
CAN/ULC-S102 Surface Burning Characteristics of "Polyvinyl Chloride"

A Report To: **NORTEM Corp.**
133 Romina Drive
Concord, ON, Canada
L4K 1Z9

Phone: +1 416-458-7898

Attention: Sam Karafarin
E-mail: sam@nortem.ca

Submitted by: Element Fire Testing

Report No. 23-002-230(A)
4 Pages

Date: July 13, 2023

1.0 ACCREDITATION

ISO/IEC 17025 for a defined Scope of Testing by the American Association for Laboratory Accreditation (A2LA), Certificate Number: 6524.03.

2.0 SPECIFICATIONS OF ORDER

Determine the Flame Spread and Smoke Developed Values based upon a single screening test only, conducted in accordance with CAN/ULC-S102-2018, as per Element Quotation No. 23-002-430421 dated March 3, 2023.

2.1 History of Report Revision

This is the original.

3.0 SAMPLE IDENTIFICATION (Element sample identification number 23-002-S0230)

PVC Siding panel, approximately 1.7 mm in measured thickness, identified as:
"Polyvinyl Chloride"

4.0 TEST PROCEDURE

The method, designated as CAN/ULC-S102-2018, "*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). FSR and SDC are the values cited by Canadian Building codes.

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

The test specimen was supplied in "plank-like" sections, each approximately 1.7 mm in measured wall thickness by 178 mm in width, by 1829 mm in length. The sections were butted together side-by-side and end-to-end to create the requisite specimen area (three wide by four long). Prior to testing, the specimen was conditioned to constant weight at a temperature of $23 \pm 3^{\circ}\text{C}$ and a relative humidity of $50 \pm 5\%$. During testing, the specimen was supported across the width by 50 mm wide steel bars spaced nominally at 610 mm intervals.

The testing was performed on: 2023-07-13

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 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.

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 \cdot min, $\text{FSV} = 1.85 \cdot \text{AT}$; if greater, $\text{FSV} = 1640 / (59.4 - \text{AT})$.

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 for red oak and multiplying by 100.

7.0 TEST RESULTS

SAMPLE: "Polyvinyl Chloride"

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)
42	5.94	445	907	63	658

7.1 Observations of Burning Characteristics

The specimen ignited approximately 42 seconds after exposure to the test flame. Partil acollapse was observed, beginning at approximately 164 seconds. Material that fell to the floor of the apparatus also ignited (at approximately 217 seconds).



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 is accessible at www.element.com, or by calling 1-866-263-9268. In CAN/ULC-S102, 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

Sample: "Polyvinyl Chloride"

Chart 1. FLAME SPREAD

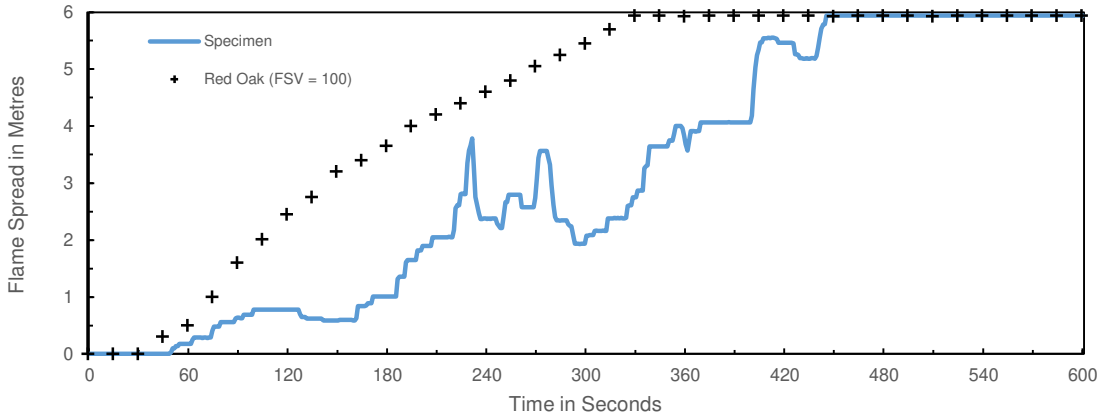


Chart 2. SMOKE DEVELOPED

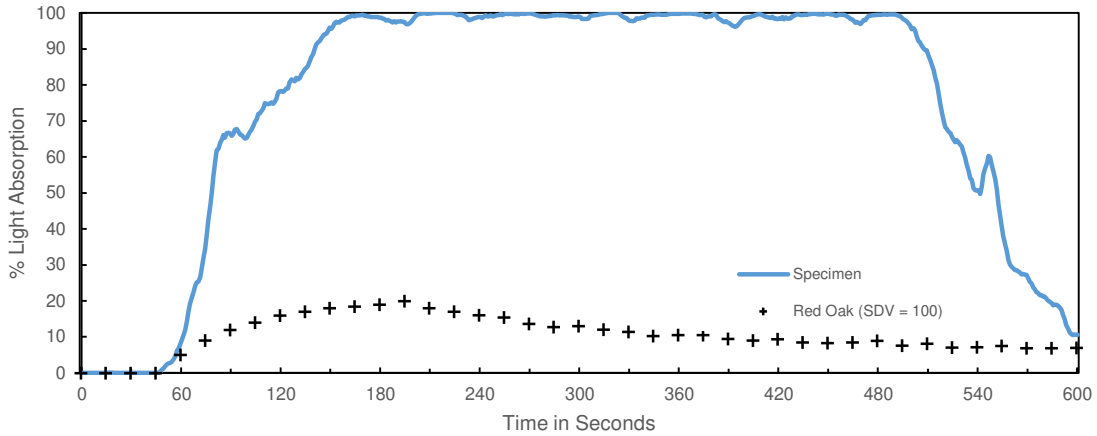
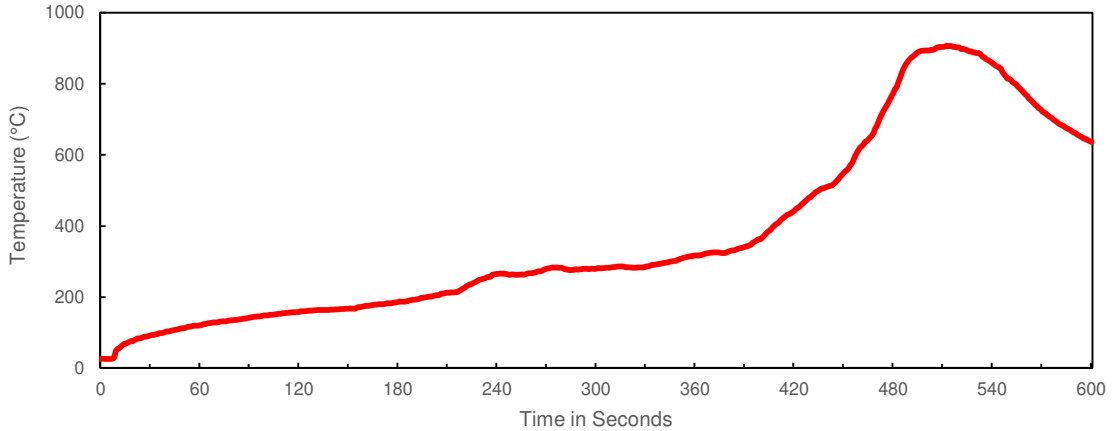


Chart 3. TEMPERATURE



Flame Spread Value (FSV)	Smoke Developed Value (SDV)	Maximum Air Temperature (°C)
63	658	907