ASTM E 84

Standard test method for surface burning characteristics of of building materials.

The flame spread Index and Smoke Developed Index values obtained by the ASTM E 84 test are used by code officials and regulatory agencies in the acceptance of interior finish materials for various applications. The most widely accepted classification system is described in the National Fire Protection Association publication NFPA 101 *Life Safety Code*

1. 2006 International Building Code

a. Section 803 Wall and Ceiling Finishes, Paragraph 803.1 General states, "Interior wall and ceiling finishes shall be classified in accordance with ASTM E- 84.Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.

i. Class A: Flame Spread 0-25; smoke-developed 0-450

ii. Class B: Flame Spread 26-75; smoke-developed 0-450

iii. Class C: Flame Spread 76-200; smoke-developed 0-450

Class A,B, and C correspond to type I, II, and III respectively in other codes such as SBCCI, BOCA, ICBO. They do not preclude a material being otherwise classified by the authority of jurisdiction.

2. NFPA 101®, Life Safety Code®

a. Chapter 10 Interior Finish, Contents, and Furnishings, Paragraph 10.2.3 Interior Wall or Ceiling Finish Testing and Classification states, "Interior wall or ceiling finish that is required elsewhere in this Code to be Class A, Class B, or Class C shall be classified based on test results from NFPA 255, ASTM E-84, or UL 723."

April 14, 2016

Mr. Dan Ferson
McCain, Inc.
2365 Oak Ridge Way
Vista, CA 92081-8348

Our Reference: SV30617/4787378267

Subject: Report Of Surface Burning Characteristics Tests On Samples As Submitted By McCain, Inc.

Dear Mr. Ferson:

This is a Report summarizing the results of a test conducted under the Commercial Inspection and Testing Services (CITS) program of UL LLC (UL) identified as Assignment No. 4787378267.

GENERAL:

The results relate only to items tested.

METHOD:

Each test was conducted in accordance with Standard ANSI/UL723, Tenth Edition, dated September 10, 2008 with revisions through August 12, 2013, "Test for Surface Burning Characteristics of Building Materials", (ASTM E84).

The test determines the Surface Burning Characteristics of the material, specifically the flame spread and smoke developed indices when exposed to fire.

The maximum distance the flame travels along the length of the sample from the end of the igniting flame is determined by observation. The Flame Spread Index of the material is derived by plotting the progression of the flame front on a time-distance basis, ignoring any flame front recession, and using the equations described below:

A. $CFS = 0.515\ A_T$ when A_T is less than or equal to 97.5 minute-foot.

B. $CFS = 4900/(195-A_T)$ when A_T is greater than 97.5 minute-foot.

Where A_T = total area under the time distance curve expressed in minute-foot.

The Smoke Developed Index (SDI) is determined by rounding the Calculated Smoke Developed (CSD) as described in UL 723. The CSD is determined by the output of photoelectric equipment operating across the furnace flue pipe. A curve is developed by plotting the values of light absorption (decrease in cell output) against time. The CSD is derived by expressing the net area under the curve for the material tested as a percentage of the area under the curve for untreated red oak.

The CSD is expressed as:

$CSD = (A_m/A_{ro}) \times 100$

Where:

CSD = Calculated Smoke Developed
A_m = The area under the curve for the test material.
A_{ro} = The area under the curve for untreated red oak.

SAMPLES:

The samples utilized in this investigation were neither prepared nor selected by a Laboratories' representative such that no verification of composition can be provided. However, the samples provided were identified by McCain, Inc. as, "M Wall powder coated aluminum panels".

Sample Description

Test No.	System
1	M Wall powder coated aluminum panels

Due to the rigidity of the test samples, supplementary means of support was not required.

RESULTS:

The results are tabulated below are considered applicable only to the specific samples tested.

Data sheets and graphical plots of flame travel versus time and smoke developed versus time are also enclosed.

Table 1: Test Summary

Test No.	Test Code	Sample Description	CFS Calculated Flame Spread	FSI Flame Spread Index	CSD Calculated Smoke Developed	SDI Smoke Developed Index
1	04051611	M Wall powder coated aluminum panels	0.00	0	44.2	45

The Classification Marking of UL on the product is the only method provided by UL to identify products which have been produced under its Classification and Follow-Up Service. No use of a Classification Marking has been authorized as a result of this investigation.

Since the anticipated work has been completed, we have instructed our Accounting Department to terminate the investigation and invoice you for the charges incurred to date.

Should you have any questions, please contact the undersigned.

Very truly yours

James Smith
Staff Engineering Associate
Building Materials & Systems

Reviewed by:

Randall Laymon
Sr, Staff Engineer
Building Materials & Systems

Project:	4787378267	File:	SV30617	TestCode:	04051611
Tested by:	BILL KANDRAY	Engineer:	JAMES SMITH	Date:	2016-04-05

TEST METHOD: The test was conducted in accordance with UL 723, Tenth Edition.

Client Name:	McCain, Inc.				
Test Duration	10 minutes	Test No.:	1	Hot Test:	No
Mounting:	Self	Test Type:	CITS	Burn-Out Required:	No

Test Sample: M Wall powder coated aluminum panels

FLAME SPREAD RESULTS

Flame Spread Data

Distance (Feet)		Time (Sec)
Ignition		178

Calculated Flame Spread (CFS):	0.00
Flame Spread Index (FSI):	0
Time to Ignition (sec):	178
Maximum Flame Spread (ft):	0.0
Area Under the Flame Spread Curve (ft.-min):	0.0

SMOKE RESULTS

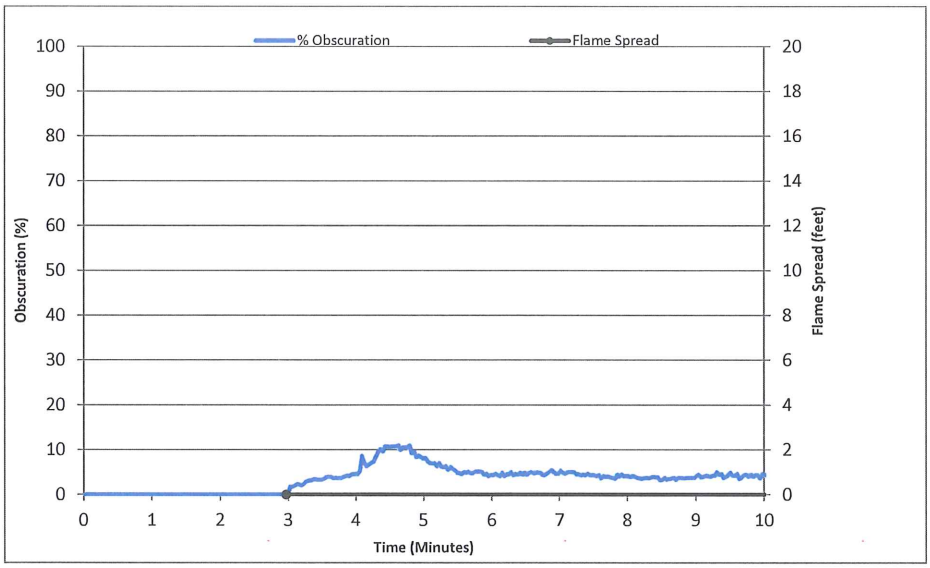
Calculated Smoke Developed (CSD):	44.2
Smoke Developed Index (SDI):	45
Area Under the Smoke Curve (Obs-min.):	34.77
Area Under Red Oak Curve (Obs-min.):	78.65

Post-Test Observations

Discoloration (Feet From Burner):	4

Flame Spread / Smoke Results

McCain, Inc.
M Wall powder coated aluminum panels



Test Num.: 1
SV30617 / 4787378267
04051611

Flame Spread Index: 0
Smoke Developed Index: 45
Max. Flame Spread (ft.): 0.0