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**CAN/ULC-S102 Surface Burning Characteristics
of "Digitally Printed Aluminum Siding" Coated Aluminum**

A Report To:	DiZal inc. 1020 rue Bouvier, Suite 400 Québec, QC G2K 0K9
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Submitted by:	Exova Warringtonfire North America
Report No.	16-002-517(B) 6 Pages
Date:	September 23, 2016

ACCREDITATION To ISO/IEC 17025 for a defined Scope of Testing by the International Accreditation Service

SPECIFICATIONS OF ORDER

Determine the Flame Spread Rating and Smoke Developed Classification based upon triplicate testing conducted in accordance with CAN/ULC-S102-10, as per DiZal inc. reference Purchase Order No. 218R1 and Exova Warringtonfire North America Quotation No. 16-002-418420RV2 dated September 7, 2016.

SAMPLE IDENTIFICATION (Exova sample identification number 16-002-S0517)

Coated aluminum 6" (152 mm) profile material, approximately 2 mm in thickness, described as, "Aluminum, primer, ink jet printed texture and clear", identified as:
"Digitally Printed Aluminum Siding"

TEST PROCEDURE

The method, designated as CAN/ULC-S102-10, "Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies", is designed to determine the relative surface burning characteristics of materials under specific test conditions. Results of less than three identical specimens are expressed in terms of Flame Spread Value (FSV) and Smoke Developed Value (SDV). Results of three or more replicate tests on identical samples produce average values expressed as Flame Spread Rating (FSR) and Smoke Developed Classification (SDC).

Although the procedure is applicable to materials, products and assemblies used in building construction for development of comparative surface spread of flame data, the test results may not reflect the relative surface burning characteristics of tested materials under all building fire conditions.

SAMPLE PREPARATION

Each test specimen consisted of a total of 6 sections of material, each approximately 2 mm in thickness by 171 mm in width by 3658 mm in length. The sections were supported on 6 mm diameter steel rods placed across the width of the tunnel, and spaced at nominal 610 mm intervals. The sections were butted together side-by-side and end-to-end to form the requisite specimen area (3 wide and 2 long). Prior to testing, each specimen was conditioned to constant mass at a temperature of $23 \pm 3^\circ\text{C}$ and a relative humidity of $50 \pm 5\%$. In all cases during testing, the coated (coloured) surface was exposed to the test flame.

The testing was performed on: Test #1: 2016-09-15 Test #2: 2016-09-15 Test #3: 2016-09-15

SUMMARY OF TEST PROCEDURE

The tunnel is preheated to 85°C , as measured by the backwall-embedded thermocouple located 7090 mm downstream of the burner ports, and allowed to cool to 40°C , as measured by the backwall-embedded thermocouple located 4000 mm from the burners. At this time the tunnel lid is raised and the test sample is placed along the ledges of the tunnel so as to form a continuous ceiling 7315 mm long, 305 mm above the floor. The lid is then lowered into place.

SUMMARY OF TEST PROCEDURE (continued)

Upon ignition of the gas burners, the flame spread distance is observed and recorded every second. Flame spread distance versus time is plotted. Calculations ignore all flame front recessions and the Flame Spread Values (FSV) are determined by calculating the total area under the curve for each test sample. If the total area under the curve (AT) is less than or equal to 29.7 m·min, $FSV = 1.85 \cdot AT$; if greater, $FSV = 1640 / (59.4 - AT)$.

Smoke Developed Values (SDV) are determined by comparing the area under the obscuration curve for each test sample to that of inorganic reinforced cement board and red oak, established as 0 and 100, respectively. Each Smoke Developed Value is determined by dividing the total area under the obscuration curve by that of red oak and multiplying by 100.

TEST RESULTS

SAMPLE		Flame Spread Value (FSV)	Smoke Developed Value (SDV)
"Digitally Printed Aluminum Siding"	Test #1	2	9
	Test #2	2	6
	Test #3	5	4
	Average:	3	6

Rounded Average Flame Spread Rating (FSR): **5**

Rounded Average Smoke Developed Classification (SDC): **5**

Observations of Burning Characteristics

- The specimens ignited approximately 52 to 60 seconds after exposure to the test flame. Surface blistering and delamination was observed. Partial collapse in the test burner impingement area was also observed.
- The flame fronts advanced to maximum distances of 0.1, 0.1 and 0.3 metres at approximately 87, 80, and 75 seconds into each respective test.

Note: This is an uncontrolled electronic copy of the report. Signatures are on file with the original.

Robert A. Carleton,
Technologist.

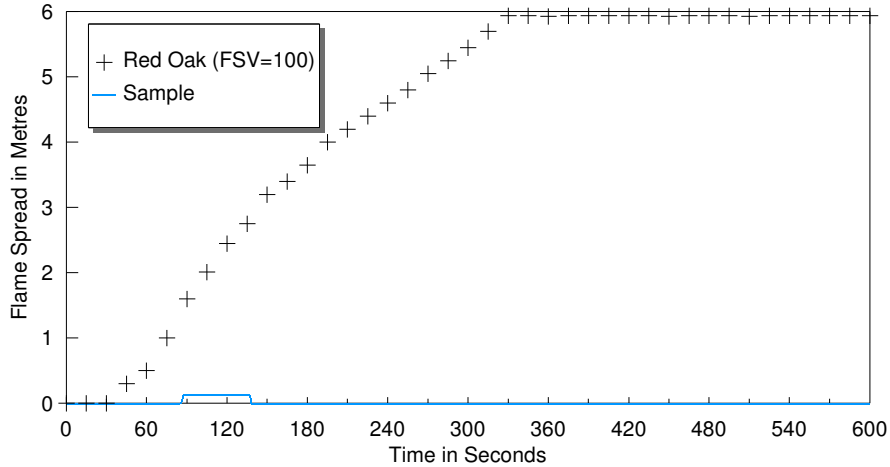
Ian Smith,
Technical Manager.

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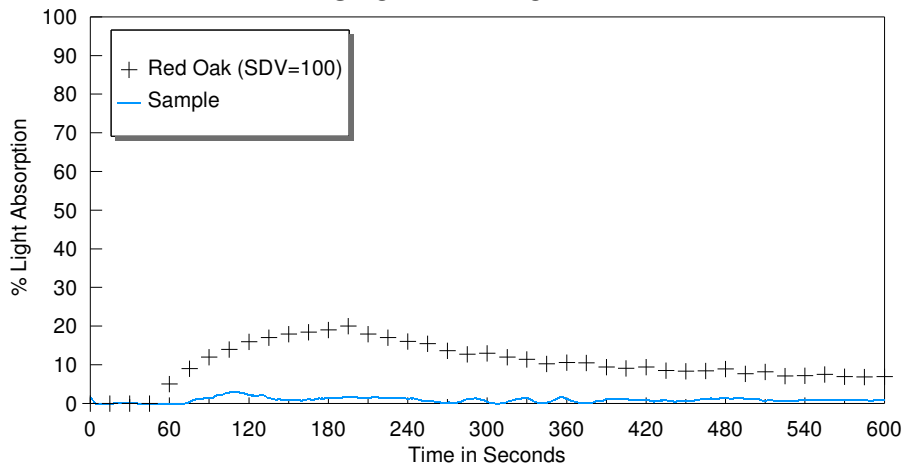
Sample: "Digitally Printed Aluminum Siding"

Test #1 of 3

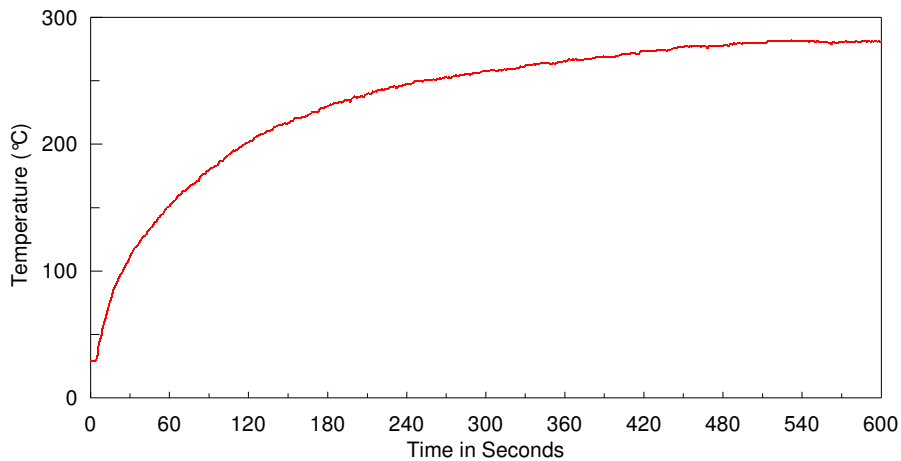
FLAME SPREAD



SMOKE DEVELOPED



TEMPERATURE



FSV
2

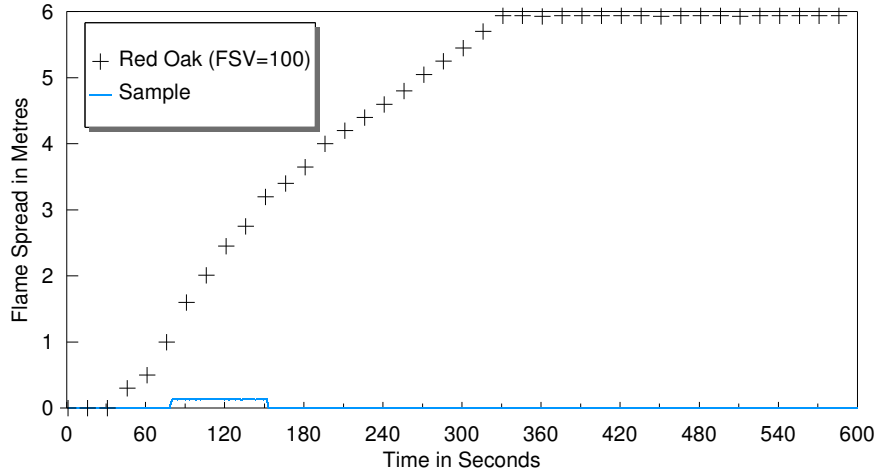
SDV
9

Max. Temp. (°C)
282

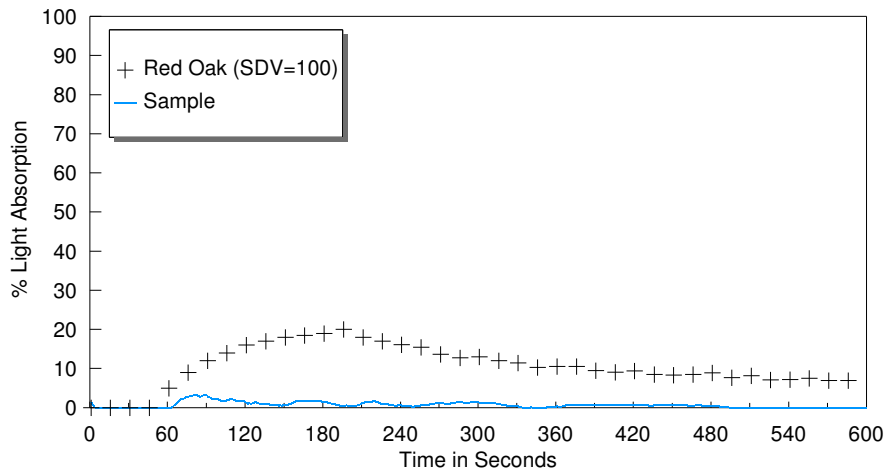
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Test #2 of 3

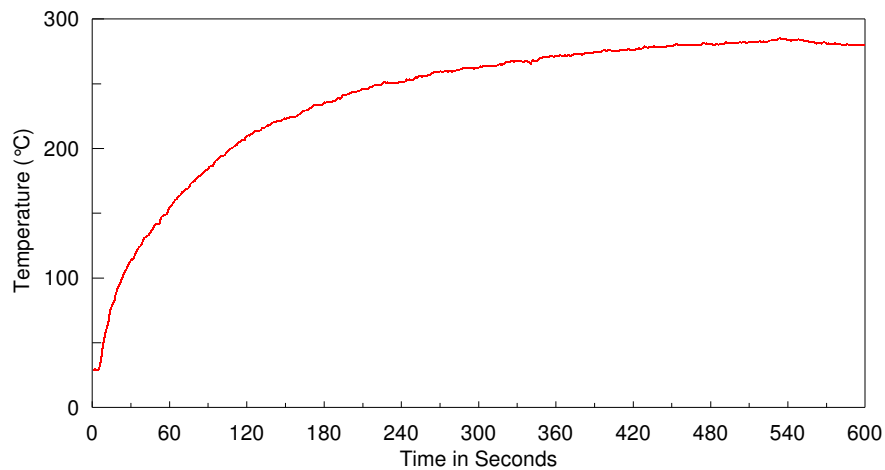
FLAME SPREAD



SMOKE DEVELOPED



TEMPERATURE



FSV
2

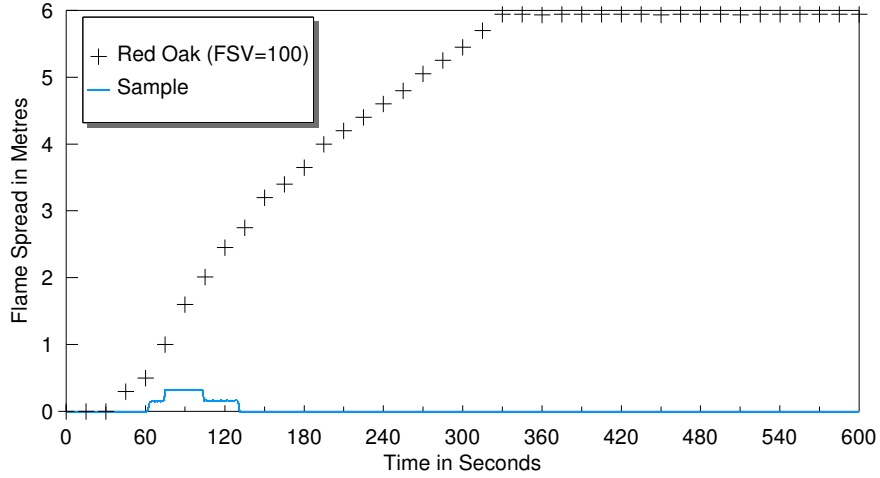
SDV
6

Max. Temp. (°C)
285

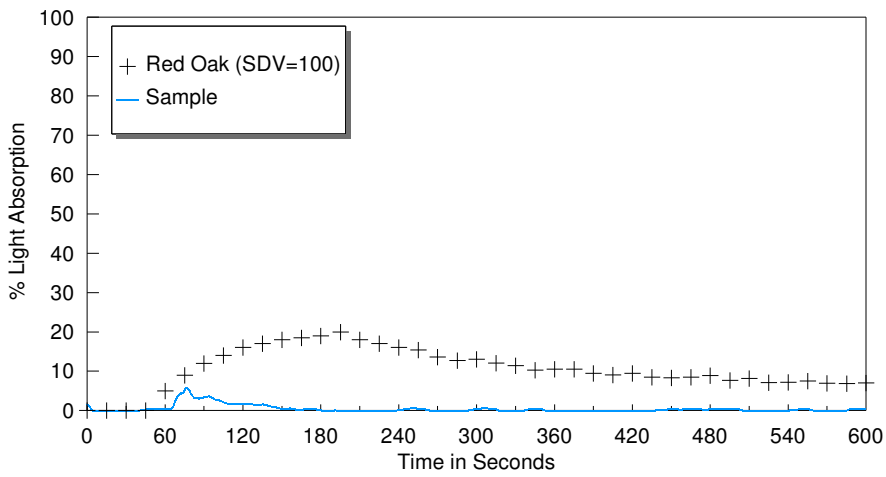
Sample: "Digitally Printed Aluminum Siding"

Test #3 of 3

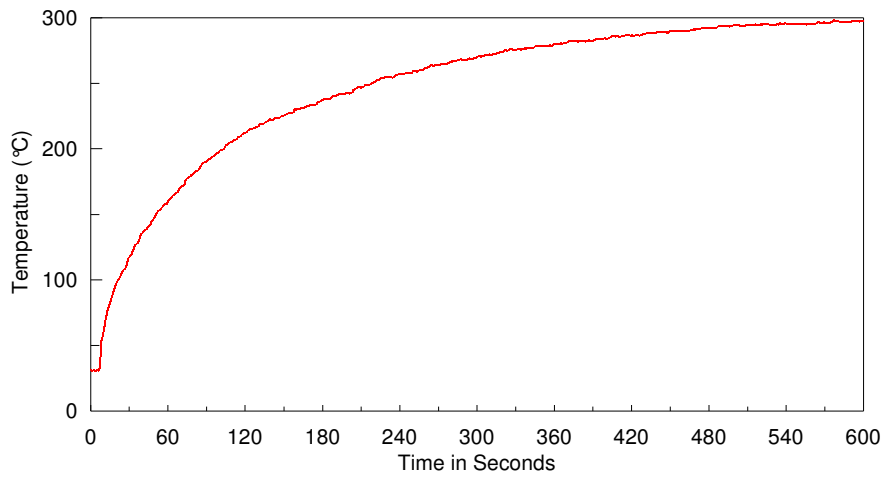
FLAME SPREAD



SMOKE DEVELOPED



TEMPERATURE



FSV
5

SDV
4

Max. Temp. (°C)
298