TEST REPORT

REPORT NUMBER: 3140310SAT-005
ORIGINAL ISSUE DATE: December 27, 2007
REVISED DATE: N/A

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

RENDERED TO

Icynene Inc.
6747 Campbello Road
Mississauga, ON
L5N 2L7
Canada

PRODUCT EVALUATED:
Icynene Standard Material with Magna Coatings SafeCoat
EVALUATION PROPERTY: Flame Spread, Flame Penetration

Report of Testing Icynene Standard Material with SafeCoat for compliance with the applicable requirements of the following criteria: SWRI 99-02.

1 Table of Contents

2 Introduction

Intertek Testing Services NA (Intertek) has conducted testing for Icynene, on Icynene Standard Material with Magna Coatings SafeCoat, 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 was performed on December 13, 2007.

3 Test Samples

3.1. SAMPLE SELECTION

The foam plastic components were submitted to Intertek directly from the client and mixed and sprayed at the test facility the day prior to the test. Samples were not independently selected for testing. Samples were received at the Evaluation Center December 10, 2007.

All wood and fiberglass insulation was commercially purchased by Intertek.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The test specimen is identified as Icynene Standard Material.

The substrates 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. Walls consisted of 4 ft x 8 ft 15/32" A-C plywood attached to 2 in x 6 in wood studs spaced 16 in. o.c. The ceiling of the crawl space was insulated with nominally 11 in. of spray foam. The walls were insulated with a nominal 6 inches of spray foam. The spray foam density was nominally 0.5 lb per cubic foot.

The walls were sprayed with a layer Magna Coatings SafeCoat, white intumescent paint.

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 and a stud/plywood system with R-11, kraft faced, fiberglass insulated walls were tested to failure to obtain the failure time. The second test involved a similar setup with foam sprayed into the floor and wall cavities. 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 30-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 sub-floor and R-11 Insulated Walls)
The test was started at 9:39am December 13, 2007. The ambient temperature was 57°F with a relative humidity of 58%. The camera was started and the crib was ignited. Events during the test are described below:

TIME (min:sec)	OBSERVATION
0:00	Ignition of crib.
1:27	Flames tips extended approximately 1.5 feet above the crib.
3:29	Flames reached the underside of the joists.
3:58	The kraft paper began to discolor.
6:22	Ignition of wall studs near the crib.
6:35	Flames exit front of crawl space.
10:52	Estimated flame penetration. Test terminated.

SAMPLE TEST (11in. foam in floor joist cavities and 6 in. foam in walls. SafeCoat)
The test was started at 1:53 pm, December 13, 2007. The camera was started and the crib was ignited. Events during the test are described below:

TIME (min:sec)	OBSERVATION
0:00	Ignition of crib.
1:52	Flames tips extended approximately 2 feet above the crib.
2:32	The flame tips began to impinge on the bottom surface of the floor foam. The foam began to discolor on the underside of the floor.
6:47	Ignition on the walls
6:56	Flames exit front of crawl space assembly.
8:16	The front flames receded back into the crawl space.
9:51	Flames reemerged from of the assembly
10:10	Foam began to fall from the cavities
10:52	No flame through.
11:00	The top decking plywood began to make bubbling noises.
~11:30	Test terminated.

SUMMARY

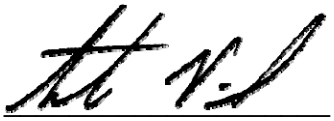
The results of the tests described above is summarized in the table below:

Test	Time for Flames Exiting the Test Structure (min:sec)	Time to Burn Through the Specimen (min:sec)
Bare wood and faced fiberglass system No Foam, (Calibration Test)	6:35	10:52
Joists insulated with 15 in. foam Stud cavities insulated with 6 in. foam and SafeCoat.	6:56	>11:00

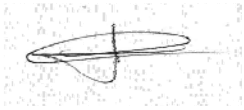
6 Conclusion

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

INTERTEK TESTING SERVICES NA

Reported by: 

C. Anthony Peñaloza
Flammability Testing Team Leader

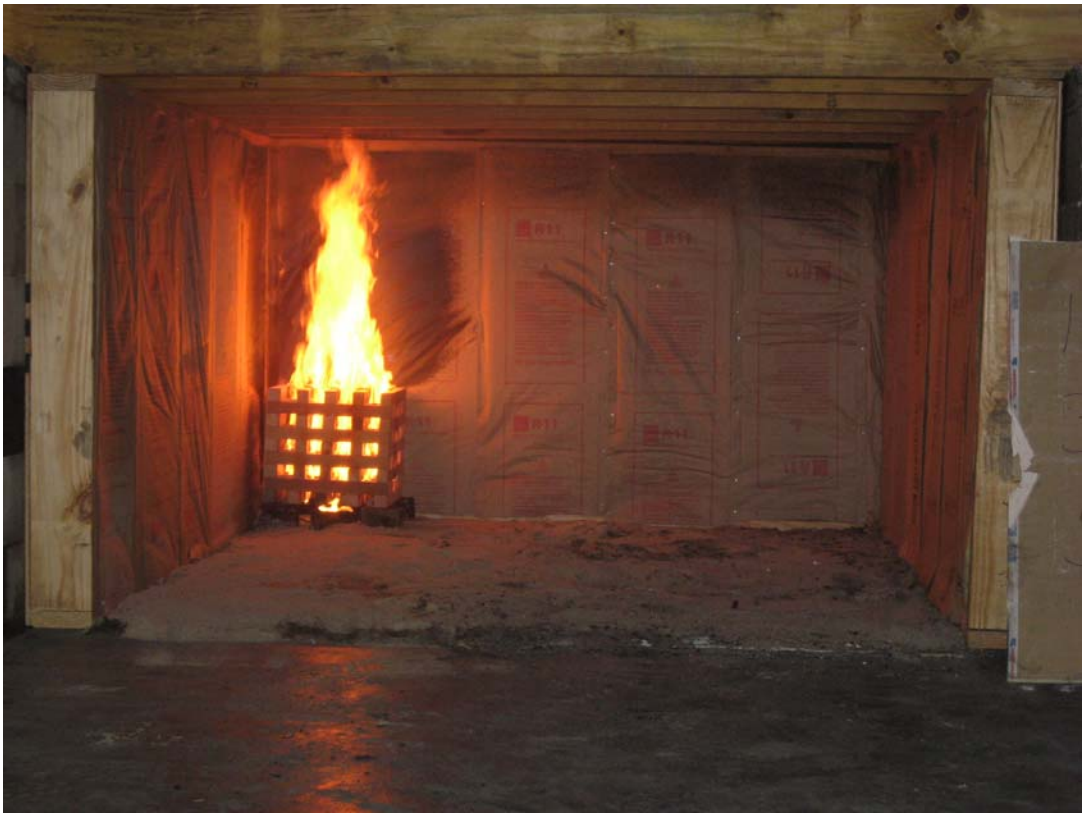
Reviewed by: 

Javier O. Trevino
Senior Project Engineer

APPENDIX A
PHOTOGRAPHS

Calibration test. Ignition.

Calibration test. Discoloration of walls.



Calibration. Ignition.

Calibration test. Flames out the front.

Calibration. Flame through.

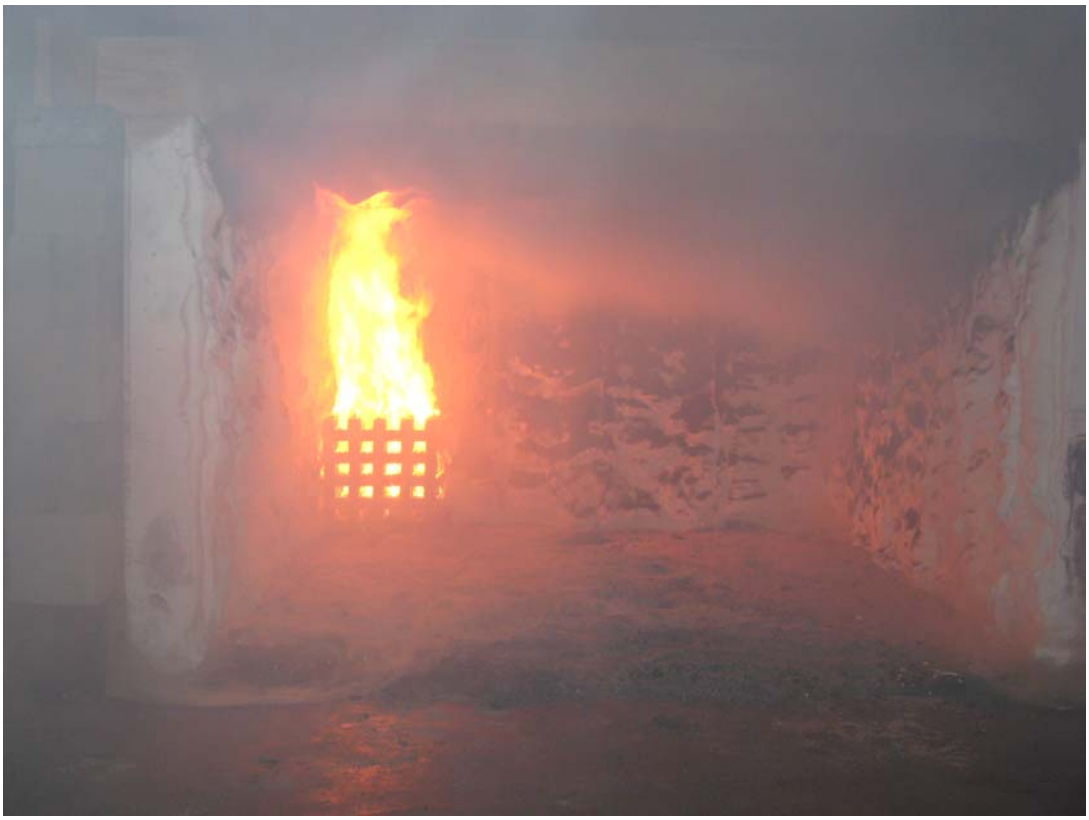
Pre-Test photo

Ignition of the crib.

Discoloration of foam

Ignition.

Flames out the front.



Flames retreated.

Post test photo.

LAST PAGE OF TEST REPORT

REVISION SUMMARY

DATE	SUMMARY
<N/A >	<N/A>