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ORIGINAL ISSUE DATE: February 26, 2008

EVALUATION CENTER
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RENDERED TO

BBMI, LLC
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PRODUCT EVALUATED: "Snapp Itz" Insulation Protection Shields
EVALUATION PROPERTY: Surface Burning Characteristics

Report of testing "Snapp Itz" Insulation Protection Shields for compliance with the applicable requirements of the following criteria: ASTM E84-07b, Standard Test Method for Surface Burning Characteristics of Materials.

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2 Introduction

Intertek Testing Services NA Ltd. (Intertek) has conducted testing for BBMI, LLC, to evaluate the surface burning characteristics of "Snapp Itz" Insulation Protection Shields (1 in. thickness). Testing was conducted in accordance with the standard methods of ASTM E84-07b, *Standard Test Method for Surface Burning Characteristics of Materials*. This evaluation began February 21, 2008 and was completed February 21, 2008.

Since the protection shields are used only at pipe hanger locations, and not a continuous insulation, they were tested in conjunction with 1/2 in. copper pipe and fiberglass pipe insulation.

3 Test Samples

3.1. SAMPLE SELECTION

Samples were submitted to Intertek directly from the client and were not independently selected for testing. The sample materials were received at the Evaluation Center on January 15, 2008. Upon receipt of the samples at the Intertek Coquiltam laboratory they were placed in a conditioning room where they remained in an atmosphere of $23 \pm 3^{\circ}\text{C}$ ($73.4 \pm 5^{\circ}\text{F}$) and $50 \pm 5\%$ relative humidity.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The sample materials consisted of a Type M 1/2 in. diameter copper pipe wrapped with 1 in. thick fiberglass pipe insulation. At the seams of the fiberglass insulation there was a 4 in wide PVC collar labeled as "Mechanical Pipe Shields MFG", also referred to by the client as "Snapp Itz" insulation protection shield. The protection shield is constructed using a PVC jacket around a polyisocyanurate foam insulation with a wall thickness of 1 in. The fiberglass insulation was pieced together from 3 ft. long sections fastened together using the PVC collar and tape. See Figure 1 below.

The test sample was supported by placing 1/4 in. steel rods every 24 in. and spanning the ledges of the tunnel. An insulated PVC pipe support was placed between each section of fiberglass insulation. A layer of 6 mm reinforced cement board was placed over top of the samples, the tunnel lid was lowered into place, and the samples were then tested in accordance with ASTM E84-07b.



Figure 1 - "Snapp Itz" Insulation Protection Shield

4 Testing and Evaluation Methods

4.1. TEST STANDARD

The results of the tests are expressed by indexes, which compare the characteristics of the sample under tests relative to that of select grade red oak flooring and asbestos-cement board.

(A) Flame Spread Classification:

This index relates to the rate of progression of a flame along a sample in the 25 foot tunnel. A natural gas flame is applied to the front of the sample at the start of the test and drawn along the sample by a draft kept constant for the duration of the test. An observer notes the progression of the flame front relative to time. This information is plotted on a graph (flame spread curve).

The test apparatus is calibrated such that the flame front for red oak flooring passes out the end of the tunnel in five minutes, thirty seconds (plus or minus 15 seconds).

Calculations: ASTM E84-06a

According to the test standard, the flame spread classification is equal to $\frac{4900}{195 - A_T}$

when A_T is the total area beneath the flame spread curve, if this area exceeds 97.5 minute feet. If the area beneath the curve is less than or equal to 97.5 minute feet the classification becomes $0.515 \times A_T$.

(B) Smoke Developed:

A photocell is used to measure the amount of light, which is obscured by the smoke passing down the tunnel duct. When the smoke from a burning sample obscures the light beam, the output from the photocell decreases. This decrease with time is recorded and compared to the results obtained for red oak, which is defined to be 100.

Calculations:

$$\text{Unrounded Smoke Developed Index} = \frac{10,000 - \text{SmokeIntegration}}{655} \times 100$$

5 Testing and Evaluation Results

5.1. RESULTS AND OBSERVATIONS

(A) Flame Spread

The resultant flame spread classifications are as follows:
(classification rounded to nearest 5)

"Snapp Itz" Insulation Protection Shields (1 in. thickness)	Flame Spread	Flame Spread Classification
Run 1	5	5

(B) Smoke Developed

The areas beneath the smoke developed curve and the related classifications are as follows:
(For smoke developed indexes 200 or more, classification is rounded to the nearest 50. For smoke developed indexes less than 200, classification is rounded to nearest 5)

"Snapp Itz" Insulation Protection Shields (1 in. thickness)	Smoke Developed	Smoke Developed Classification
Run 1	31	30

(C) Observations

During the test the jacketing on the outside of the insulation ignited quickly but did not spread. The flame front quickly reached its maximum and remained there for the remainder of the test. At approximately 300 seconds the PVC section between the fiberglass sections began to flame.

6 Conclusion

The samples of "Snapp Itz" Insulation Protection Shields (1 in. thickness), submitted by BBMI, LLC, exhibited the following flame spread characteristics when tested in accordance with ASTM E84-07b, *Standard Test Method for Surface Burning Characteristics of Materials*.

Since the protection shields are used only at pipe hanger locations, and not a continuous insulation, they were tested in conjunction with 1/2 in. copper pipe and fiberglass pipe insulation.

Sample Material	Flame Spread Classification	Smoke Developed Classification
"Snapp Itz" Insulation Protection Shields (1 in. thickness)	5	30

The conclusions of this test report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

INTERTEK TESTING SERVICES NA LTD.

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SL/bjm

APPENDIX A

DATA SHEETS

ASTM E84-07b DATA SHEETS

ASTM E84

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Client: BBMI, LLC
Date: 2/21/2008
Project Number: 3144378
Test Number: 2
Operator: Scott Leduc

Specimen ID: 1/2 in. copper pipe with 1 in. fiber glass insulation and a "Mechanical Pipe Shield" between the sections of insulation.

TEST RESULTS

FLAMESPREAD INDEX: 5

SMOKE DEVELOPED INDEX: 30

SPECIMEN DATA . . .

Time to Ignition (sec): 3
Time to Max FS (sec): 256
Maximum FS (feet): 1.5
Time to 980 F (sec): Never Reached
Time to End of Tunnel (sec): Never Reached
Max Temperature (F): 461
Time to Max Temperature (sec): 600
Total Fuel Burned (cubic feet): 42.20

FS*Time Area (ft*min): 10.5
Smoke Area (%A*min): 20.1
Unrounded FSI: 5.4

CALIBRATION DATA . . .

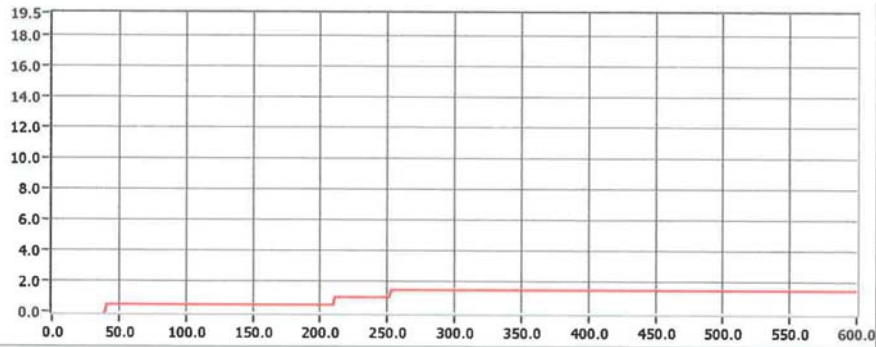
Time to Ignition of Last Red Oak (Sec): 47.0
Red Oak Smoke Area (%A*min): 65.5

ASTM E84-07b DATA SHEETS

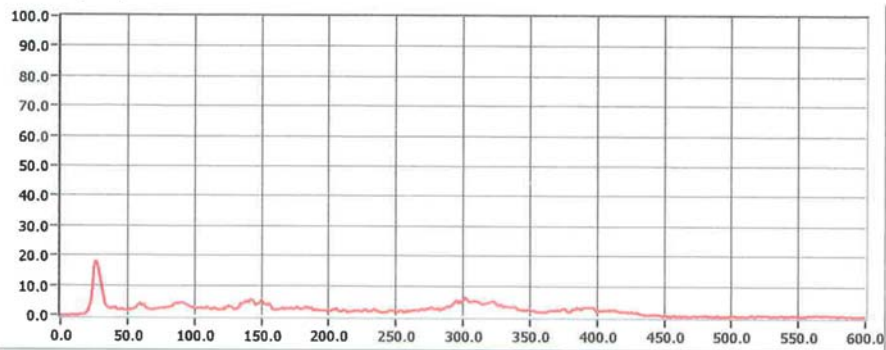
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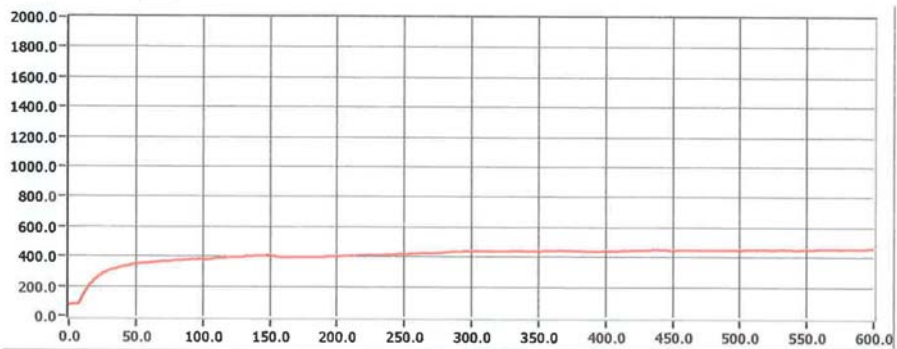
FLAME SPREAD (ft)



Smoke (%A)



Temperature (°F)



Time (sec)
600

REVISION SUMMARY

DATE	PAGE	SUMMARY
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