“The test report attached verifies the fire performance for Armstrong BioBased Tile®. The product tested is representative of, but may not be identical to the product you are purchasing. Changes in product formulation that occur for a variety of reasons may cause fluctuations in results. The above referenced data is representative of the current formulation of these products. Specifications and interpretation of fire test methods are subject to ongoing development. To assure that the information continues to be current, it is suggested that you request product certification for a specific project. The certification will reference the current applicable independent laboratory test reports.”

Exova
2395 Speakman Dr.
Mississauga
Ontario
Canada
L5K 1B3

T: +1 (905) 822-4111
F: +1 (905) 823-1446
E: sales@exova.com
W: www.exova.com

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CAN/ULC-S102.2 Surface Burning Characteristics of "Armstrong Migrations BioBased Tile"

A Report To:	**Armstrong World Industries, Inc.** **Innovation Center, B19** 2500 Columbia Avenue Lancaster, PA 17604 USA
Phone:	(717) 396-5354
Email:	TCErisman@Armstrong.com
Attention:	Tom Erisman
Submitted by:	Fire Testing
Report No.	09-002-938(A) 6 Pages
Date:	January 12, 2010

ACCREDITATION Standards Council of Canada, Registration #1.

SPECIFICATIONS OF ORDER

Determine the Flame Spread and Smoke Developed Classifications based upon triplicate testing conducted in accordance with CAN/ULC-S102.2-07, as per your Purchase Order No. 4502312640 and our Quotation No. 09-002-8423 accepted November 18, 2009.

SAMPLE IDENTIFICATION (Exova sample identification number 09-002-S0938-1)

Resilient flooring material identified as "Armstrong Migrations BioBased Tile".

TEST PROCEDURE

The method, designated as CAN/ULC-S102.2-07, "Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials", is designed to determine the relative 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 sample consisted of 6 sections of flooring material adhered to a substrate (by client) with Armstrong S-515 adhesive. Each section was approximately 533 mm in width by 1219 mm in length by 13 mm in total thickness (including substrate). The sections were butted together to form the requisite specimen size. Prior to testing, each sample was conditioned at a temperature of 23 ± 3°C and a relative humidity of 50 ± 5%.

The testing was performed on: Test #1: 2009-12-23 Test #2: 2009-12-24 Test #3: 2009-12-24

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 floor of the tunnel so as to form a continuous surface and then the lid is lowered.

SUMMARY OF TEST PROCEDURE (continued)

Upon ignition of the gas burners, the flame spread distance is observed and recorded every 15 seconds. Flame spread distance versus time is plotted, ignoring any flame front recessions. Calculations are based on comparison with flame spread characteristics of select red oak, determined in calibration trials and arbitrarily established as 100. If the area under the curve (A) is less than or equal to 29.7 m·min, FSV = 1.85·A; if greater, FSV = 1640/(59.4-A). The Smoke Developed Value is determined by comparing the area under the obscuration curve for the test sample to that of inorganic reinforced cement board and red oak, established as 0 and 100, respectively.

TEST RESULTS

SAMPLE		FSV	SDV
"Armstrong Migrations BioBased Tile"	Test #1	0	17
	Test #2	0	15
	Test #3	0	38
	Average:	0	23

Rounded Average Flame Spread Rating (FSR): **0**

Rounded Average Smoke Developed Classification (SDC): **25**

Observations of Burning Characteristics

- In all three tests, the samples ignited approximately 2.5 to 3 minutes after exposure to the test flame. Blistering and charring of the sample surfaces was observed.
- The flame fronts did not advance past the base line.
- Smoke Developed and temperature were also recorded during the tests (see accompanying charts).

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

Robert A. Carleton,
Fire Testing.

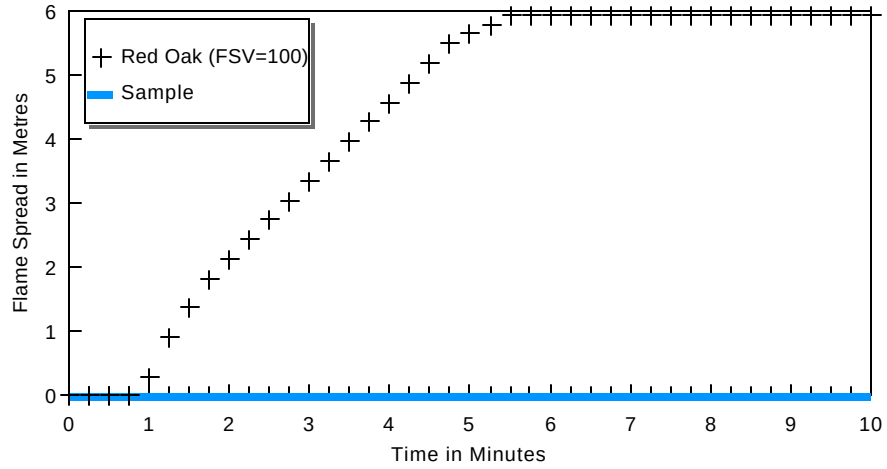
Ian Smith,
Fire Testing.

Note: This report and service are covered under Exova Canada Inc. Standard Terms and Conditions of Contract which may be found on the Exova website (www.exova.com), or by calling 1-866-263-9268.

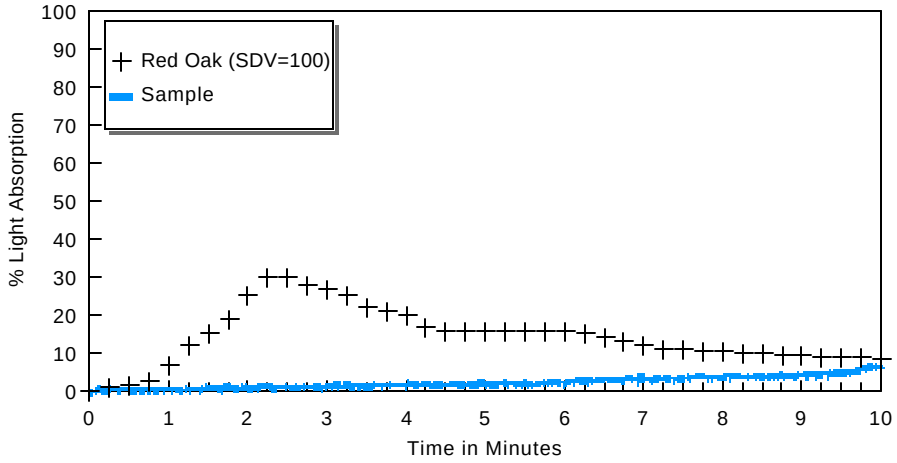
Sample:"Armstrong Migrations BioBased Tile"

Test #1 of 3

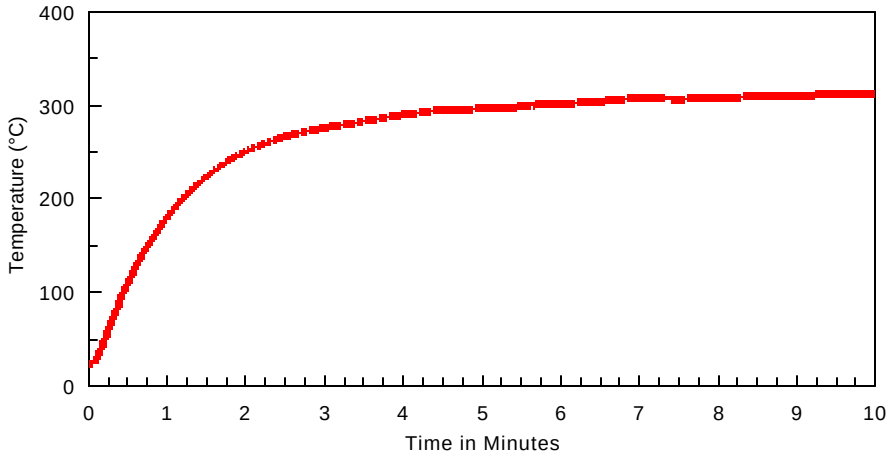
FLAME SPREAD



SMOKE DEVELOPED



TEMPERATURE

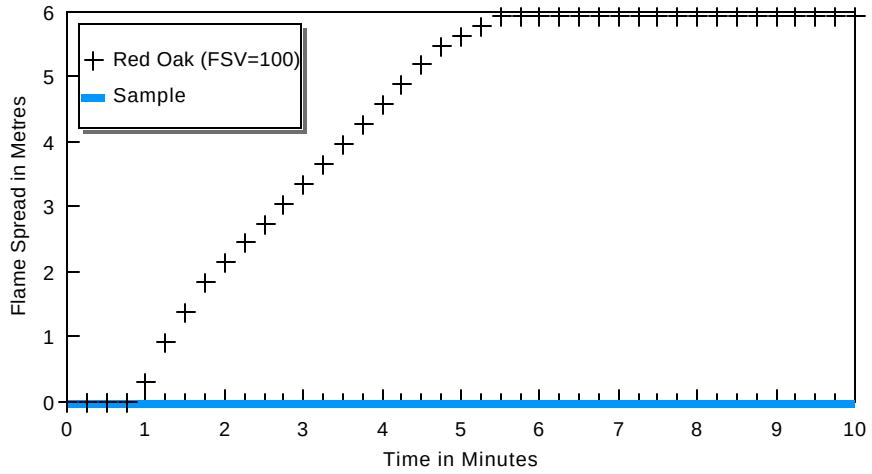


FSV	**SDV**
0	17

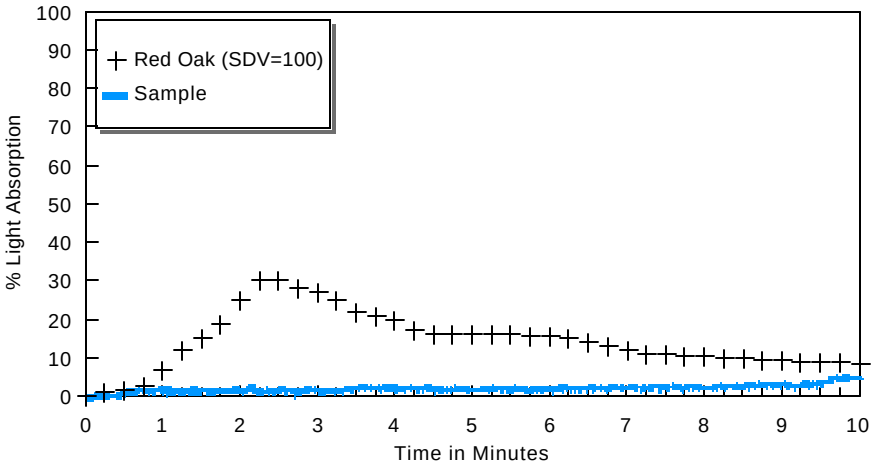
Sample:"Armstrong Migrations BioBased Tile"

Test #2 of 3

FLAME SPREAD



SMOKE DEVELOPED



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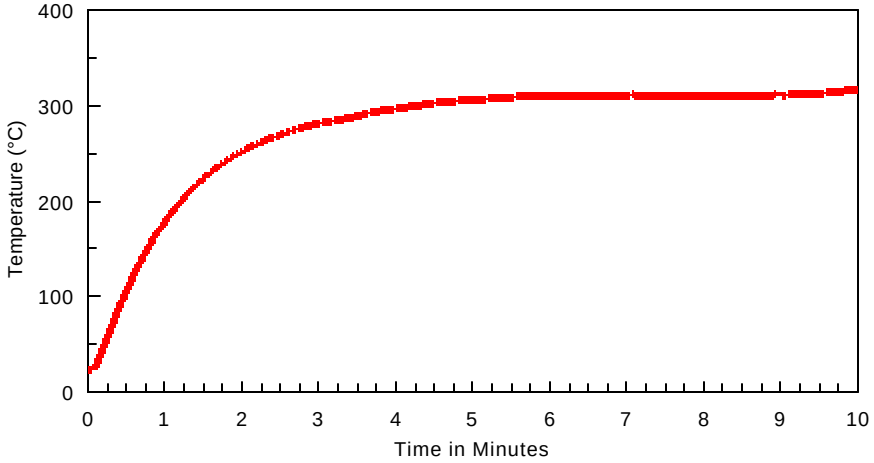
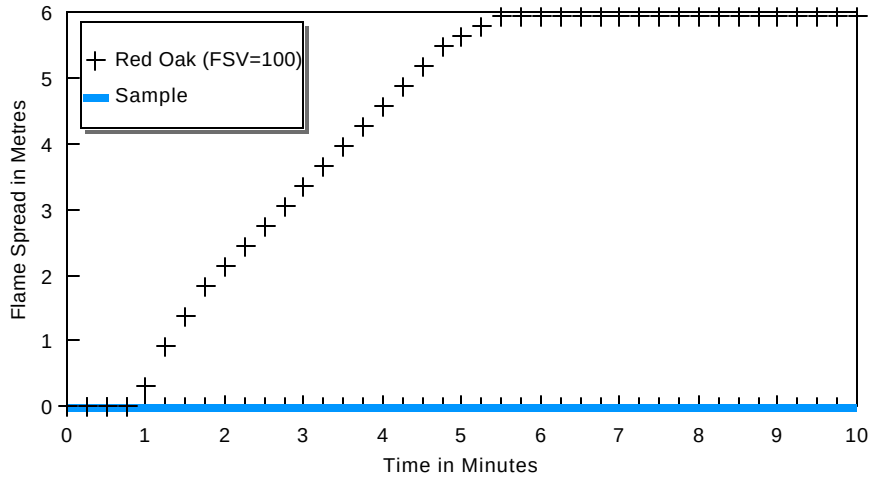


FSV	SDV
0	15

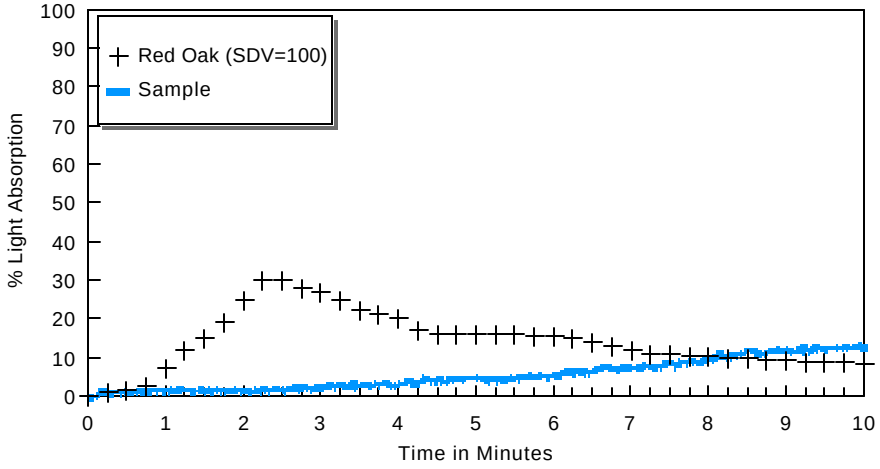
Sample:"Armstrong Migrations BioBased Tile"

Test #3 of 3

FLAME SPREAD



SMOKE DEVELOPED



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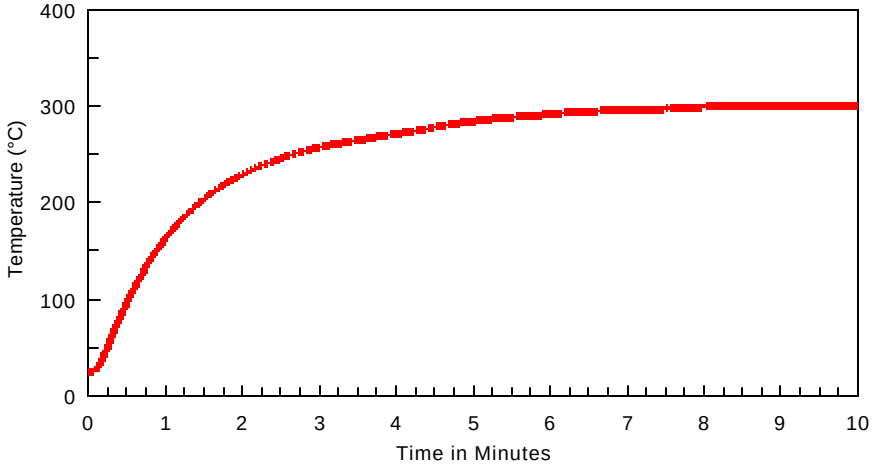

FSV	**SDV**
0	38