimen was self-supporting. The specimen was the same on both sides.

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## VI. TEST RESULTS & OBSERVATIONS

| Test Specimen | 10 Minute Flame Spread Index | 30 Minute Maximum Flame Front |
|---|---|---|
| "Flame Safe X-T Plywood" | 0 | 8.8 |

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. |
| 1:37 | Transient ignition was observed. |
| 3:26 | Steady ignition was observed. |
| 5:43 | The specimen began to crack. |
| 8:27 | The specimen began to flake. |
| 8:37 | The specimen began to sag. |
| 8:55 | Charred chunks began to fall. |
| 30:00 | The test burners were shut off. |

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

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

| Distance (FEET) | Damage Descriptions |
|---|---|
| 0 – 8 | The coating was observed to be mostly consumed and heavily charred. The board was observed to be heavily charred. |
| 8 – 24 | The coating was observed to be heavily charred. |

## VIII. CONDITIONS OF CLASSIFICATION

The test method has the following conditions of classification for a material or product to be classified as meeting the requirements of this standard:

a.) The flame spread index shall be 25 or less as determined for the initial 10 min test period.
b.) The flame front shall not progress more than 10.5 ft (3.2 m) beyond the centerline of the burners at any time during the 30 min test period. This is considered evidence of no significant progressive combustion in this test method.

**Test Results**

| Test Specimen | 10 Minute Flame Spread Index | 30 Minute Maximum Flame Front |
|---|---|---|
| "Flame Safe X-T Plywood" | 0 | 8.8 Feet |

## IX. CONCLUSION

**This specimen passed the ASTM E2768-11 requirements.**

SAMPLE

# Appendix A
# ASTM E2768-11
# Data Sheets

FLAME SAFE

## TEST RESULTS

**FLAMESPREAD INDEX: 0**

**SMOKE DEVELOPED INDEX: 75**

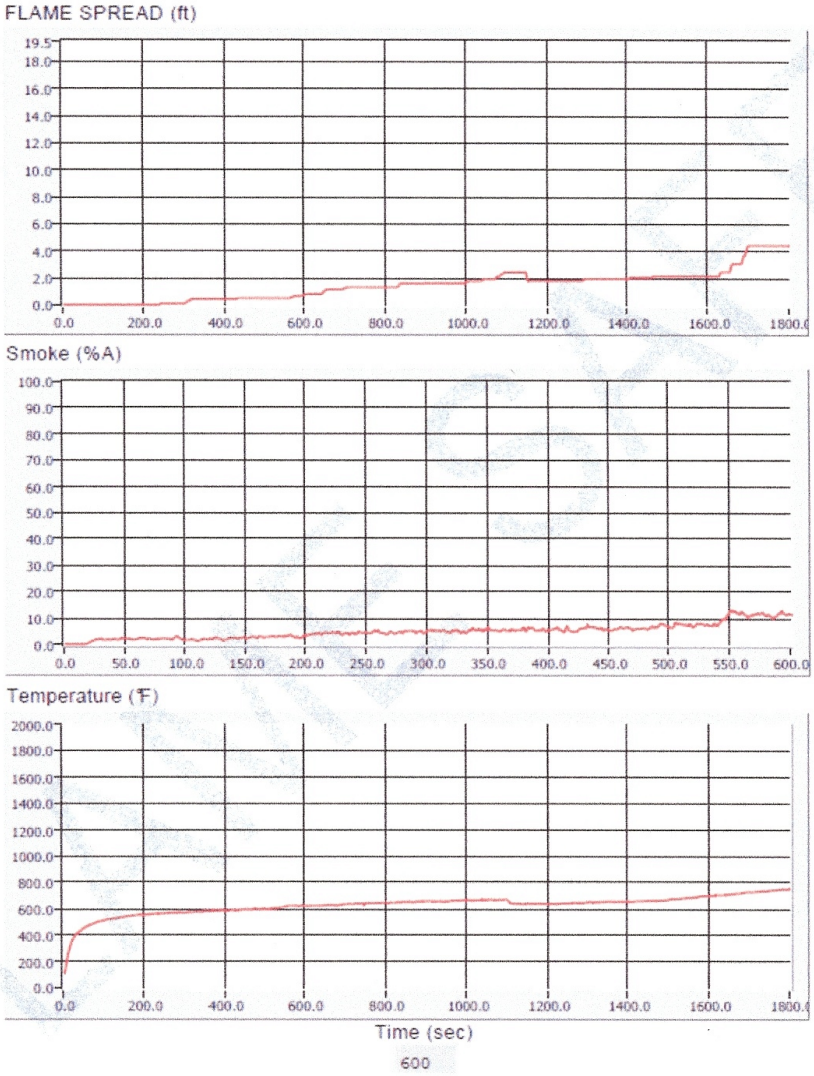
## SPECIMEN DATA . . .

| | |
|---|---|
| Time to Ignition (sec): | 206 |
| Time to Max FS (sec): | 1698 |
| Maximum FS (feet): | 4.3 |
| Time to 980 F (sec): | Never Reached |
| Time to End of Tunnel (sec): | Never Reached |
| Max Temperature (F): | 752 |
| Time to Max Temperature (sec): | 1798 |
| Total Fuel Burned (cubic feet): | 141.86 |
| FS*Time Area (ft*min): | 2.5 |
| Smoke Area (%A*min): | 279.8 |
| Unrounded FSI: | 1.3 |

## CALIBRATION DATA . . .

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

PRELIMINARY


FLAME SPREAD (ft)
19.5
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0.0 200.0 400.0 600.0 800.0 1000.0 1200.0 1400.0 1600.0 1800.0
Smoke (%A)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
0.0 50.0 100.0 150.0 200.0 250.0 300.0 350.0 400.0 450.0 500.0 550.0 600.0
Temperature (°F)
2000.0
1800.0
1600.0
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
0.0 200.0 400.0 600.0 800.0 1000.0 1200.0 1400.0 1600.0 1800.0
Time (sec)
600