TEST REPORT

**REPORT NUMBER: 100339765SAT-003C**
ORIGINAL ISSUE DATE: March 14, 2011
REVISED DATE:

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

## RENDERED TO

**Gaco Western, LLC**
**1245 Chapman Drive**
**Waukesha, WI 53186**

**Report of Testing "GacoFireStop 5500" for compliance with the applicable requirements of the following criteria: ASTM E84-10b TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS (UL 723, UBC 8-1, NFPA 255)**

## ABSTRACT


| | |
|---|---|
| Specimen I. D. | "GacoFireStop 5500" |
| Test Standard: | ASTM E84-10b TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS (UL 723, UBC 8-1, NFPA 255) |
| Test Date: | March 10, 2011 |
| Client: | Gaco Western, LLC |

Test Results:

| | |
|---|---|
| **FLAME SPREAD INDEX** | **15** |
| **SMOKE DEVELOPED INDEX** | **400** |


Darrell Gonzales
Technician 3

March 14, 2011

Reviewed and approved:

Servando Romo
Project Manager

March 17, 2011

Intertek

## I. INTRODUCTION

The specimens were witnessed in production by Anthony Mendoza from Intertek on February 23, 2011 at Intertek plant located at 16015 Shady Falls Road, in Elmendorf, TX 78112.

This report describes the results of the ASTM E84-10b 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. Mineral fiber cement board 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.

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The subject test specimen is a traceable sample selected from the manufacturers facility. Intertek selected the specimen and has verified the composition, manufacturing techniques and quality assurance procedures under its Listing & Follow-up Service program.

## IV. DESCRIPTION OF TEST SPECIMENS

| | |
|---|---|
| Date Received: | 02/17/2011 |
| Date Prepared: | 02/23/11 |
| Date placed in the conditioning room: | 02/24/2011 |
| Conditioning (73°F & 50% R.H.): | 14 days |
| Specimen Width (in): | 20 |
| Specimen Length (ft): | 24 |
| Specimen Thickness (Panel 1) (in): | 3.16 Average |
| Specimen Thickness (Panel 2) (in): | 4.83 Average |
| Total Specimen thickness (in.): | 3.99 Average |
| Total Specimen Weight (lbs): | 183 |

**Mounting Method:**
The specimen was self-supporting. The foam was exposed to the flames.

**Specimen Description:**
The specimen was described by the client as "GacoFireStop 5500, 0.5 pound open cell, spray foam".

The specimen consisted of (2) 12-ft. long x 20-in. wide x a combined average of 3.99-in. thick foam insulation sprayed on gypsum.

The product was received by our personnel in good condition.

## V. TEST RESULTS & OBSERVATIONS

The test was conducted on March 10, 2011, and witnessed by Dan Nelson and Tom Sojak.

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 |
|---|---|---|
| "GacoFireStop 5500" | 15 | 400 |

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.

## VI. OBSERVATIONS

**During the test, the specimen was observed to behave in the following manner.**

| Time (min:sec) | Observations |
|---|---|
| 0:02 | A steady ignition was observed. |
| 0:46 | Cracking was observed. |
| 4:07 | Sagging was observed. |

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 - 20 | The foam was observed to be heavily charred. |
| 20 - 24 | The foam was observed to be lightly charred. |

# APPENDIX A
## ASTM E84
## DATA SHEETS

## TEST RESULTS

**FLAMESPREAD INDEX: 15**

**SMOKE DEVELOPED INDEX: 400**

## SPECIMEN DATA . . .

| | |
|---|---|
| Time to Ignition (sec): | 2 |
| Time to Max FS (sec): | 35 |
| Maximum FS (feet): | 3.3 |
| Time to 980 F (sec): | Never Reached |
| Time to End of Tunnel (sec): | Never Reached |
| Max Temperature (F): | 674 |
| Time to Max Temperature (sec): | 594 |
| Total Fuel Burned (cubic feet): | 50.90 |
| FS*Time Area (ft*min): | 32.3 |
| Smoke Area (%A*min): | 354.7 |
| Unrounded FSI: | 16.6 |

## CALIBRATION DATA . . .

| | |
|---|---|
| Time to Ignition of Last Red Oak (Sec): | 55.0 |
| Red Oak Smoke Area (%A*min): | 86.4 |