Report of testing Mansonville TYPE I EPS Foam for compliance with the applicable requirements of the following criteria: CAN/ULC S102.2-10, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Covering, and Miscellaneous Materials and Assemblies.
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2 Introduction

Intertek Testing Services NA Ltd. (Intertek) has conducted testing for Mansonville Plastics (B.C.) Ltd., to evaluate the surface burning characteristics of Mansonville TYPE I EPS Foam. Testing was conducted in accordance with the standard methods of CAN/ULC S102.2-10, *Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Covering, and Miscellaneous Materials and Assemblies*.

This evaluation began February 14, 2017 and was completed February 15, 2017.

3 Test Samples

3.1. SAMPLE SELECTION

Intertek representative, Luke Kong, selected test samples on December 20, 2016. The sampling was conducted at Mansonville Plastics (B.C.) Ltd., located at 19402 - 56th Avenue Surrey B.C..

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

Upon receipt of the samples at the Intertek Coquitlam laboratory, they were placed in a conditioning room where they remained in an atmosphere of 23 ± 3°C (73.4 ± 5°F) and 50 ± 5% relative humidity.

The sample materials consisted of nine 17-3/8 in. wide by 8 ft. long by 2 ½ in. thick EPS foam panels, and were identified as Mansonville TYPE I EPS Foam.

For each trial run, three 8 ft. panels were butted together end to end to form the required 24 ft. sample length, and then placed on the floor of the tunnel. A layer of 6mm reinforced cement board was placed on the upper ledges of the tunnel, the tunnel lid was lowered into place, and the samples were then tested in accordance with CAN/ULC S102.2-10.
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 inorganic cement board.

(A) Flame Spread Rating:

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.

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).

(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.
5 Testing and Evaluation Results

5.1. RESULTS AND OBSERVATIONS

(A) Flame Spread

The resultant flame spread ratings are as follows:
(Rating rounded to nearest 5)

<table>
<thead>
<tr>
<th>Mansonville TYPE I EPS Foam</th>
<th>Flame Spread</th>
<th>Flame Spread Rating</th>
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<tbody>
<tr>
<td>Run 1</td>
<td>145</td>
<td></td>
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<tr>
<td>Run 2</td>
<td>135</td>
<td>140</td>
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<tr>
<td>Run 3</td>
<td>141</td>
<td></td>
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</tbody>
</table>

(B) Smoke Developed

The areas beneath the smoke developed curve and the related classifications are as follows:
(Classification rounded to nearest 5)

<table>
<thead>
<tr>
<th>Mansonville TYPE I EPS Foam</th>
<th>Smoke Developed</th>
<th>Smoked Developed Classification</th>
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<tr>
<td>Run 1</td>
<td>375</td>
<td>375</td>
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<tr>
<td>Run 2</td>
<td>384</td>
<td></td>
</tr>
<tr>
<td>Run 3</td>
<td>360</td>
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</tbody>
</table>

(C) Observations

Surface ignition occurred between 37 and 40 seconds; the flame began to progress along the sample until it reached the maximum flame spread.
6 Conclusion

The 2 ½ in. thick Mansonville TYPE I EPS Foam, submitted by Mansonville Plastics (B.C.) Ltd., exhibited the following flame spread characteristics when tested in accordance CAN/ULC S102.2-10, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Covering, and Miscellaneous Materials and Assemblies.

A series of three test runs was conducted to conform to the requirements of the National Building Code of Canada.

<table>
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<tr>
<th>Sample Material</th>
<th>Flame Spread Rating</th>
<th>Smoke Developed Classification</th>
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<tr>
<td>Mansonville TYPE I EPS Foam</td>
<td>140</td>
<td>375</td>
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The conclusions of this test report may be used as part of the requirements for Intertek product certification.

INTERTEK TESTING SERVICES NA LTD.

Tested and Reported by:  
Greg Philp  
Technician – Building Products

Reviewed by:  
Riccardo DeSantis  
Manager – Building Products
APPENDIX A

DATA SHEETS
CAN/ULC S102.2 DATA SHEETS
Run 1

Standard: Canadian ULC S102.2

Client: Mansonville Plastics (B.C.) Ltd
Date: 02 14 2017
Project Number: 102850330
Test Number: 1
Operator: Greg Philp
Specimen ID: Type I EPS 65 mm thick

TEST RESULTS

FLAMESpread INDEX: 145
SMoke DEVELOPED INDEX: 375

SPECIMEN DATA . . .

Time to Ignition (sec): 37
Time to Max FS (sec): 141
Maximum FS (min): 570.3
Time to 527 C (sec): Never Reached
Time to End of Tunnel (sec): 141
Max Temperature (C): 479
Time to Max Temperature (sec): 278
Total Fuel Burned (cubic feet): 46.00

FS*Time Area (M*min): 48.1
Smoke Area (%A*min): 689.5
Unrounded FSI: 144.5
Unrounded SDI: 379.3

CALIBRATION DATA . . .

Time to Ignition of Last Red Oak (Sec): 42.0
Red Oak Smoke Area (%A*min): 181.3

Tested By:  Reviewed By:  

Intertek
CAN/ULC S102.2 DATA SHEETS

Run 1

Test No.: 10285330  
Specimen ID: Type 1 EPS 65 mm thick

FLAME SPREAD (MM)

Smoke (%A)

Temperature (°C)

Tested By: 
Reviewed By: KE
CAN/ULC S102.2 DATA SHEETS
Run 2

Standard: Canadian ULC S102.2

Client: Mansonville Plastics (B.C.) Ltd
Date: 02 15 2017
Project Number: 102850330
Test Number: 2
Operator: Greg Phlip

Specimen ID: Type I EPS foam 65 mm thick

TEST RESULTS

FLAMESPREAD INDEX: 135
SMOKE DEVELOPED INDEX: 385

SPECIMEN DATA . . .

Time to Ignition (sec): 39
Time to Max FS (sec): 140
Maximum FS (mm): 5790.7
Time to 527 C (sec): Never Reached
Time to End of Tunnel (sec): 148
Max Temperature (C): 483
Time to Max Temperature (sec): 315
Total Fuel Burned (cubic feet): 45.00

FS*Time Area (M^2*min): 47.3
Smoke Area (%A*min): 697.0
Unrounded FSI: 135.9
Unrounded SDI: 394.4

CALIBRATION DATA . . .

Time to Ignition of Last Red Oak (Sec): 42.0
Red Oak Smoke Area (%A*min): 191.3

Tested By: Reviewed By: 

Intertek
CAN/ULC S102.2 DATA SHEETS
Run 2

Client: Mansonville Plastics (B.C.) Ltd
Specimen ID: Type I EPS foam 45 mm thick
Test No.: 102858130
Standard: Canadian ULC S102.2

FLAME SPREAD (MM)

Smoke (%A)

Temperature (°C)

Tested By: ___________________________ Reviewed By: ___________________________
Mansonville Plastics (B.C.) Ltd.
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CAN/ULC S102.2 DATA SHEETS
Run 3

Standard: Canadian ULC S102.2

Client: Mansonville Plastics (B.C.) Ltd
Date: 02 15 2017
Project Number: 102850330
Test Number: 3
Operator: Greg Philip
Specimen ID: Type I EPS Foam 65 mm thick

TEST RESULTS

FLAMESPREAD INDEX: 140
SMOKE DEVELOPED INDEX: 360

SPECIMEN DATA . . .

Time to Ignition (sec): 40
Time to Max FS (sec): 145
Maximum FS (mm): 577.2
Time to 527 C (sec): Never Reached
Time to End of Tunnel (sec): 145
Max Temperature (C): 468
Time to Max Temperature (sec): 240
Total Fuel Burned (cubic feet): 46.60

FS*Time Area (M*min): 47.8
Smoke Area (%A*min): 653.1
Unrounded FSI: 140.8
Unrounded SDR: 360.2

CALIBRATION DATA . . .

Time to Ignition of Last Red Oak (Sec): 42.0
Red Oak Smoke Area (%A*min): 161.3

Tested By: 
Reviewed By: 

Intertek
CAN/ULC S102.2 DATA SHEETS
Run 3

Tested By:  Reviewed By:  

Intertek
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