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CAN/ULC-S102.2 Surface Burning Characteristics of "Mixed Moss Panel"

A Report To:	**ByNature Import Inc.** 490 - 1000 Parker Street Vancouver, BC, Canada V6A 2H2
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Submitted by:	Element Fire Testing
Report No.	22-002-396(B) 6 Pages
Date:	October 13, 2022

1.0 ACCREDITATION

ISO/IEC 17025 for a defined Scope of Testing by the American Association for Laboratory Accreditation (A2LA)

2.0 SPECIFICATIONS OF ORDER

Determine the Flame Spread Rating and Smoke Developed Classification based upon triplicate testing conducted in accordance with CAN/ULC-S102.2-2018, as per ByNature Import Inc. reference Purchase Order No. PO220914684 and Element Quotation No. 22-002-353644 RV2 dated August 30, 2022.

2.1 History of Report Revision

This is the original.

3.0 SAMPLE IDENTIFICATION (Element sample identification number 22-002-S0396)

Panel system described as, "Mixed moss panel assembly (assembly sheet moss 64% + pole moss 14% + mood moss 22%) on 5mm coroplast", and identified as:
"Mixed Moss Panel"

4.0 TEST PROCEDURE

The method, designated as CAN/ULC-S102.2-2018, "*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).
CAN/ULC-S102-2018 "*Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies*" is typically employed for non-flooring materials. An exception is made materials which cannot be tested without the use of supporting material that is not representative of the intended installation. For those materials, CAN/ULC-S102.2 is specified by CAN/ULC-S102. Such is the case for this material.
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.

5.0 SAMPLE PREPARATION

Each test specimen consisted of a total of eight sections of material, each approximately 25 mm in total thickness by 445 mm in width by 914 mm in length. The sections were butted together to create the total specimen length. Prior to testing, the specimens were conditioned at a temperature of 23 ± 3°C and a relative humidity of 50 ± 5%. In all cases, the moss surface was exposed during testing.

Testing was performed on: Test #1: 2022-10-07 Test #2: 2022-10-13 Test #3: 2022-10-13

6.0 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.

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 Value (FSV) is determined by calculating the total area under the curve for the 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.

7.0 TEST RESULTS

SAMPLE: "Mixed Moss Panel"

Test	Approx. Time to Ignition (s)	Maximum Flame Front Distance (m)	Time to Maximum Flame Front (s)	Maximum Air Temperature (°C)	Flame Spread Value (FSV)	Smoke Developed Value (SDV)
1	52	5.94	319	645	**59**	**274**
2	58	1.81	592	412	**5**	**103**
3	56	5.94	544	461	**23**	**100**
				Average:	29	159
				Rounded Average Flame Spread Rating **(FSR)**:	**30**	-
				Rounded Average Smoke Developed Classification **(SDC)**:	-	**160**

7.1 Observations of Burning Characteristics

The specimens ignited approximately 52 to 58 seconds after exposure to the test flame.

8.0 RESULTS INTERPRETATION

CAN/ULC-S102.2 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.

Francis Williams,
Technician.

Ian Smith,
Technical Manager.

Notes: This report is related only to the sample identified and shall not be reproduced, except in full, without approval. It is covered under Element Materials Technology Canada Inc. Standard Terms and Conditions of Contract, which are accessible at www.element.com, or by calling 1-866-263-9268. In CAN/ULC-S102.2, individual test data is reported in the form of indices (Flame Spread Value, Smoke Developed Value). As such, measurement uncertainty (MU) cannot be calculated.

9.0 TEST CHARTS

9.1 Test 1

Test #1: "Mixed Moss Panel"

Chart 1. FLAME SPREAD (Specimen #1)

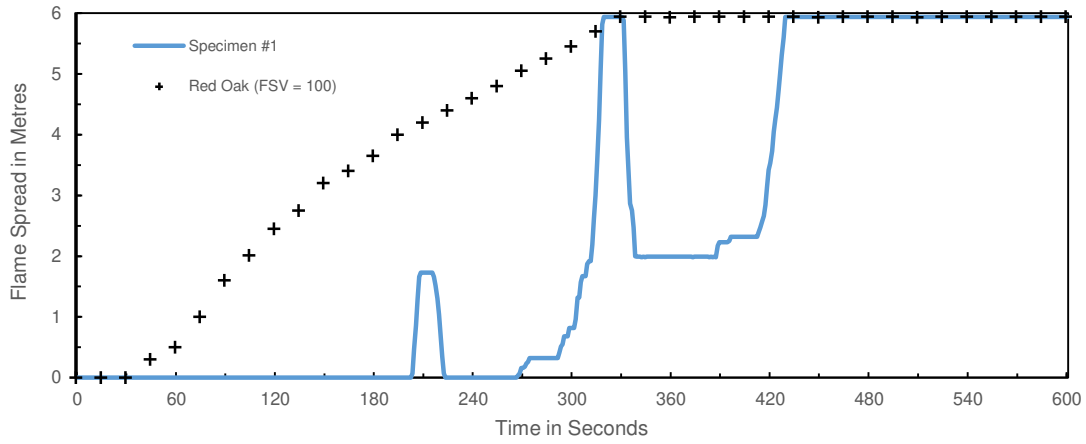


Chart 2. SMOKE DEVELOPED (Specimen #1)

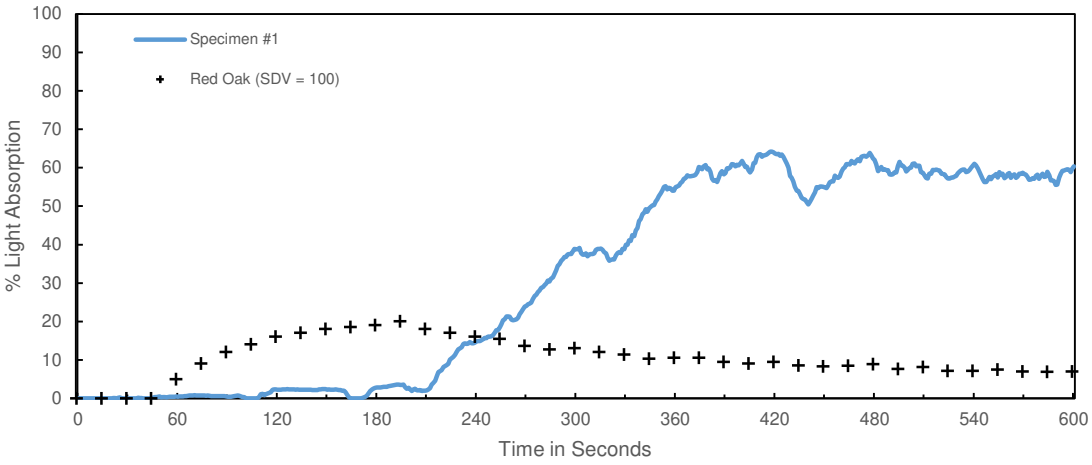
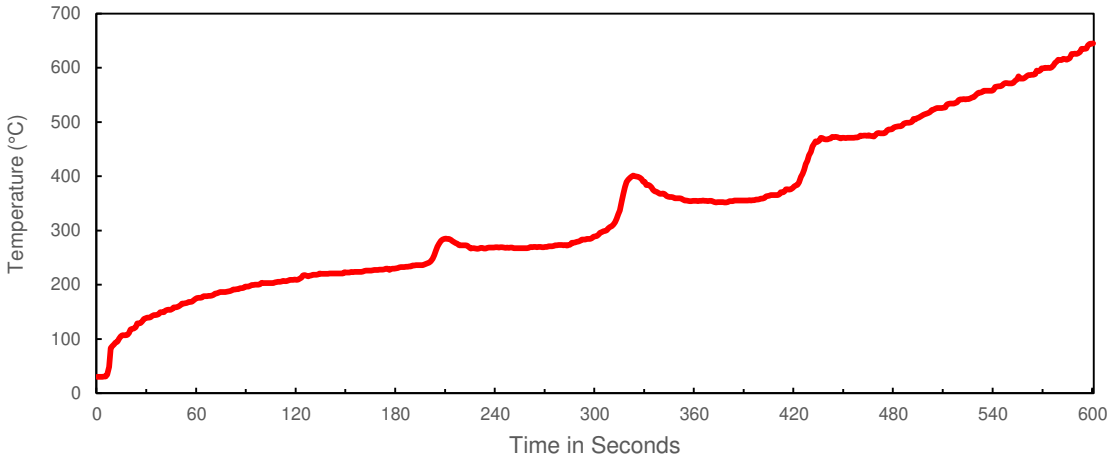


Chart 3. TEMPERATURE (Specimen #1)



Flame Spread Value (FSV)	Smoke Developed Value (SDV)	Maximum Air Temperature (°C)
59	**274**	645

9.2 Test 2

Test #2: "Mixed Moss Panel"

Chart 4. FLAME SPREAD (Specimen #2)

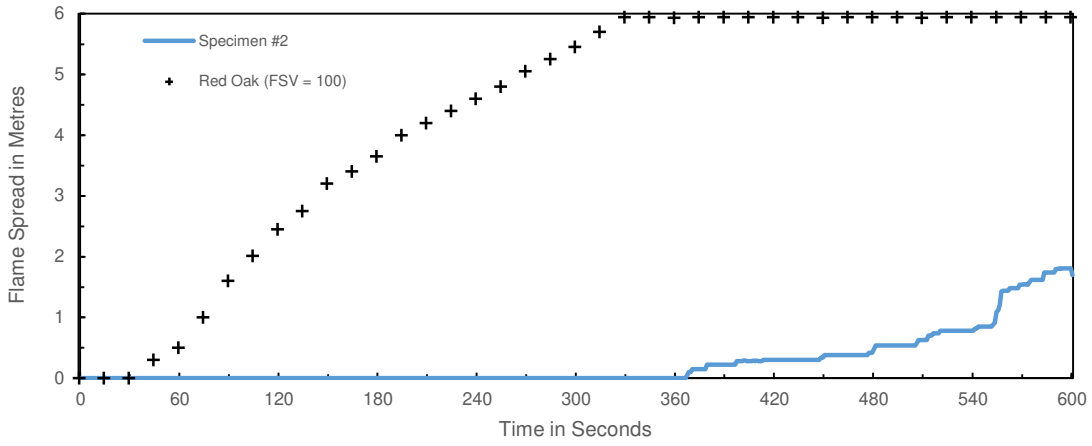


Chart 5. SMOKE DEVELOPED (Specimen #2)

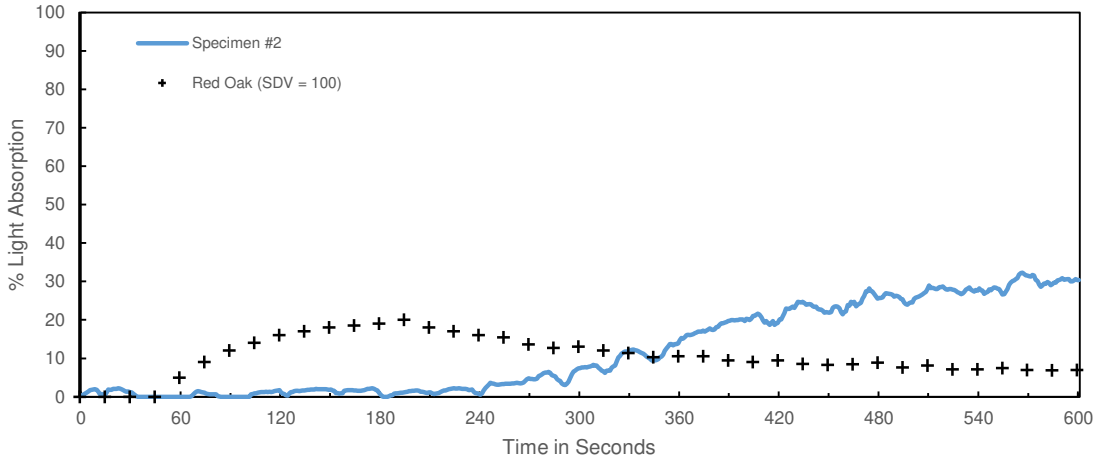
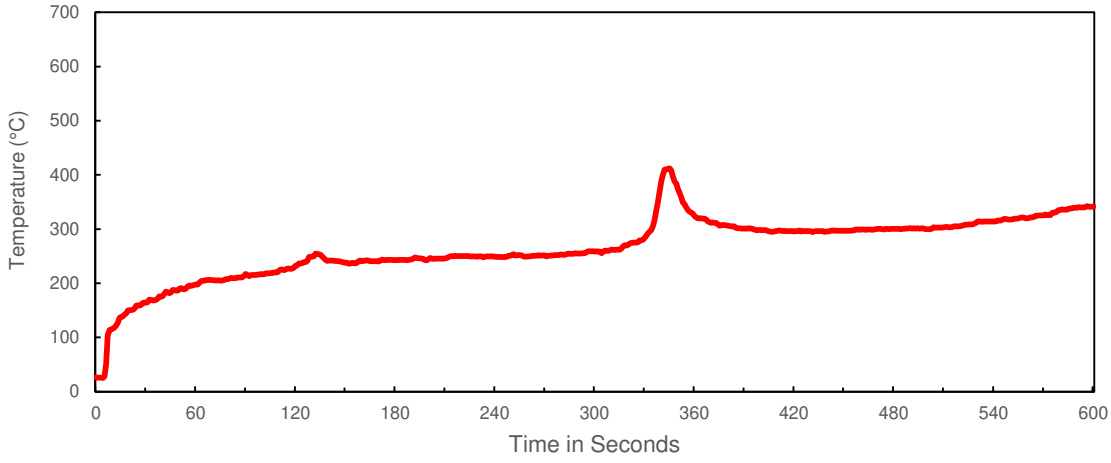


Chart 6. TEMPERATURE (Specimen #2)



Flame Spread Value (FSV)	Smoke Developed Value (SDV)	Maximum Air Temperature (°C)
5	**103**	412

9.3 Test 3

Test #3: "Mixed Moss Panel"

Chart 7. FLAME SPREAD (Specimen #3)

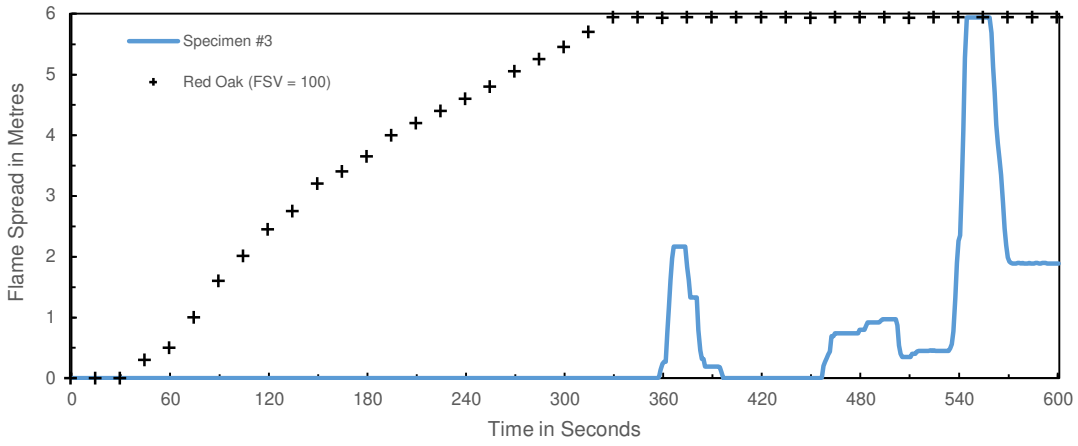


Chart 8. SMOKE DEVELOPED (Specimen #3)

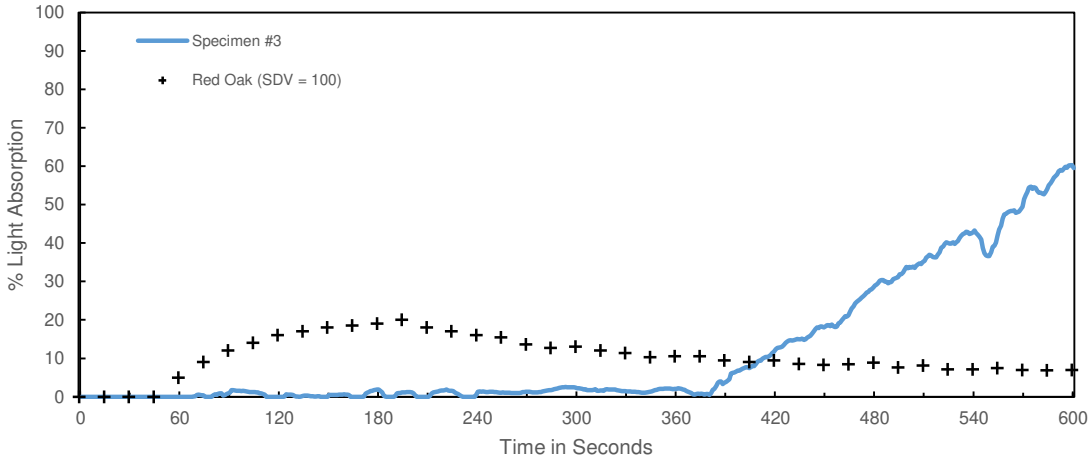
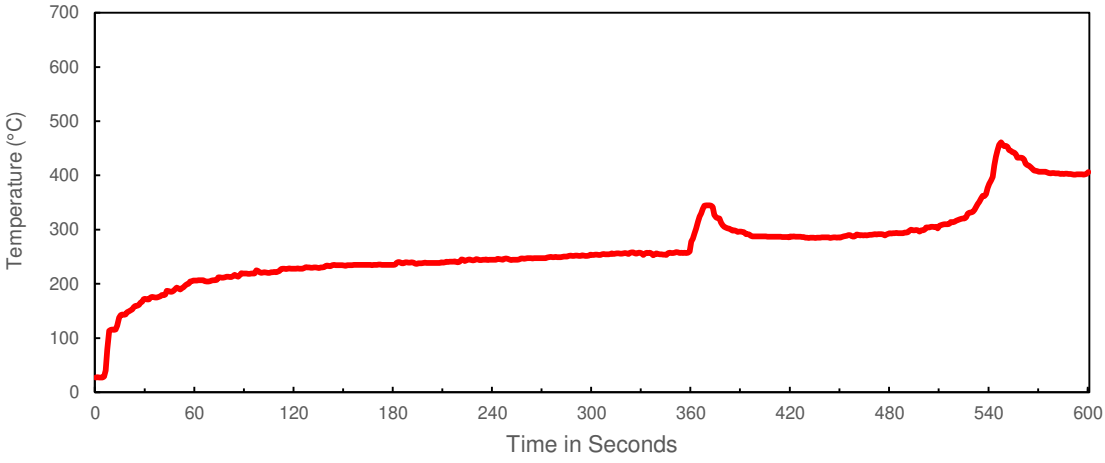


Chart 9. TEMPERATURE (Specimen #3)



Flame Spread Value (FSV)	Smoke Developed Value (SDV)	Maximum Air Temperature (°C)
23	**100**	461