

RADIAL ENGINEERING LTD. TEST REPORT

SCOPE OF WORK

REPORT OF TESTING ON 50 MM THICK PRIMACOUSTIC HERCULES IMPACT RESISTANT PANELS FOR COMPLIANCE WITH THE APPLICABLE REQUIREMENTS OF THE FOLLOWING CRITERIA: CAN/ULC S102-18, STANDARD METHOD OF TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS AND ASSEMBLIES.

REPORT NUMBER

104616206COQ-001 R0

TEST DATE(S)

03/15/21 - 02/16/21

ISSUE DATE

03/19/21

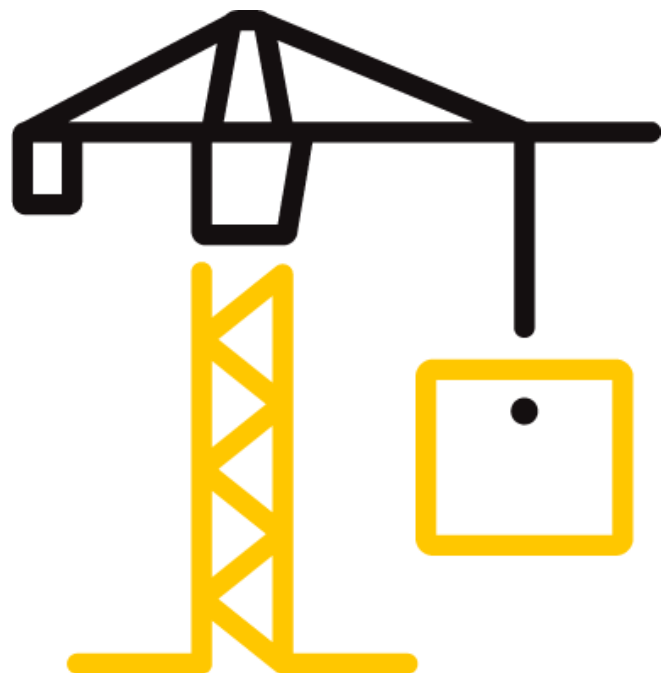
PAGES

16

DOCUMENT CONTROL NUMBER

GFT-OP-10c (09/29/20)

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TEST REPORT FOR RADIAL ENGINEERING LTD.

Report No.: 104616206COQ-001 R0

Date: 03/19/21

REPORT ISSUED TO**RADIAL ENGINEERING LTD.**

Unit 1165, 1845 Kingsway Avenue

Port Coquitlam, BC, V3C 1S9 CAN

SECTION 1**SCOPE**

Intertek Building & Construction (B&C) was contracted by Radial Engineering. Unit 1165, 1845 Kingsway Avenue Port Coquitlam, BC to perform testing in accordance with CAN/ULC S102-18, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies., on their 50 mm thick Primacoustic Hercules Impact Resistant Panels. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at Intertek Testing Services NA Ltd. (Intertek) test facility at 1500 Brigantine Drive Coquitlam, BC Canada.

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Intertek B&C will service this report for the entire test record retention period. The test record retention period ends four years after the test date. Test records, such as detailed drawings, datasheets, representative samples of test specimens (where required by Certification or Accreditation bodies), or other pertinent project documentation, will be retained for the entire test record retention period.

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SECTION 2

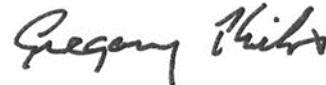
SUMMARY OF TEST RESULTS

The samples of 50 mm thick Primacoustic Hercules Impact Resistant Panels submitted by Muraflex Inc. were tested in accordance with CAN/ULC S102-18, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

The product test results are presented in Section 10 of this report.

For INTERTEK B&C:

COMPLETED BY:	Sean Fewer
TITLE:	Technician B&C
SIGNATURE:	
DATE:	03/19/21

REVIEWED BY:	Greg Philp
TITLE:	Reviewer- B&C
SIGNATURE:	
DATE:	03/19/21

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SECTION 3

TEST METHOD(S)

The specimens were evaluated in accordance with the following:

CAN/ULC S102-18, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

SECTION 4

MATERIAL SOURCE/INSTALLATION

Samples were submitted to Intertek directly from the client and were not independently selected for testing.

The test samples were received by the test facility on 03/03/2021.

SECTION 5

EQUIPMENT

ASSET #	DESCRIPTION	MODEL	CAL DUE DATE
WH2189	Photocell	Huygen 856	11/06/21
WH 2190	Smoke Opacity Meter	Huygen	11/06/21
WH 1052	Data Logger	Phidgets DAQ 2020	11/06/21
	FS Tunnel	N/A	02/17/22

SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Sean Fewer	Intertek B&C

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SECTION 7

TEST CALCULATIONS

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 7620 mm 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.

SECTION 8

TEST SPECIMEN 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 $23 \pm 3^{\circ}\text{C}$ ($73.4 \pm 5^{\circ}\text{F}$) and $50 \pm 5\%$ relative humidity.

The sample material consisted of their 50 mm thick Primacoustic Hercules Impact Resistant Panels. Each sample measured 50 mm thick by 610 mm. wide by 1220 mm long.

For each trial run, six 50 mm thick by 610 mm wide by 1220 mm long sample panels were placed on the upper ledge of the flame spread tunnel to form the required 7315 mm sample length. 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 CAN/ULC S102-18.

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TEST RESULTS

(A) Flame Spread

The resultant flame spread ratings are as follows:

(Rating rounded to nearest 5)

50 mm thick Primacoustic Hercules Impact Resistant Panels	Flame Spread	Flame Spread Rating
Run 1	17	15
Run 3	17	
Run 3	16	

(B) Smoke Developed

The areas beneath the smoke developed curve and the related classifications are as follows:

(Classification rounded to nearest 5)

50 mm thick Primacoustic Hercules Impact Resistant Panels	Smoke Developed	Smoke Developed Classification
Run 1	68	70
Run 2	55	
Run 3	91	

Observations

During the test runs, surface ignition occurred between 23 and 27 seconds; the flame then began to progress along the sample length until it reached the maximum flame spread.

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SECTION 10
CONCLUSION

The samples of 50 mm thick Primacoustic Hercules Impact Resistant Panels submitted by Muraflex Inc. exhibited the following flame spread characteristics when tested in accordance with CAN/ULC S102-18, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

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

Sample Material	Flame Spread Rating	Smoke Developed Classification
50 mm thick Primacoustic Hercules Impact Resistant Panels	15	70

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.

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SECTION 11

TEST DATA (6 PAGES)

TEST REPORT FOR RADIAL ENGINEERING LTD.

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CAN/ULC S102-18 DATA SHEETS**Run 1**

Page 1 of 2

Standard: ULC S102Lab ID: Intertek Coquitlam Fire Laboratory
Client: Radial Engineering
Date: 15 Mar 2021
Project Number: 104616206
Test Number: 1
Operator: Sean Fewer

Specimen ID and Description:

Primeacoustic Hercules Impact Resistant Panels

TEST RESULTSFLAMESPREAD INDEX: 17.000
SMOKE DEVELOPED INDEX: 68.000**SPECIMEN DATA**Time to Ignition (sec): 27.232
Time to Max Flame Spread (min): 0.621
Maximum Flame Spread (mm): 0.990
Time to 527 C / 980 F (sec): 0.000
Max Temperature (deg F or C as per test standard): 298.070
Time to Max Temperature (sec): 571.232
Total Fuel Burned (cubic feet): 44.377

Flame Spread*Time Area (M*min): 9.352
Smoke Area (%A*min): 106.420
Unrounded FSI: 17.301
Unrounded SDI: 68.471**CALIBRATION DATA**Time to Ignition of Last Red Oak (sec): 47
Calibrated Smoke Area (%A*min): 155.42315 point Heptane average for E84-19b
5 point Red Oak average for S102Tested by: SPReviewed by:

TEST REPORT FOR RADIAL ENGINEERING LTD.

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Date: 03/19/21

CAN/ULC S102-18 DATA SHEETS

Run 1

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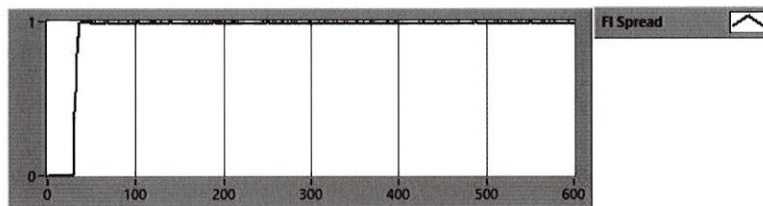
Client: Radial Engineering

Project Number: 104616206

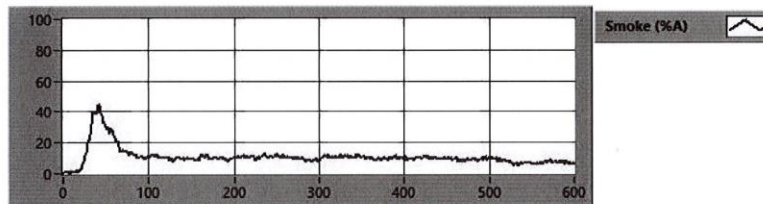
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Test Standard: ULC S102

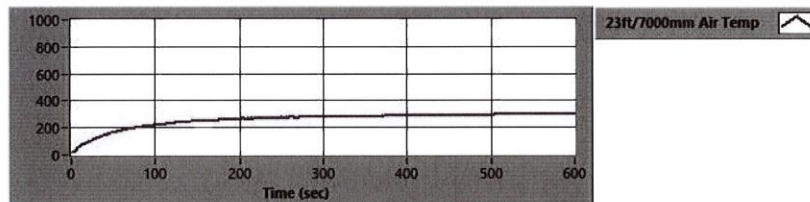
FLAME SPREAD



SMOKE (%A)



TEMPERATURE



Tested by: SF

Reviewed by: [Signature]

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CAN/ULC S102-18 DATA SHEETS
Run 2

Page 1 of 2

Standard: ULC S102Lab ID: Intertek Coquitlam Fire Laboratory
Client: Radial Engineering
Date: 16 Mar 2021
Project Number: 104616206
Test Number: 2
Operator: Sean Fewer

Specimen ID and Description:

Primacoustic Hercules Impact Resistant Panels

TEST RESULTSFLAMESPREAD INDEX: 17.000
SMOKE DEVELOPED INDEX: 55.000**SPECIMEN DATA**Time to Ignition (sec): 23.249
Time to Max Flame Spread (min): 0.637
Maximum Flame Spread (mm): 0.970
Time to 527 C / 980 F (sec): 0.000
Max Temperature (deg F or C as per test standard): 289.380
Time to Max Temperature (sec): 515.249
Total Fuel Burned (cubic feet): 44.268

Flame Spread*Time Area (M*min): 9.222
Smoke Area (%A*min): 85.306
Unrounded FSI: 17.061
Unrounded SDI: 54.886**CALIBRATION DATA**

Time to Ignition of Last Red Oak (sec): 47

Calibrated Smoke Area (%A*min): 155.423

15 point Heptane average for E84-19b
5 point Red Oak average for S102Tested by: SFReviewed by:

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CAN/ULC S102-18 DATA SHEETS

Run 2

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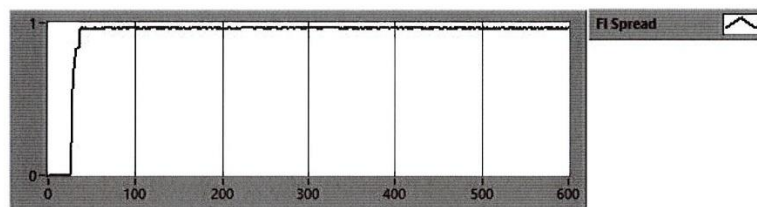
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Project Number: 104616206

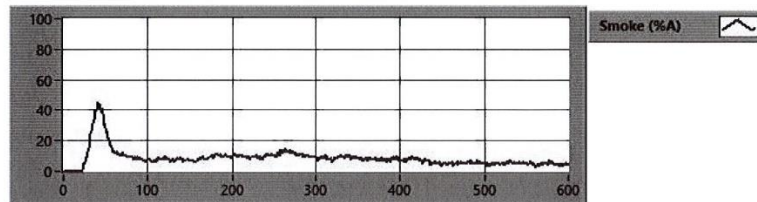
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Test Standard: ULC S102

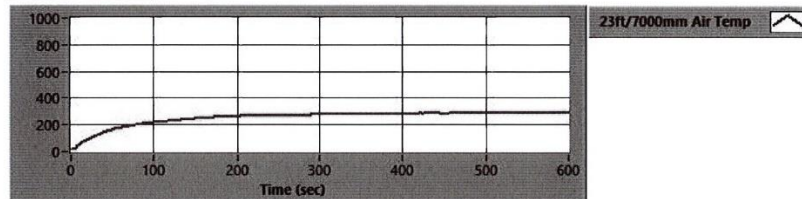
FLAME SPREAD



SMOKE (%A)



TEMPERATURE



Tested by: SF

Reviewed by:

TEST REPORT FOR RADIAL ENGINEERING LTD.

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CAN/ULC S102-18 DATA SHEETS
Run 3

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Standard: ULC S102

Lab ID: Intertek Coquitlam Fire Laboratory
Client: Radial Engineering
Date: 16 Mar 2021
Project Number: 104616206
Test Number: 3
Operator: Sean Fewer

Specimen ID and Description:

Primacoustic Hercules Impact Resistant Panels

TEST RESULTS

FLAMESPREAD INDEX: 16.000
SMOKE DEVELOPED INDEX: 91.000

SPECIMEN DATA

Time to Ignition (sec): 25.554
Time to Max Flame Spread (min): 0.643
Maximum Flame Spread (mm): 0.890
Time to 527 C / 980 F (sec): 0.000
Max Temperature (deg F or C as per test standard): 292.570
Time to Max Temperature (sec): 587.556
Total Fuel Burned (cubic feet): 44.211

Flame Spread*Time Area (M*min): 8.411
Smoke Area (%A*min): 141.393
Unrounded FSI: 15.561
Unrounded SDI: 90.973

CALIBRATION DATA

Time to Ignition of Last Red Oak (sec): 47
Calibrated Smoke Area (%A*min): 155.423

15 point Heptane average for E84-19b
5 point Red Oak average for S102

Tested by: SF

Reviewed by:

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CAN/ULC S102-18 DATA SHEETS

Run 3

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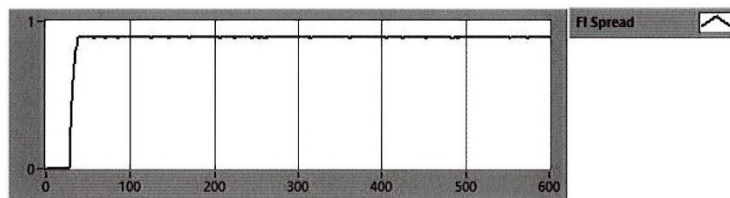
Client: Radial Engineering

Project Number: 104616206

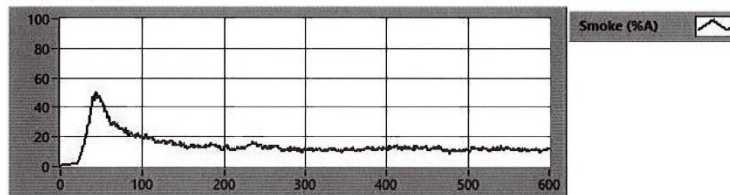
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Test Standard: ULC S102

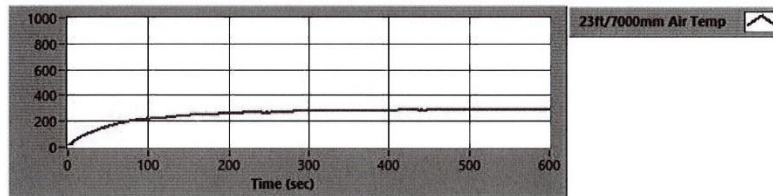
FLAME SPREAD



SMOKE (%A)



TEMPERATURE



Tested by: SF

Reviewed by: [Signature]

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PHOTOGRAPHS

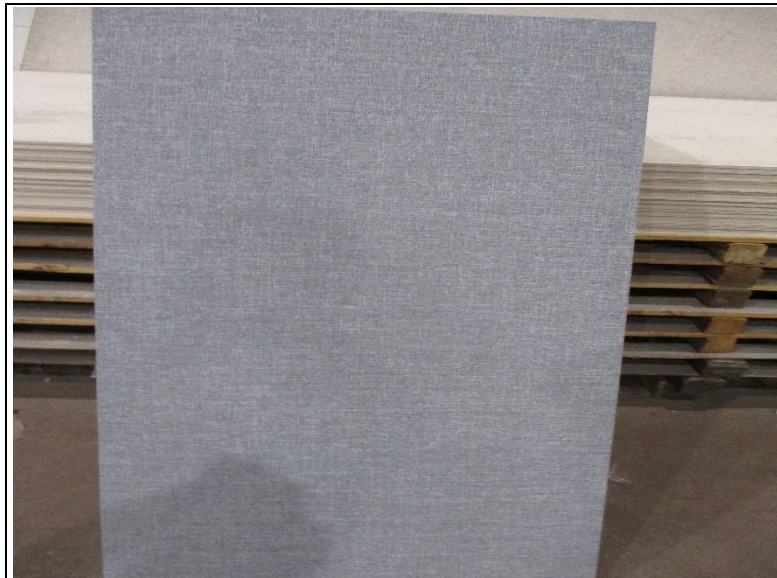


Photo No. 1
Pre-Test



Photo No. 2
Post Test

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SECTION 13

REVISION LOG

REVISION #	DATE	SECTION	REVISION
0	03/19/21	N/A	Original Report Issue