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**CAN/ULC-S102.2 Surface Burning Characteristics
of "16 mm Multiwall Polycarbonate"**

A Report To: **Polygal Plastics Industries, Ltd.**
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Attention: Ward C. Ogle

Submitted by: Fire Testing

Report No. 09-002-494(C)
6 Pages

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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 our Quotation No. 09-002-4374 RV2 accepted July 2, 2009.

SAMPLE IDENTIFICATION

Polycarbonate material identified as: "POLPC16/2.7CX/CLR16, clear Polycarbonate Multiwall sheet 16 mm".

(Bodycote sample identification number 09-002-S0494-3)

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

The specimens were free-laid on 6 mm thick, fiberglass reinforced cement board. Each specimen consisted of 3 sections of material, each approximately 2438 mm in length by 533 mm in width by 16 mm in thickness butted together to form the requisite specimen length. Prior to testing, the samples were conditioned at a temperature of $23 \pm 3^{\circ}\text{C}$ and a relative humidity of $50 \pm 5\%$.

The testing was performed on: Test #1: 2009-07-10 Test #2: 2009-07-14 Test #3: 2009-07-14

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 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, $FSV = 1.85 \cdot A$; 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

<u>SAMPLE</u>		<u>FSV</u>	<u>SDV</u>
"POLPC16/2.7CX/CLR16"	Test #1	9	122
	Test #2	43	206
	Test #3	<u>3</u>	<u>81</u>
	Average:	19	136

Rounded Average Flame Spread Rating (FSR): **20**

Rounded Average Smoke Developed Classification (SDC): **135**

Observations of Burning Characteristics

- The samples ignited approximately 7.5, 5.5, and 7.0 minutes after exposure to the test flame.
- The flame fronts advanced to a maximum distances of 6.0, 6.0, and 4.6 metres at approximately 9.5, 6.5, and 10.0 minutes into each respective test.
- 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.

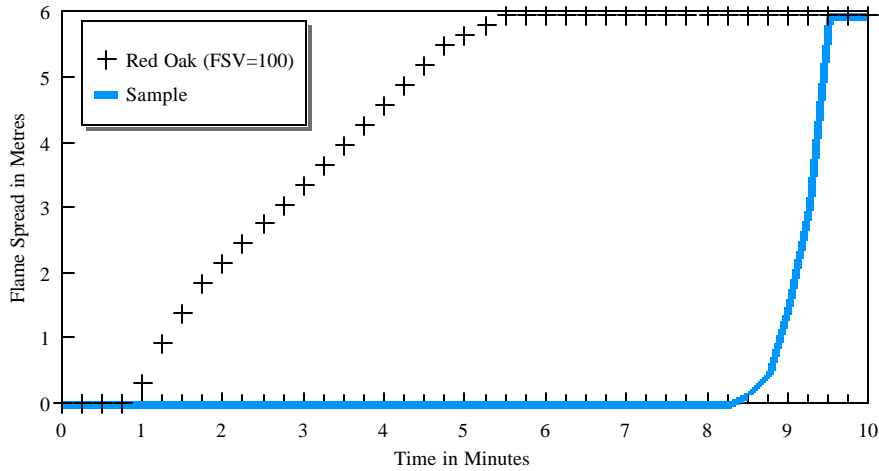
Ian Smith,
Fire Testing.

Note: This report consists of 6 pages, including the cover page, that comprises the report "body". It should be considered incomplete if all pages are not present.

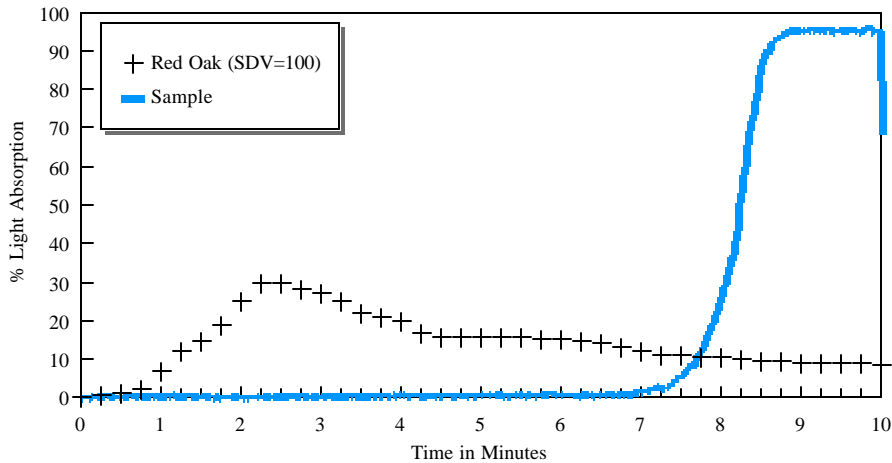
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Test #1 of 3

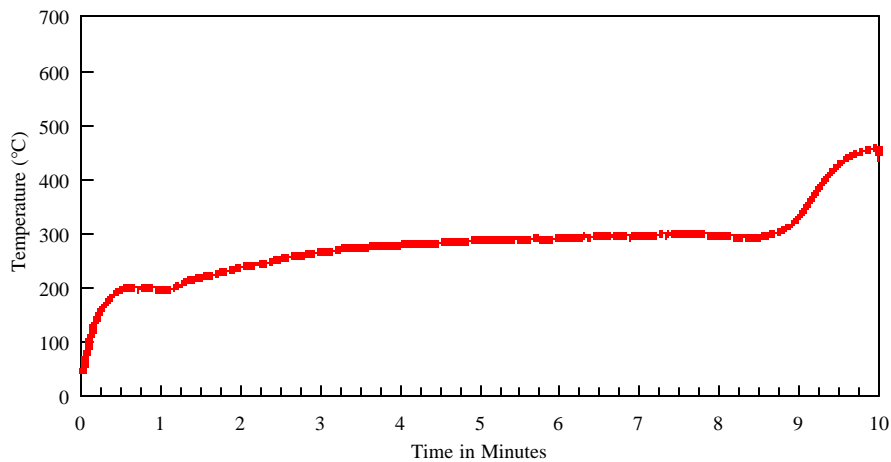
FLAME SPREAD



SMOKE DEVELOPED



TEMPERATURE



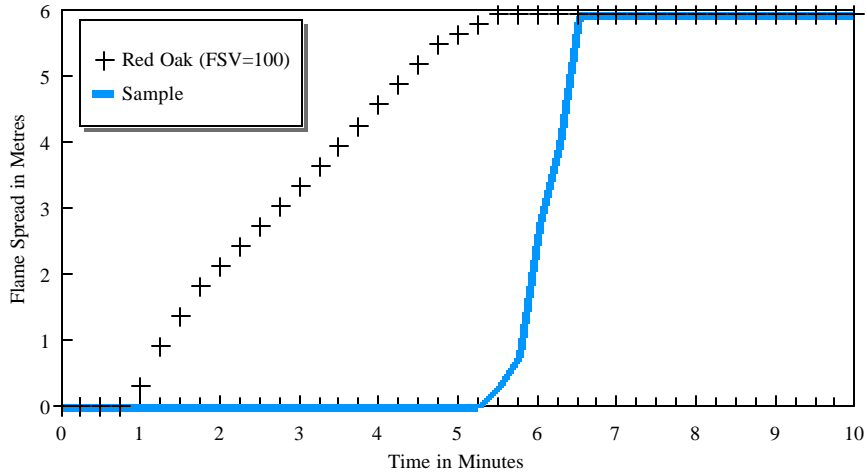
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SDV
122

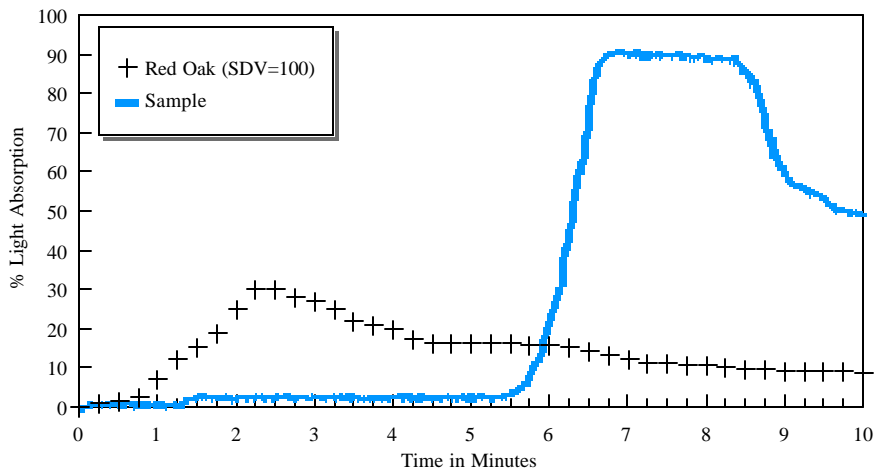
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Test #2 of 3

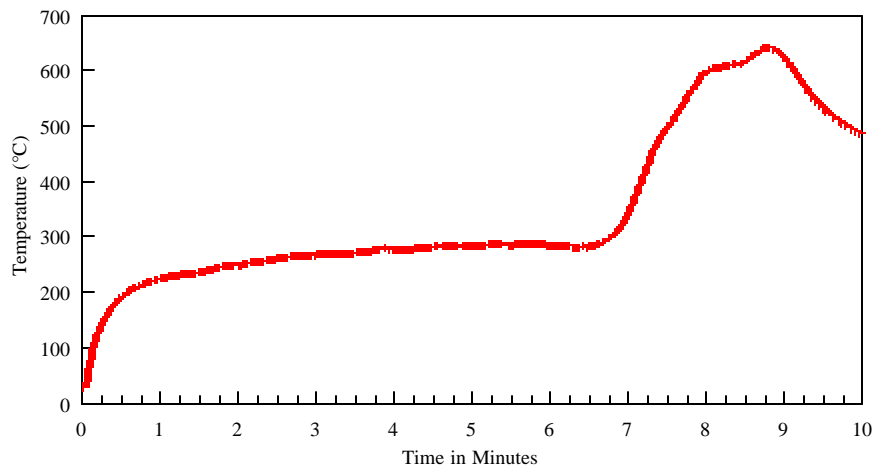
FLAME SPREAD



SMOKE DEVELOPED



TEMPERATURE



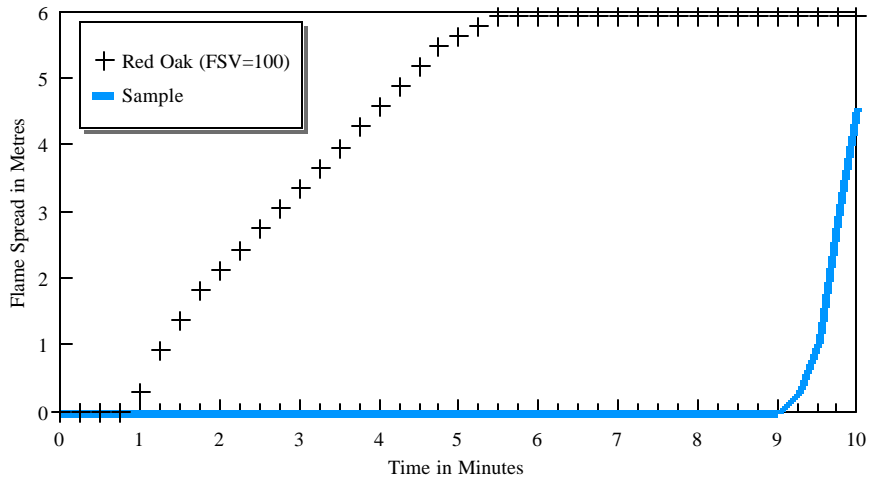
FSV
43

SDV
206

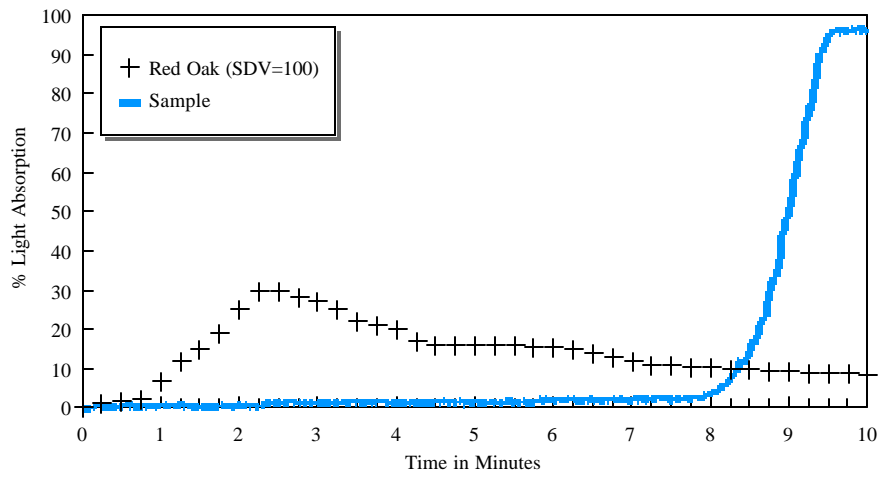
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Test #3 of 3

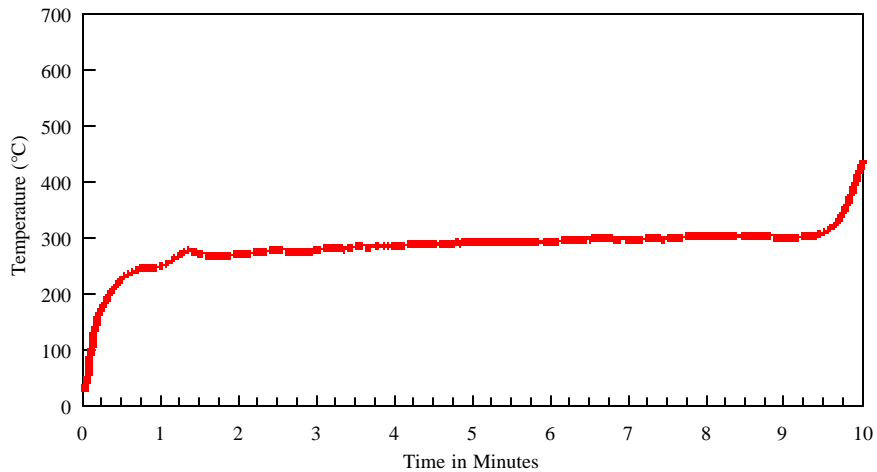
FLAME SPREAD



SMOKE DEVELOPED



TEMPERATURE



FSV

3

SDV

81