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CAN/ULC-S102 Surface Burning Characteristics of "Moss Wall Covering"

A Report To:	**LRI Engineering Inc.** 170 University Avenue, 3rd Floor - Box 1 Toronto, ON, Canada M5H 3B3
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Submitted by:	Exova Warringtonfire North America
Report No.	17-002-597(Revision 1) 6 Pages
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ACCREDITATION To ISO/IEC 17025 for a defined Scope of Testing by the International Accreditation Service

SPECIFICATIONS OF ORDER

Determine Flame Spread and Smoke Developed Values based upon triplicate testing conducted in accordance with CAN/ULC-S102-10.

Notes: 1. This is a compilation test report, combining test data from Exova Test Report No. 17-002-546(A) (1 test), and current data (2 tests). Previously, initial testing was conducted to compare CAN/ULC-S102 and CAN/ULC-S102.2 results. It was determined that CAN/ULC-S102 produced a higher Flame Spread Value (FSV) than CAN/ULC-S102.2. These tests complete the triplicate testing requirement of CAN/ULC-S102-10, Section 1.4.

2. This report supersedes Exova Test Report No. 17-002-597, originally issued on October 17, 2017. It is revised herein by request, to enhance the sample description.

SAMPLE IDENTIFICATION (Exova sample identification number 17-002-S0597)

Multilayer, composite wall covering system described as; "Moss adhered to Coroplast plastic backing (manufactured by By Nature) adhered with hot glue to gypsum wallboard", identified as:
"Moss Wall Covering"

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 3 sections of prepared material (prepared by client), each approximately 70 mm in nominal thickness (including substrate) by 553 mm in width by 2438 mm in length. The sections were butted together during testing to create the specimen length. Prior to testing, each specimen was conditioned to constant mass at a temperature of 23 ± 3°C and a relative humidity of 50 ± 5%. At the initiation of testing, each specimen was self-supporting and the moss surface was exposed to the test flame.

Testing was performed on: Test #1: 2017-09-24 Test #2: 2017-10-17 Test #3: 2017-10-17

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·AT; if greater, FSV = 1640/(59.4-AT).

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. The Smoke Developed Value (SDV) 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)
"Moss Wall Covering"	Test #1	73	435
	Test #2	99	455
	Test #3	113	446
	Average:	95	445

Rounded Average Flame Spread Rating **(FSR)**: **95**

Rounded Average Smoke Developed Classification **(SDC)**: **445**

Observations of Burning Characteristics

The specimens ignited approximately 105 to 142 seconds after exposure to the test flame. Partial collapse of the moss material was observed. Material that fell to the floor of the apparatus also ignited, creating ceiling and floor fire scenarios.

In all cases, the flame fronts advanced to the maximum distance of 5.94 metres (end of tunnel), at approximately 426, 211, and 209 seconds into each respective test.

Results Interpretation

CAN/ULC-S102-10 contains no performance criteria of its own. The National Building Code of Canada (NBCC) or other jurisdictional documentation should be referenced to determine the FSR and/or SDC performance criteria that is applicable to the product under test for the intended application.

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

Francis Williams,
Technician.

Ian Smith,
Technical Manager.

Test 1 of 3 Sample: "Moss Wall Covering"

Chart 1. FLAME SPREAD (Specimen #1)

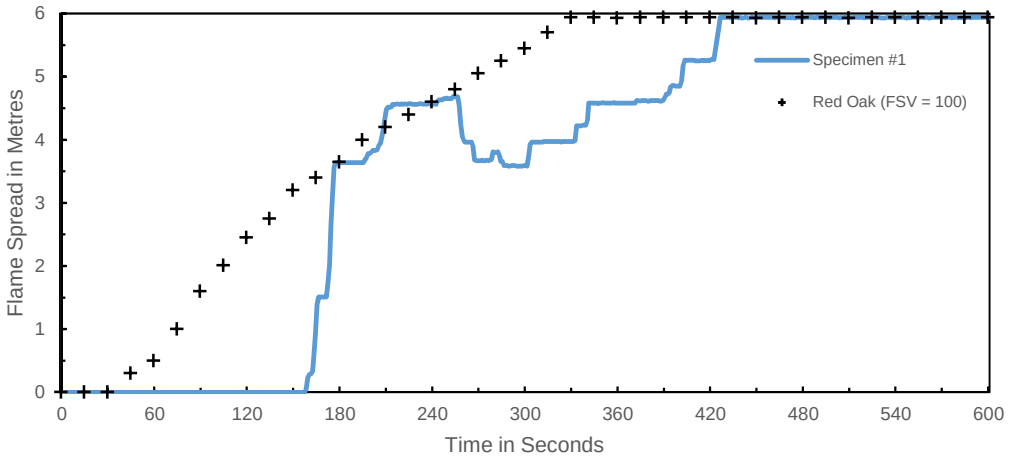


Chart 2. SMOKE DEVELOPED (Specimen #1)

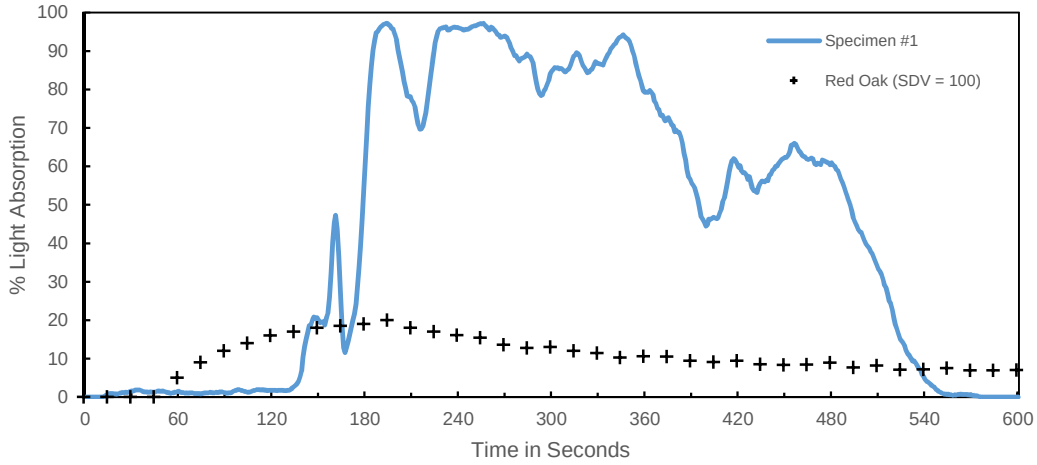
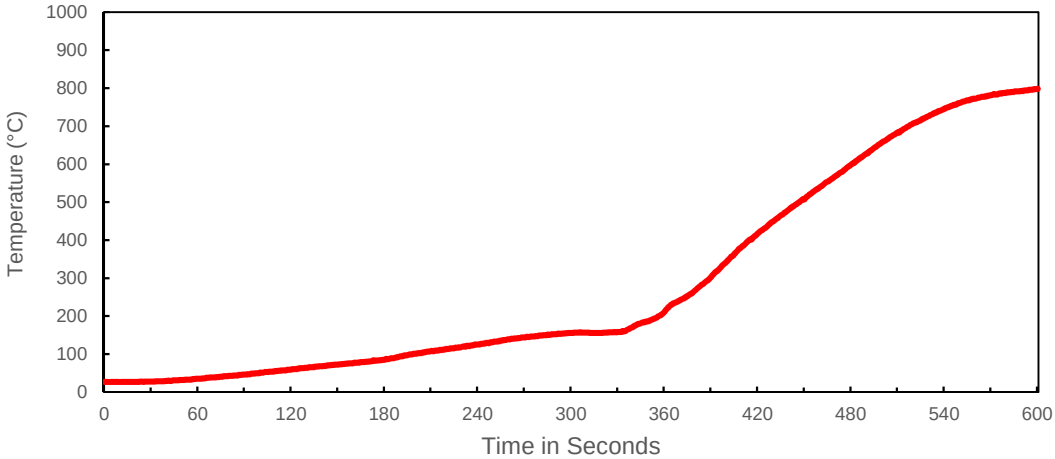


Chart 3. TEMPERATURE (Specimen #1)



Flame Spread Value (FSV)	Smoke Developed Value (SDV)	Maximum Air Temperature (°C)
73	**435**	798

Test 2 of 3 Sample: "Moss Wall Covering"

Chart 4. FLAME SPREAD (Specimen #2)

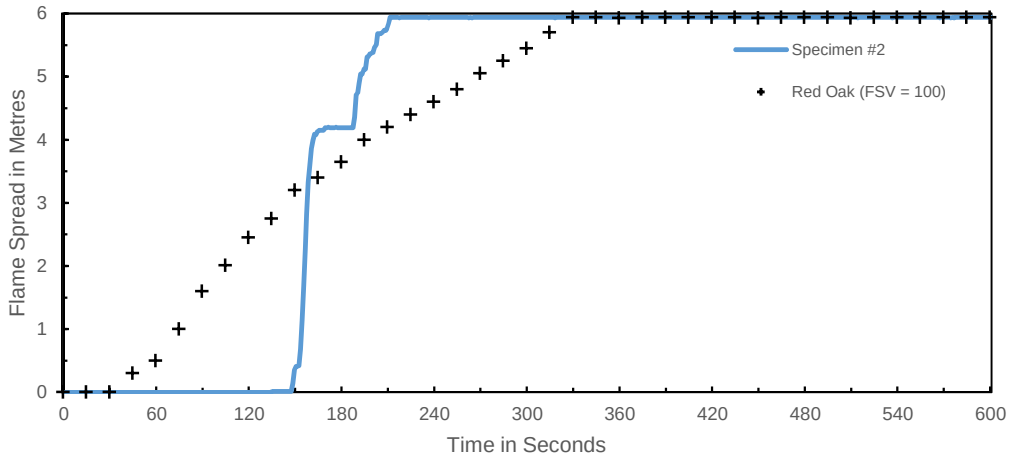


Chart 5. SMOKE DEVELOPED (Specimen #2)

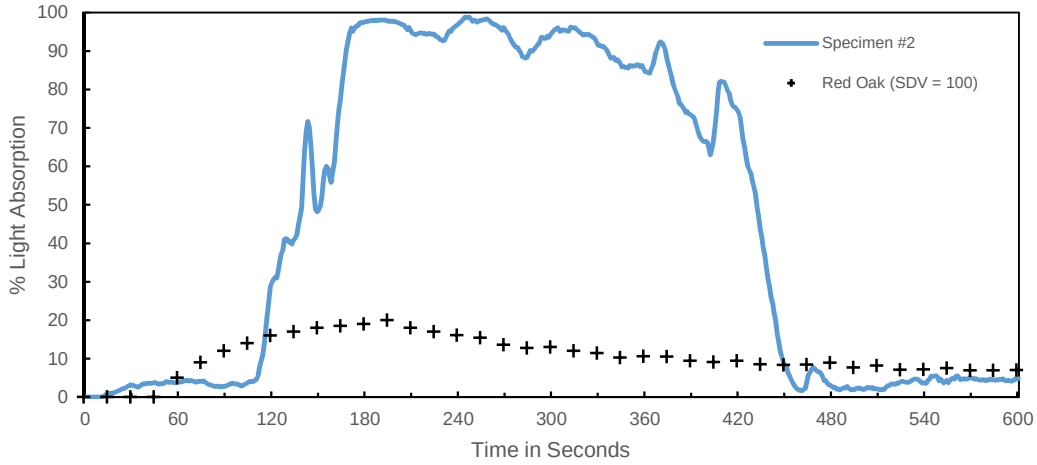
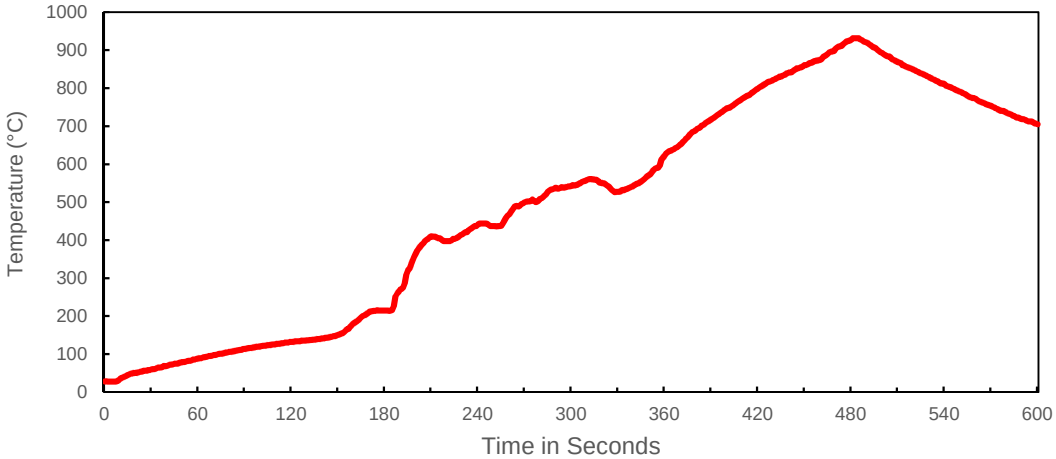


Chart 6. TEMPERATURE (Specimen #2)



Flame Spread Value (FSV)	Smoke Developed Value (SDV)	Maximum Air Temperature (°C)
99	**455**	932

Test 3 of 3 Sample: "Moss Wall Covering"

Chart 7. FLAME SPREAD (Specimen #3)

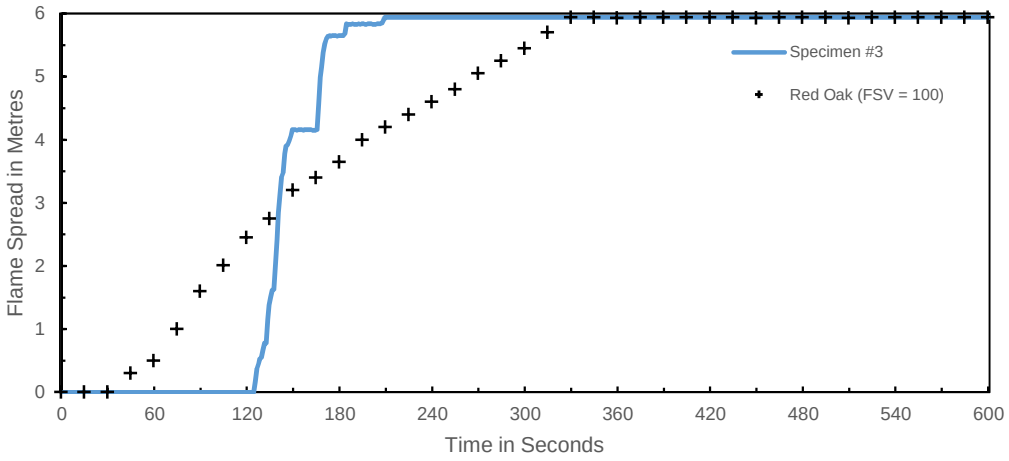


Chart 8. SMOKE DEVELOPED (Specimen #3)

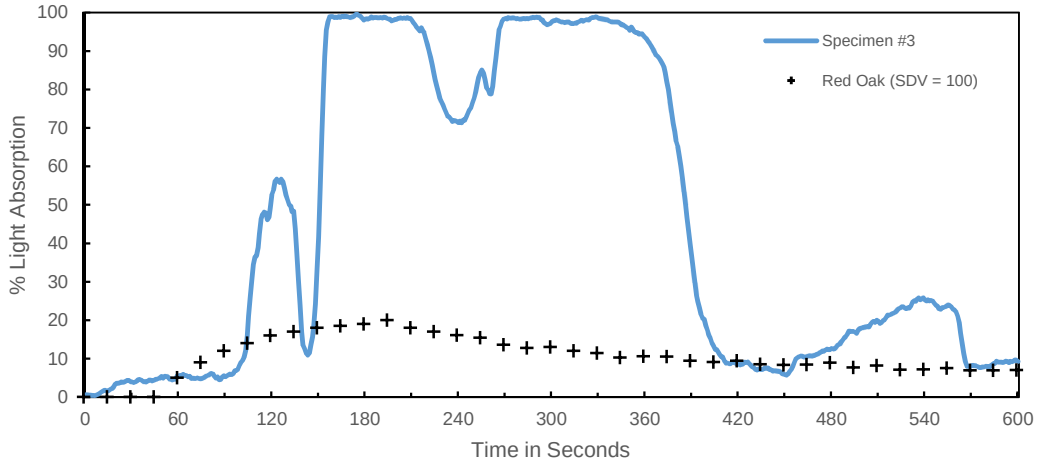
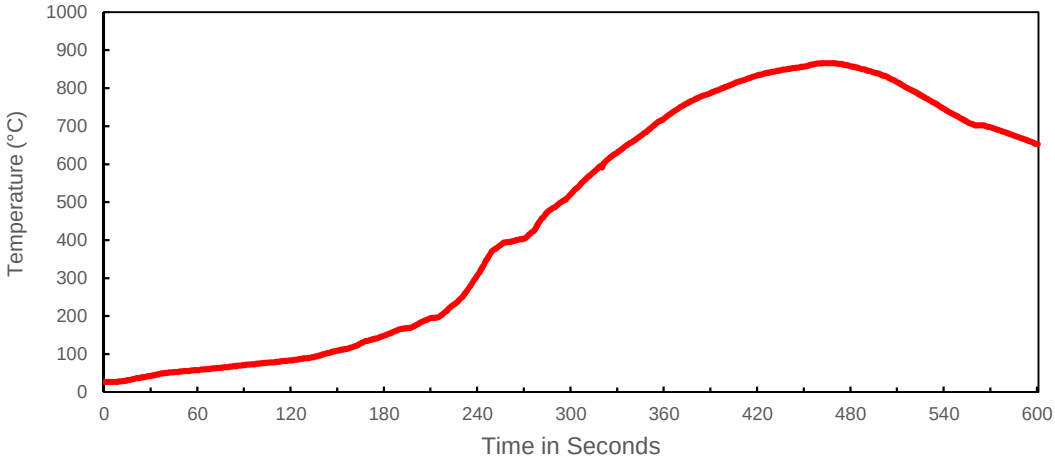


Chart 9. TEMPERATURE (Specimen #3)



Flame Spread Value (FSV)	Smoke Developed Value (SDV)	Maximum Air Temperature (°C)
113	**446**	866