

TEST REPORT

Intertek

REPORT NUMBER: 3189147COQ-002
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EVALUATION CENTER
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RENDERED TO

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PRODUCT EVALUATED: Broadway Acoustical Tile
EVALUATION PROPERTY: Surface Burning Characteristics

Report of testing Broadway Acoustical Tile for compliance with the applicable requirements of the following criteria: ASTM E84-09, 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 Radial Engineering Ltd., to evaluate the surface burning characteristics of Broadway Acoustical Tile. Testing was conducted in accordance with the standard methods of ASTM E84-09, *Standard Test Method for Surface Burning Characteristics of Materials*.

This evaluation began September 21, 2009 and was completed September 30, 2009.

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 September 2, 2009 and September 29, 2009.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The sample products were described by the client as Broadway Acoustical Tile panels. The samples consisted of a formed inorganic semi-rigid fiberglass panel wrapped with polyester fabric. Three fabric colours were submitted for testing – beige, grey, and black. Each panel measured 22 inches wide by 4 feet long by 2 inches thick.

For each trial run, six 4 ft. panels of the same colour were placed on the upper ledge of the flame spread tunnel with the fabric side oriented towards the flame and butted together to form the required 24 ft. 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 ASTM E84-09.

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 E84-09

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:

Unrounded Smoke Developed Index = $\frac{10,000 - \text{SmokeIntegration}}{650} \times 100$

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)

Broadway Acoustical Tile	Flame Spread	Flame Spread Classification
Run 1 – Beige Tile	9	10
Run 2 – Grey Tile	19	20
Run 3 – Black Tile	21	20

(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)

Broadway Acoustical Tile	Smoke Developed	Smoke Developed Classification
Run 1 – Beige Tile	145	145
Run 2 – Grey Tile	145	145
Run 3 – Black Tile	214	200

(C) Observations

After ignition the polyester fabric quickly caught fire and melted onto the tunnel floor. The flame spread traveled to its respective point and then receded to its original flame front position. This was the case for all three test runs.

6 Conclusion


The samples of Broadway Acoustical Tile, submitted by Radial engineering Ltd., exhibited the following flame spread characteristics when tested in accordance with ASTM E84-09, *Standard Test Method for Surface Burning Characteristics of Materials*.

Sample Material	Flame Spread Classification	Smoke Developed Classification
Run 1 – Beige Tile	10	145
Run 2 – Grey Tile	20	145
Run 3 – Black Tile	20	200

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.

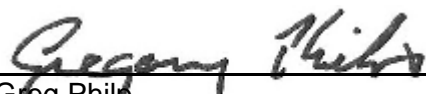
INTERTEK TESTING SERVICES NA LTD.

Tested and
Reported by:



Gerry Loverro
Technician – Construction Products Testing

Reviewed by:



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Reviewer, Fire Testing

GL

APPENDIX A

DATA SHEETS

ASTM E84-09 DATA SHEETS
Run 1

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ASTM E84

Client: Radial Engineering Ltd.
Date: 09/21/09
Project Number: 3189147
Test Number: 1
Operator: Gerry Loverro
Specimen ID: Broadway acoustical tile (beige).

TEST RESULTS

FLAMESPREAD INDEX: 10
SMOKE DEVELOPED INDEX: 145

SPECIMEN DATA . . .

Time to Ignition (sec): 7
Time to Max FS (sec): 34
Maximum FS (feet): 1.7
Time to 980 F (sec): Never Reached
Time to End of Tunnel (sec): Never Reached
Max Temperature (F): 585
Time to Max Temperature (sec): 532
Total Fuel Burned (cubic feet): 43.5

FS*Time Area (ft*min): 16.7
Smoke Area (%A*min): 94.3
Unrounded FSI: 8.6

CALIBRATION DATA . . .

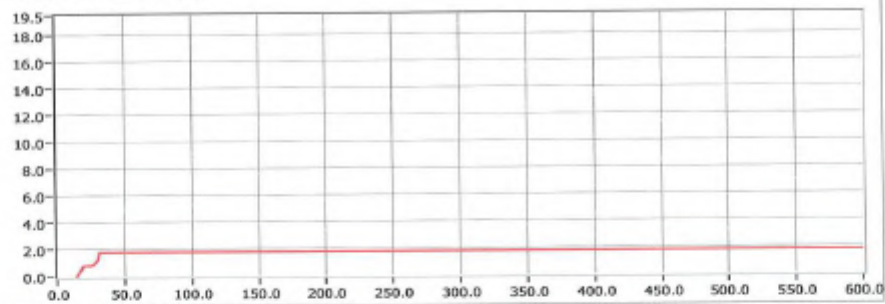
Time to Ignition of Last Red Oak (Sec): 38.0
Red Oak Smoke Area (%A*min): 65.0

ASTM E84-09 DATA SHEETS Run 1

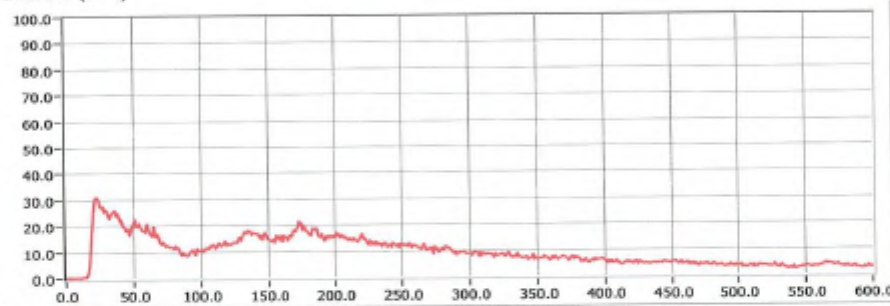
Project No: 3189147

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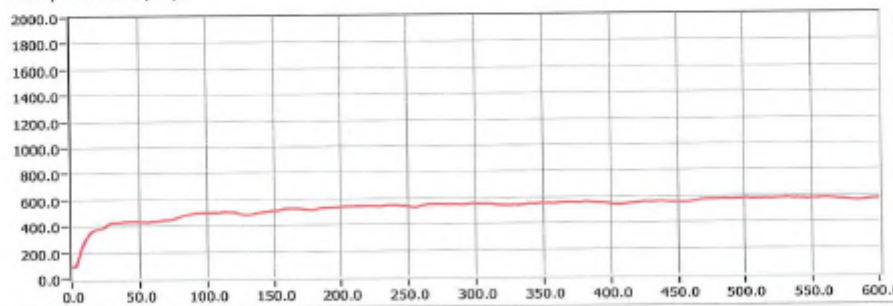
FLAME SPREAD (ft)



Smoke (%A)



Temperature (°F)



Time (sec)

600

ASTM E84-09 DATA SHEETS
Run 2

ASTM E84

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Client: Radial Engineering Ltd.
Date: 09/30/09
Project Number: 3189147
Test Number: 2
Operator: Gerry Loverro
Specimen ID: Broadway acoustical tile (grey).

TEST RESULTS

FLAMESPREAD INDEX: 20
SMOKE DEVELOPED INDEX: 145

SPECIMEN DATA . . .

Time to Ignition (sec): 6
Time to Max FS (sec): 33
Maximum FS (feet): 3.7
Time to 980 F (sec): Never Reached
Time to End of Tunnel (sec): Never Reached
Max Temperature (F): 336
Time to Max Temperature (sec): 600
Total Fuel Burned (cubic feet): 43.50

FS*Time Area (ft*min): 36.1
Smoke Area (%A*min): 94.2
Unrounded FSI: 18.6

CALIBRATION DATA . . .

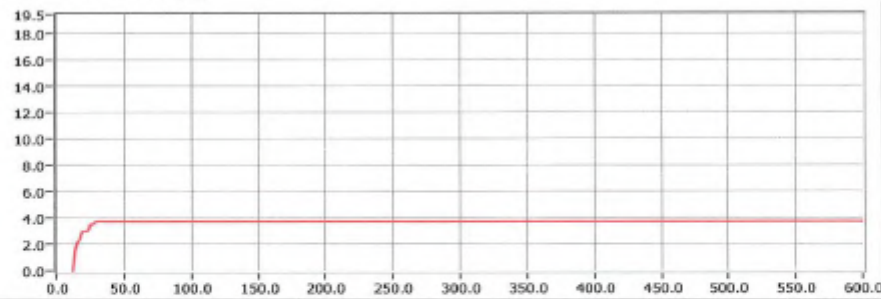
Time to Ignition of Last Red Oak (Sec): 38.0
Red Oak Smoke Area (%A*min): 65.0

ASTM E84-09 DATA SHEETS Run 2

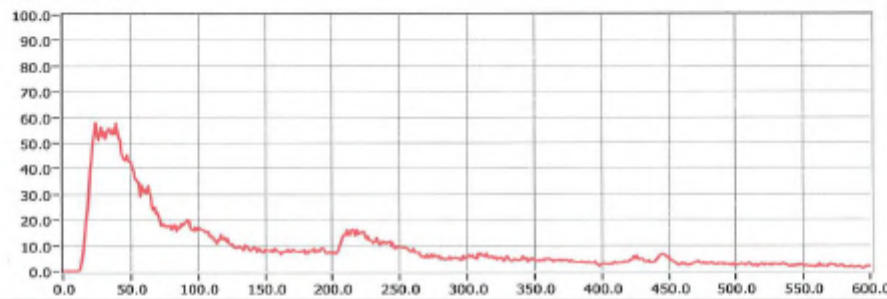
Project No: 3189147

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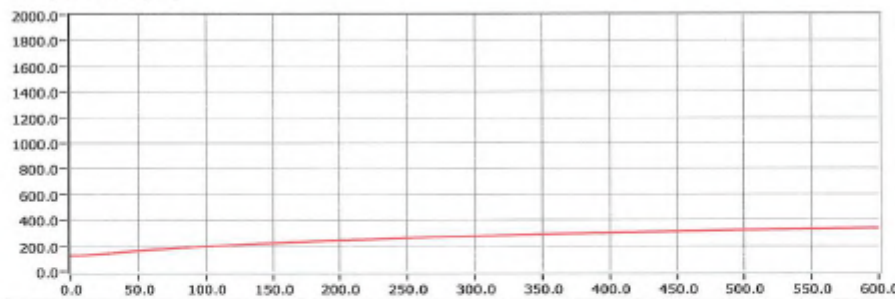
FLAME SPREAD (ft)



Smoke (%A)



Temperature (°F)



Time (sec)

600

ASTM E84-09 DATA SHEETS
Run 3

ASTM E84

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Client: Radial Engineering Ltd.
Date: 09/30/09
Project Number: 3189147
Test Number: 3
Operator: Gerry Loverro

Specimen ID: Broadway acoustical tile (black).

TEST RESULTS

FLAMESPREAD INDEX: 20
SMOKE DEVELOPED INDEX: 200

SPECIMEN DATA . . .

Time to Ignition (sec): 6
Time to Max FS (sec): 43
Maximum FS (feet): 4.2
Time to 980 F (sec): Never Reached
Time to End of Tunnel (sec): Never Reached
Max Temperature (F): 348
Time to Max Temperature (sec): 600
Total Fuel Burned (cubic feet): 43.60

FS*Time Area (ft*min): 40.8
Smoke Area (%A*min): 139.0
Unrounded FSI: 21.0

CALIBRATION DATA . . .

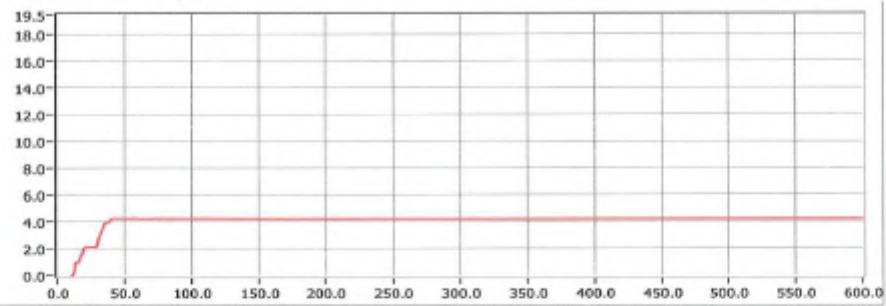
Time to Ignition of Last Red Oak (Sec): 38.0
Red Oak Smoke Area (%A*min): 65.0

ASTM E84-09 DATA SHEETS Run 3

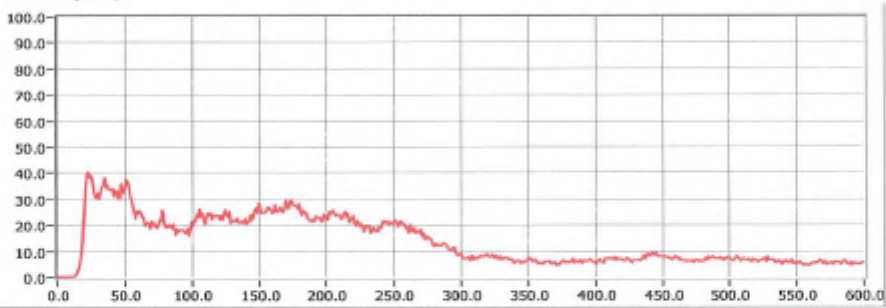
Project No: 3189147

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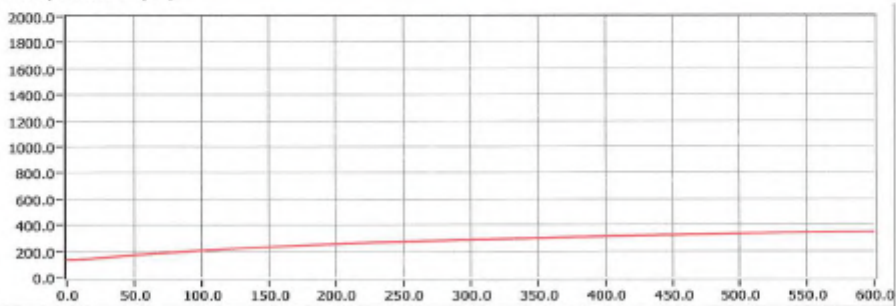
FLAME SPREAD (ft)



Smoke (%A)



Temperature (°F)



Time (sec)

600

REVISION SUMMARY

DATE	PAGE	SUMMARY
September 30, 2009	all	Original Issue Date