Report On
Surface Burning Characteristics Determined By ASTM E84/ (UL 723) Twenty-Five Foot Tunnel Furnace Test Method

PREPARED FOR:

BASWA Acoustic North America, LLC

21863 Aurora Rd.
Cleveland, OH

TEST NUMBER T-14755

MATERIAL TESTED:

BASWAphon Acoustical Finish System

DATE OF ISSUE 2/3/2015

I. SCOPE

This report contains the reference to the test method, purpose, test procedure, rounding procedures, preparation and conditioning of specimens, description of materials, test and post test observation data, and test results.

II. TEST METHOD

The test was conducted in accordance with ASTM E 84, "Standard Test Method for Surface Burning Characteristics of Building Materials." The 25-foot tunnel method is also described by NFPA 255 and UL 723.

III. PURPOSE

The purpose of the test is to determine the relative performance of the test material under standardized fire exposure. Results are given for Flame Spread and Smoke Developed Index. The values obtained from burning the test material represent a comparison with that of 1/4" inorganic reinforced cement board expressed as zero and red oak flooring expressed as 100.

The flame spread results of 25-foot tunnel tests are frequently used by building code officials and regulatory agencies in the acceptance of interior finish material for various applications. The most widely accepted classification system is epitomized by the International Code Council (ICC) and National Fire Protection Association (NFPA) Life Safety Code, NFPA 101:

Class A*	0 - 25	flame spread	0-450 smoke developed
Class B*	26 - 75	flame spread	0-450 smoke developed
Class C*	76 - 200	flame spread	0-450 smoke developed

*Class A, B and C correspond to I, II and III, respectively, in other historical codes such as UBC and BOCA.

This flame spread classification system is based on the premise that the higher the flame spread numbers, the greater the fire spread potential. The actual relationship between the numbers developed under this test and life safety from fire has not been adequately established.

IV. TEST PROCEDURE NOTES

The furnace was preheated to a minimum of 150°F as measured by an 18 AWG thermocouple embedded in cement 1/8" below the floor surface of the chamber, 23-1/4' from the centerline of the ignition burners. The furnace was then cooled to 105°F (± 5°F) as measured by a thermocouple embedded 1/8" below the floor surface of the test chamber 13' from the fire end.

Prior 10-minute tests with 1/4" inorganic reinforced cement board provided the zero reference for flame spread. Periodic 10-minute tests with unfinished select grade red oak flooring provided for the 100 reference for flame spread and smoke developed as noted in Section III.

A. Flame Spread

The flame spread distance is observed and recorded at least every 15 seconds or every 2 feet of progression. The peak distance is noted at the time of occurrence. The flame spread distance is plotted over time. The total area under the flame spread distance-time curve is determined; flame front recessions are ignored. The flame spread is then calculated as a function of the area under the curve relative to the standard red oak curve area. The value for flame spread classification for the tested material may be compared with that of inorganic reinforced cement board and select grade red oak flooring.

B. Smoke Developed

The smoke developed during the test is determined by the reduction in output of a photoelectric cell. A light beam vertically orientated across the furnace outlet duct is attenuated by the smoke passing through the duct. The output of the photoelectric cell is related to the obscuration of the light source through the duct caused by the smoke. A curve is developed by plotting photoelectric cell output against time. The value of smoke developed is derived by calculating the net area under the curve for the test material and comparing this area with the net area under the curve for unfinished select grade 23/32" red oak flooring.

V. FLAME SPREAD AND SMOKE DEVELOPED ROUNDING PROCEDURES

Single test calculated flame spread and smoke developed values are rounded to the nearest multiple of 5 and reported as the Flame Spread or Smoke Developed Index. Actual test values are available on request.

For multiple tests, the individual calculated flame spread and smoke developed values are recorded, averaged, and the results rounded to the nearest multiple of 5. The averaged, rounded number is reported as the Flame Spread or Smoke Developed Index.

VI. PREPARATION AND CONDITIONING OF TEST SAMPLES

Three or four sections are generally used in the preparation of a complete test specimen which is 20-1/2" wide and 24' long. Materials 8' in length may be tested by using three sections 20-1/2" wide by 8' long for a total specimen length of 24'. A 14" length of uncoated 16 gauge steel sheet is used to make up the remainder of the test specimen; it is placed at the fire end of the test chamber. Prior to testing, three 8' long sections of 1/4" inorganic reinforced cement board are placed on the back side of the specimens to protect the furnace lid assembly. Test specimens are conditioned at a controlled temperature of 73.4°F ($\pm$ 5°F) and a controlled relative humidity of 50 $\pm$ 5 percent.

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VII: MATERIAL TESTED

1) Manufacturer: BASWA Acoustic North America, LLC
Cleveland OH

2) Burn Number: 1

3) Average Thickness(in.): 2.152

4) Average Weight (lbs./sq.ft.): 4.187

5) Average Groove Depth (in.):

6) Product Description: BASWAphon Acoustical Finish System
2 Coats of marble aggregate in a copolymer totaling 5mm thickness was applied to the precoated mineral wool base supporting panel with a factory applied 3mm thick coating of glass micro-spheres and then applied to 5/8" Type "x" Gypsum Board.

7) Color: White

8) Surface: Face Side

9) Sample Selection: Manufacturer

10) Date of Selection: 1/13/2015

11) Material Description By: Manufacturer

12) Method of Mounting: Self-Supporting

13) Days in Conditioning: 20

VIII: TEST CONDITIONS AND DATA

1) Specimen Preheat Time (min.) 2:00

2) Tunnel Brick Temp (deg. F): 105

3) Ignition Time (seconds): 63

4) Time to End of Tunnel or Flamefront Distance: 6'@3:00

5) Time-Distance Curve Area (min./ft.): 48.5

6) Fuel and Temperature
a) Fuel (cu.ft./min.): 5.152
b) Max. Vent End Temp. (deg.F): 663
c) Time to Max. Temp (min.): 5:11

7) After Flaming: No

IX: TEST RESULTS

Test results calculated on the basis of the area under the curves of flame spread distance and smoke developed versus time are provided in the table below for calibration materials and for:

BASWAphon Acoustical Finish System

Material Description	Flame Spread Index	Smoke Developed Index
High Density Inorganic Reinforced Cement Board	0	0
Red Oak Flooring	100	100
T-14755	25	15

Observations:

Charring to 10', discoloration to 24'.

Remarks:

Sample consisted of three 8' long boards laid end to end.

Conclusions:

Meets Class A, Flame Spread Index 25 or less and Smoke Developed Index 450 or less.

REPORT PREPARED BY:

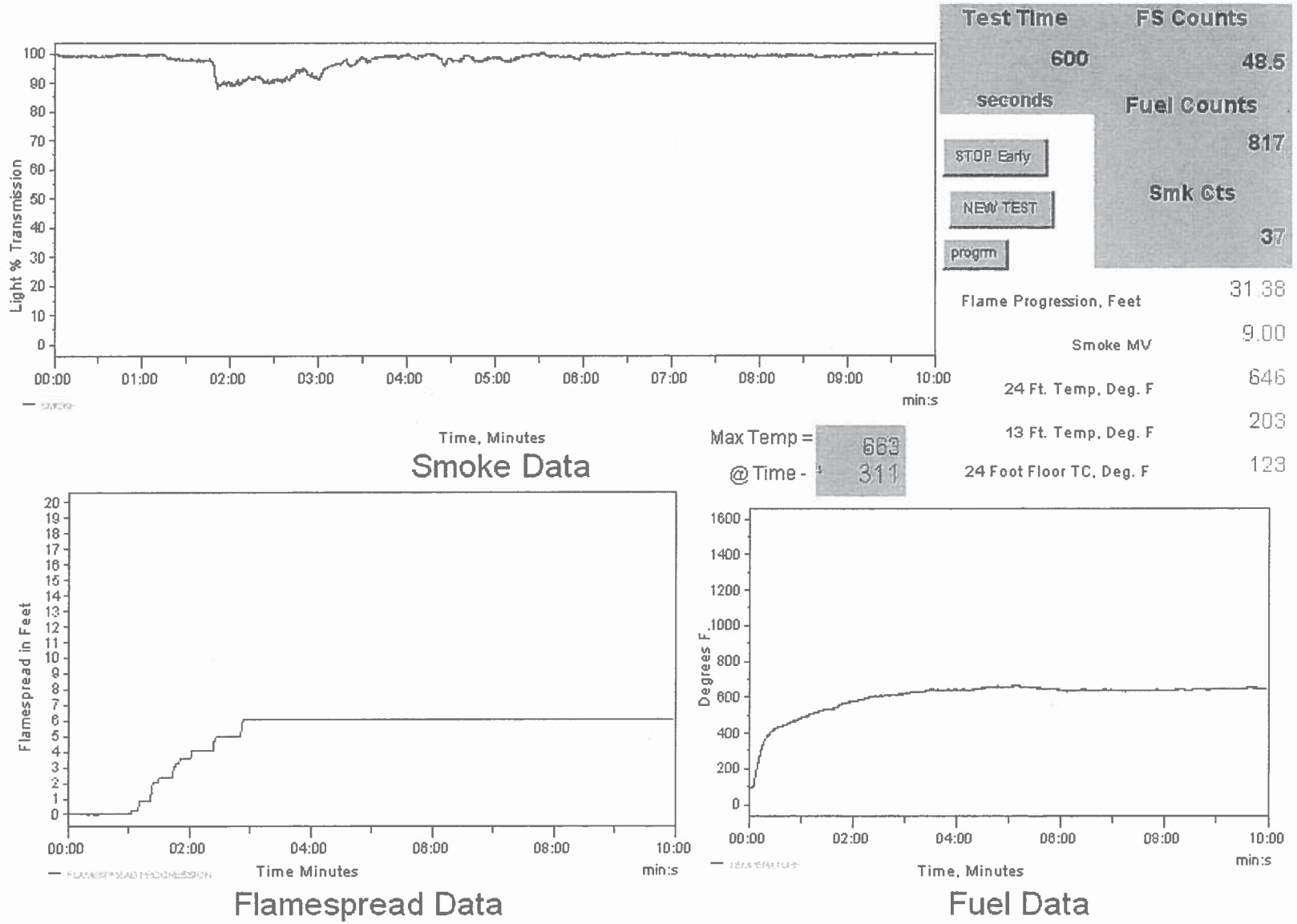
Chris Palumbo

Manager of Fire Testing

REPORT REVIEWED BY:

Brian Sause

Director of Testing, Standards, and Certification



HPVA LABORATORIES – TESTING AND CERTIFICATION SERVICES
1825 Michael Faraday Drive, Reston, Virginia 20190 TEL: 703-435-2900 FAX: 703-435-2537

LABORATORY ACCREDITATION

ACCREDITED

HPVA Laboratories is an internationally accredited testing laboratory according to ISO/IEC 17025 and recognized by state and local building code jurisdictions.

International Accreditation Service (IAS) Accredited Testing Laboratory Number: TL-224

HPVA Laboratories has met the requirements of the IAS Accreditation Criteria for Testing Laboratories (AC89), and has demonstrated compliance with ISO/IEC Standard 17025:2005, General requirements for the competence of testing and calibration laboratories, for the test methods listed in the approved scope of accreditation.

HPVA FLAME SPREAD PROPERTY VERIFICATION PROGRAM

The Hardwood Plywood & Veneer Association provides a product property verification program for flame spread properties. This program is based on the selection and testing of panels within a given marketing line on the basis of that combination of factors that theoretically should give the highest flame spread values. Such factors as panel thickness, specific gravity, color of stain, type of lamination, surface texture, and product mix are taken into consideration in the selection of flame spread samples.

While it is standard procedure to include smoke developed values in test reports, the HPVA label identifies only the flame spread class. The authorized use of an HPVA Laboratories label is evidence that the manufacture has implement a quality program and participates in ongoing testing and inspection of certified product lines.

The sample HPVA label displayed below would indicate conformance of the tested samples to the Type II glue bond requirements as set forth in ANSI/HPVA HP-1-2015 American National Standard For Hardwood And Decorative Plywood, and conformance to Flame Spread Class C (200 or less) as determined by the test procedures described in ASTM E 84. Depending on the type of product, the label may also include other information such as structural and formaldehyde emission ratings.

<table>
<tr><th colspan="3">HPVA LABORATORIES</th></tr>
<tr>
<td>BOND LINE
TYPE II
ANSI/HPVA
HP-1-2015</td>
<td>HPVA LABORATORIES ®
MILL 00
SPECIALTY GRADE</td>
<td>FLAME SPREAD
200 OR LESS
CLASS C
ASTM E 84
SIMULATED
DECORATIVE
FINISH ON
PLYWOOD</td>
</tr>
</table>

CANNONDESIGN

SUBMITTAL IDENTIFICATION SHEET

To be completed by Contractor/CM

WEBSTER UNIVERSITY ISB
PROJECT NAME

8274 BIG BEND BLVD
ADDRESS

NUMBER

WEBSTER UNIVERSITY
OWNER

CANNON DESIGN
ARCHITECT / ENGINEER

Joe Voypick
SUBMITTED BY

098310-005
CONTRACTOR / CM SUBMITTAL NO.

CANNON DESIGN SUBMITTAL NO.

DRAWING / DETAIL REFERENCE

098310
SPECIFICATION SECTION / PARAGRAPH

MANUFACTURER / SUPPLIER

ITEM / PRODUCT ID

REQUIRED DATE

PRIORITY

CRITICAL

ITEM BEING SUBMITTED (check only one)

- ○ Shop Drawings
- ○ Samples (_____ copies)
- ○ LEED Submittal
- ◉ Certification / Qualifications
- ○ Record Documents
- ○ Product Data
- ○ Coordination Drawing
- ○ Calculations
- ○ Schedules
- ○ O&M Manuals
- ○ Other _____

ITEM BEING SUBMITTED FOR (check only one)

◉ Action ○ Information Only ○ Record

REMARKS OR DEVIATIONS

CONTRACTOR / CM CERTIFICATION
(SUBMITTALS NOT CERTIFIED WILL BE RETURNED WITHOUT REVIEW)

PARIC

PARIC CORPORATION
SUBMITTAL STAMP

THIS SHOP DRAWING HAS BEEN REVIEWED BY PARIC CORPORATION

Subcontractor remains responsible for dimensions, quantities, coordination with other trades and compliance with contract documents.

By:
Devin D. Gates

Joe Voypick — REVIEWED BY
2/21/17 — DATE

To be completed by Reviewer

09 8310-005
CANNON DESIGN SUBMITTAL NUMBER

2/21/17
RECEIVED DATE

- ◉ A. No Exceptions Taken
  No further review of submittal is required.
- ○ B. Make Corrections Noted
  Incorporate corrections in work; resubmission is not required.
- ○ C. Revise and Resubmit
  Revise as noted, and resubmit for review.
- ○ D. Rejected
  Submittal is not in compliance with Contract Documents; provide new submittal.
- ○ E. For Record / Information Only
  Submittal was reviewed for Record / Information purposes only.
- ○ F. Not Required for Review
  Submittal is not required by Contract Documents and has not been reviewed.

Review is for conformance with the design concept of this project and for general compliance with contract documents. Contractor is responsible for quantities, dimensions and compliance with contract documents and for information that pertains to fabrication processes, construction techniques and coordination of this work with all trades which will be affected thereby. This review is null and void if submittal deviates from contract documents and does not indicate or note deviations.

A/E COMMENTS ○ See attached sheet(s) for additional comments

Kelvin Patel — REVIEWED BY
Digitally signed by Kelvin Patel
DN: C=US, E=kpatel@cannondesign.com, O=Cannon Design, OU=Architect, CN=Kelvin Patel
Date: 2017.02.24 12:43:21-06'00'

2/24/17 — DATE

PARIC
EXPERIENCE. EXCELLENCE.
77 Westport Plaza
Suite 250
St. Louis, MO 63146

TRANSMITTAL

No. 15051-0510

Paric Corporation

PROJECT: 15051-Webster University Interdisciplinary Science Building

DATE: 02/21/2017

TO: Cannon Design
1100 Clark Ave
St Louis MO 63102

Fax;
314-241-2203

RE: Acoustical Plaster Fire Resistance Reports

ATTN: Kelvin Patel

JOB: 15051

WE ARE SENDING:	SUBMITTED FOR:	ACTION TAKEN:
☐ Shop Drawings	☑ Approval	☐ Approved as Submitted
☐ Letter	☐ Your Use	☐ Approved as Noted
☐ Prints	☐ As Requested	☐ Returned After Loan
☐ Change Order	☐ Review and Comment	☐ Resubmit
☐ Plans		☐ Submit
☐ Samples	**SENT VIA:**	☐ Returned
☐ Specifications	☐ Attached	☐ Returned for Corrections
☑ Other: Fire Resistance Reports	☐ Separate Cover Via:	☐ Due Date:

Item	*Package*	*Code*	*Rev.*	*Copies*	*Date*	*Description*	*Status*
Submittal		098310-005	1		02/21/2017	Acoustical Plaster Fire Resistance Reports	Submitted

NOTES:

CC:

Signed: _____
Devin Gates