

RADIAL ENGINEERING LTD. TEST REPORT

SCOPE OF WORK

REPORT OF TESTING 2 IN. THICK PRIMACOUSTIC HERCULES IMPACT RESISTANT PANELS FOR COMPLIANCE WITH THE APPLICABLE REQUIREMENTS OF THE FOLLOWING CRITERIA: ASTM E84-20 STANDARD TEST METHOD FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS.

REPORT NUMBER

104616206COQ-002 R0

TEST DATE(S)

03/17/21 - 03/17/21

ISSUE DATE

03/19/21

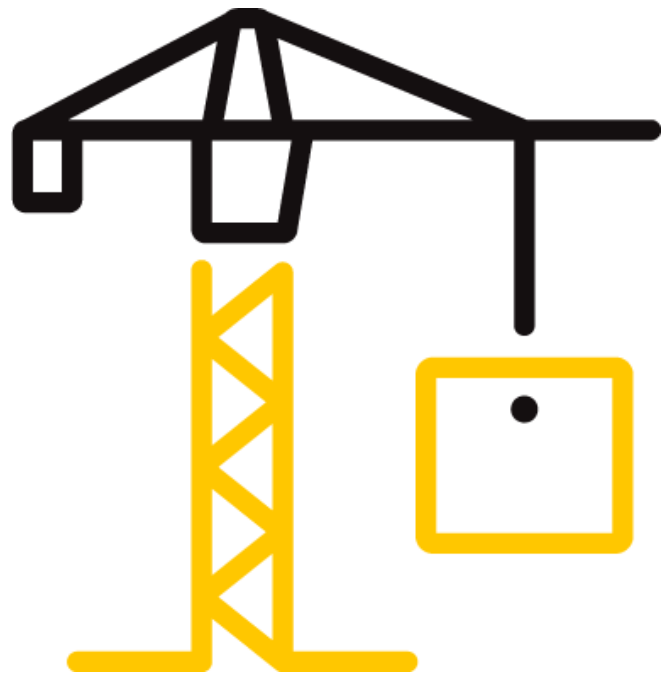
PAGES

12

DOCUMENT CONTROL NUMBER

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

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TEST REPORT FOR RADIAL ENGINEERING LTD.

Report No.: 104616206COQ-002 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 Ltd. Unit 1165, 1845 Kingsway Avenue Port Coquitlam, BC to perform testing in accordance with ASTM E84-20 Standard Test Method for Surface Burning Characteristics of Building Materials on their 2 in. 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 in 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

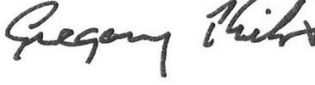
SUMMARY OF TEST RESULTS

The samples of 2 in. thick Primacoustic Hercules Impact Resistant Panels submitted by Radial Engineering Ltd. were tested in accordance with ASTM E84-20 Standard Test Method for Surface Burning Characteristics of Building Materials.

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:	Senior Technician – 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:

ASTM E84-20 Standard Test Method for Surface Burning Characteristics of Building Materials.

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
WH 2189	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	02/23/22

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 Index:

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 heptane, 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 was identified by the client as 2 in. thick Primacoustic Hercules Impact Resistant Panels. The samples measured 2 in. thick by 24 in. wide by 4 ft. long.

For this trial run, six 24 in. wide by 4 ft. long of sample material was placed on the upper ledge of the flame spread tunnel. 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 E84-20. Standard Test Method for Surface Burning Characteristics of Building Materials.

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SECTION 9**TEST RESULTS****(A) Flame Spread**

The resultant flame spread Indexes are as follows:

(Indexes rounded to nearest 5)

Sample Material	Flame Spread	Flame Spread Index
2 in. thick Primacoustic Hercules Impact Resistant Panels	15	15

(B) Smoke Developed

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

(For smoke developed indexes 200 or more, index is rounded to the nearest 50. For smoke developed indexes less than 200, index is rounded to nearest 5)

Sample Material	Smoke Developed	Smoke Developed Index
2 in. thick Primacoustic Hercules Impact Resistant Panels	120	120

(C) Observations

During the test, the sample surface ignited at approximately 19 seconds; the flame began to progress along the sample until it reached the maximum flame spread.

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COMMENTARY ON CLASSIFICATION

Neither ASTM E84 nor UL 723 include classification criteria for the results obtained from testing. The International Building Code® (IBC), NFPA 101: Life Safety Code® (NFPA 101), and NFPA 5000: Building Construction and Safety Code® (NFPA 5000) all describe a set of classification criteria required for interior wall and ceiling finish materials based on Flame Spread Index and Smoke Developed Index when tested in accordance with ASTM E84 or UL 723. The classification criteria for all three model codes is the same:

Class	Flame Spread Index	Smoke Developed Index
A	0-25	0-450
B	26-75	0-450
C	76-200	0-450

Note that classification under this scheme for interior wall and ceiling finishes does not strictly apply to all products or materials tested in accordance with ASTM E84 or UL 723 because not all products or materials are recommended or suitable for use as interior wall or ceiling finish materials in buildings, regardless of the surface burning characteristics. Consult with the product manufacturer and the local authority having jurisdiction (AHJ) regarding specific applications of a given product or material.

SECTION 10**CONCLUSION**

The samples 2 in. thick Primacoustic Hercules Impact Resistant Panels submitted by Radial Engineering Ltd. exhibited the following flame spread characteristics when tested in accordance with ASTM E84-20 Standard Test Method for Surface Burning Characteristics of Building Materials

Sample Material	Flame Spread Index	Smoke Developed Index
2 in. thick Primacoustic Hercules Impact Resistant Panels	15	120

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.



Total Quality. Assured.

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SECTION 11

TEST DATA (2 PAGES)

TEST REPORT FOR RADIAL ENGINEERING LTD.

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ASTM E84-20 DATA SHEETS

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Standard: ASTM E84-20/UL723

Lab ID: Intertek Coquitlam Fire Laboratory
Client: Radial Engineering
Date: 17 Mar 2021
Project Number: 104616206
Test Number: 1
Operator: Sean Fewer

Specimen ID and Description:

Primacoustic Hercules Impact resistant Panels

TEST RESULTS

FLAMESPREAD INDEX: 15.000
SMOKE DEVELOPED INDEX: 120.000

SPECIMEN DATA

Time to Ignition (sec): 18.898
Time to Max Flame Spread (min): 0.665
Maximum Flame Spread (mm): 3.100
Time to 527 C / 980 F (sec): 0.000
Max Temperature (deg F or C as per test standard): 563.216
Time to Max Temperature (sec): 529.898
Total Fuel Burned (cubic feet): 44.393

Flame Spread*Time Area (M*min): 29.451
Smoke Area (%A*min): 75.330
Unrounded FSI: 15.167
Unrounded SDI: 119.793

CALIBRATION DATA

Time to Ignition of Last Red Oak (sec): 48
Calibrated Smoke Area (%A*min): 62.883

15 point Heptane average for E84-20
5 point Red Oak average for S102

Tested by: SF

Reviewed by: SF

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ASTM E84-20 DATA SHEETS

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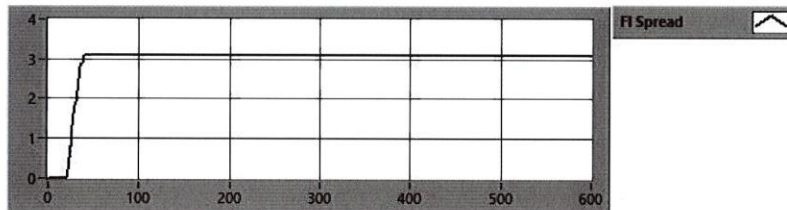
Client: Radial Engineering

Project Number: 104616206

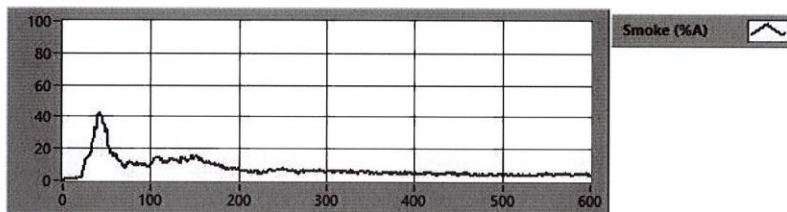
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Test Standard: ASTM E84-20/UL723

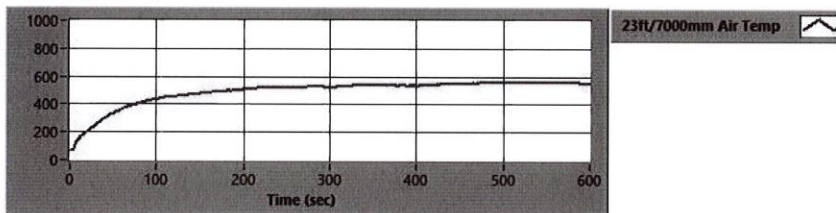
FLAME SPREAD



SMOKE (%A)



TEMPERATURE



Tested by: SF

Reviewed by: [Signature]

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SECTION 12 PHOTOGRAPHS

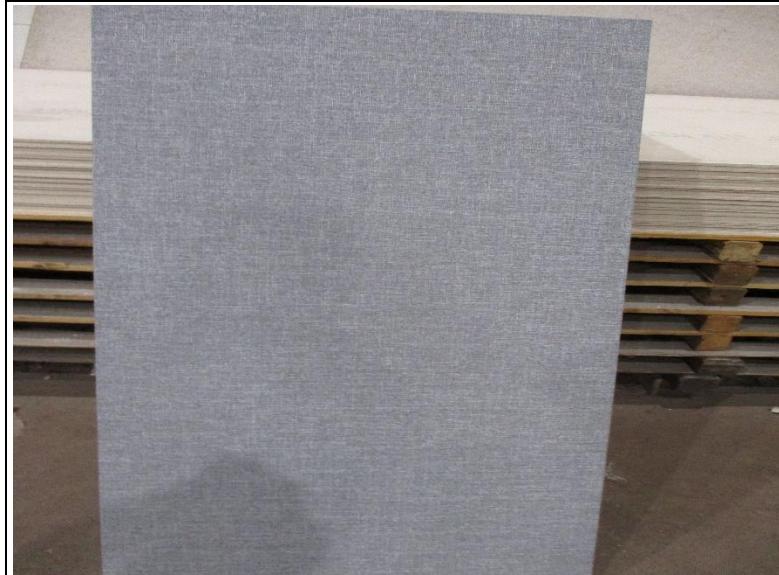


Photo No. 1
Pre Test



Photo No. 2
Post Test



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SECTION 13

REVISION LOG

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