TEST REPORT

**REPORT NUMBER: 3142060-001**
ORIGINAL ISSUE DATE: January 22, 2008
REVISED DATE: N/A

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

## RENDERED TO

TPR2
P.O. Box 1029
Richmond Hill, GA

PRODUCT EVALUATED: AFES Series Coating (8 mils)
over 2pcf closed cell spray foam
EVALUATION PROPERTY: Flame Spread, Flame Penetration

**Report of Testing AFES Series Coating over 2pcf closed cell spray foam for compliance with the applicable requirements of the following criteria: SWRI 99-02.**

# 1 TEST REPORT

# 2 Introduction

Intertek Testing Services NA (Intertek) has conducted testing for TPR2, on AFES Series Coating over 2 pcf closed cell spray foam 4 inches thick, to evaluate flame spread and flame penetration properties when subjected to specific ignition conditions. Testing was conducted in accordance with SWRI 99-02. This evaluation began January 7, 2008 and was completed on January 8, 2008.

# 3 Test Samples

### 3.1. SAMPLE SELECTION

Samples were submitted to Intertek directly from the client. Samples were not independently selected for testing. Samples were received at the Evaluation Center the week of December 31, 2007.

### 3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The test specimen is identified as **AFES Series Coating (8 mils) over 2pcf closed cell spray foam 4 inches thick..**

The substrate consisted of 8 ft x 8 ft floor made up of 2 x 8 joists spaced 16 in. o.c. with 15/32" A-C plywood flooring. The ceiling of the crawl space was insulated with nominally 4 in. of spray foam then coated with the client's product. The walls were not insulated and were left as bare concrete. The spray foam density was nominally 2 lb per cubic foot.

# 4 Testing and Evaluation Methods

The purpose of testing was to compare the fire performance characteristics of a crawl space insulation system as compared to a "Calibration" test.

Two tests were conducted. The first was a "Calibration" test in which a bare floor joist/plywood insulated with kraft paper faced fiberglass insulation with the paper towards the fire was tested to failure to obtain the failure time. The second test involved the same setup with foam sprayed into the floor joist cavities then coated with the client's coating. The walls were left as bare concrete. These tests were conducted to compare the failure times to the failure times of the calibration deck.

A concrete, block three-walled test structure was constructed with each wall measuring 8 ft. long x 4 ft. high O.D. The joists in the test chamber ran perpendicular to the camera's line of sight

through the front of the test chamber. There was 1 in. of sand placed on the floor of the test chamber. There was a 22-lb. wood crib constructed of 2 in. x 2 in. fir, with a plan of 15 in. square. The crib was placed in the rear left corner of the test chamber, 1 in. from the surface of the walls. There was 150 ml of ethyl alcohol placed in a metal pan below the wood crib, which was used as the ignition source

**TEST EQUIPMENT AND INSTRUMENTATION**

STOPWATCH

A calibrated stopwatch was used to time the events during the test.

PHOTOGRAPHIC RECORDS

Digital color photographs and DV video taping are both used to record and document the test. Care is taken to position the photographic equipment so as to not interfere with the smooth flow of air into the test room.

**PROCEDURE**

SUMMARY OF METHOD

The test consists of igniting the wood crib and recording the time at which flames exit the front of the crawl space, and the time for flames to penetrate the floor system. Once this occurs, the test is terminated (extinguished).

Post test observations are made and this concludes the test.

All damage is documented after the test is over, using descriptions, photographs and drawings, as is appropriate.

## 4.1. TEST STANDARD

SWRI 99-02 Test Method for Crawl Space Evaluation.

# 5 Testing and Evaluation Results

## 5.1. RESULTS AND OBSERVATIONS

CALIBRATION TEST (Bare Wood)
The test was started at 2:45 p.m., January 7, 2008. The ambient temperature was 71°F with a relative humidity of 81%. The camera was started and the crib was ignited. Events during the test are described below:

| TIME (min:sec) | OBSERVATION |
|---|---|
| 0:00 | Ignition of alcohol. |
| 4:57 | Ignition of kraft paper insulation. |
| 5:04 | Flames exit front of crawlspace. |
| 12:15 | Lames burn through plywood floor decking. |
| 12:30 | Test terminated. |

SAMPLE TEST (4 in. Foam in floor joist cavities then sprayed with AFES Coating (8 mils))
The test was started at 9:00 a.m., January 8, 2008. The ambient temperature was 71°F with a relative humidity of 91%. The camera was started and the crib was ignited. Events during the test are described below:

| TIME (min:sec) | OBSERVATION |
|---|---|
| 0:00 | Ignition of alcohol. |
| 5:32 | Ignition of corner of specimen. |
| 6:00 | Max flame spread 6 ft to RHS of deck. |
| 6:45 | Flames receding. |
| 7:19 | Flames receding. |
| 12:15 | No burn through. |
| 30:00 | Test terminated. |

**SUMMARY**

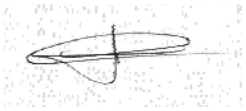
The results of the tests described above is summarized in the table below:

| Test | Time for Flames Exiting the Test Structure (min:sec) | Time to Burn Through the Specimen (min:sec) |
|---|---|---|
| Bare wood System Only. No Foam, (Calibration Test) | 5:04 | 12:15 |
| **Joists insulated with 4 in. foam and coated with AFES Coating (8 mils)** | No Flames Exited Front. | No Burn through |

# 6 Conclusion

The sample submitted, and tested as described herein met the criteria of SWRI 99-02.

**INTERTEK TESTING SERVICES NA**



Reported by: _____
Javier . Trevino
**Senior Project Engineer**

Reviewed by: _____
Mike Luna
**Senior Project Engineer**

APPENDIX A
PHOTOGRAPHS


1-8-08
TPR/3142060
FIRESHELL COAT
OVER 4" 2pcf
Spray Foam


FireShell coat


EXIT
Plank Foam


1-8-08
TPR/3142060
FIRESHELL COAT
OVER 4" 2pcf
Spray Foam


1-8-08
TPR/3142060
FIRESHELL COAT
OVER 4" 2pcf
Spray Foam


TPR/3192
FIRESHELL

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