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**ASTM E 84 Surface Burning Characteristics
of "Microglass"**

A Report To: **NGI Designer Glass Inc.**
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Attention: Nancy Mendonca

Submitted by: Fire Testing

Report No. 10-002-051
4 Pages

Date: January 29, 2010

ACCREDITATION To ISO/IEC 17025 for a defined Scope of Testing by the Standards Council of Canada

SPECIFICATIONS OF ORDER

Determine the Flame Spread and Smoke Developed Indices based upon a single test conducted in accordance with ASTM E 84-09c, as per your P.O. #2019 and our Quotation No. 10-002-0539 accepted January 19, 2010.

SAMPLE IDENTIFICATION (Exova sample identification number 10-002-S0051)

Crystallized glass material identified as "Microglass".

TEST PROCEDURE

The method, designated as ASTM E 84-09c, "Standard Method of Test for Surface Burning Characteristics of Building Materials", is designed to determine the relative surface burning characteristics of materials under specific test conditions. Results are expressed in terms of Flame Spread Index (FSI) and Smoke Developed (SD).

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 test sample consisted of 3 sections of material, each approximately 21 inches (533 mm) in width by 96 inches (2438 mm) in length by 0.75 inches (19 mm) in thickness, butted together to form the specimen length. Prior to testing, the sample was conditioned at a temperature of $73 \pm 5^{\circ}\text{F}$ ($23 \pm 3^{\circ}\text{C}$) and a relative humidity of $50 \pm 5\%$. During testing the sample was self-supporting.

The testing was performed on: 2010-01-29

SUMMARY OF TEST PROCEDURE

The tunnel is preheated to $150 \pm 5^{\circ}\text{F}$ ($66 \pm 2.8^{\circ}\text{C}$), as measured by the floor-embedded thermocouple located 23.25 feet (7087 mm) downstream of the burner ports, and allowed to cool to $105 \pm 5^{\circ}\text{F}$ ($40.5 \pm 2.8^{\circ}\text{C}$), as measured by the floor-embedded thermocouple located 13 feet (3962 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 24 feet (7315 mm) long, 12 inches (305 mm) above the floor. Three 8 foot (2438 mm) sections of 0.25 inch (6 mm) cement board are then placed on the back side of the sample end-to-end, to protect the tunnel lid, and 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 97.5 min·ft, FSI = 0.515·A; if greater, FSI = 4900/(195·A). Smoke Developed is determined by comparing the area under the obscuration curve for the test sample to that of inorganic reinforced cement board and red oak, arbitrarily established as 0 and 100, respectively.

TEST RESULTS

<u>SAMPLE</u>	<u>FSI</u>	<u>SD</u>
"Microglass"	0	30

Observations of Burning Characteristics

- The sample did not ignite.
- The sample was observed to crack, spall and delaminate during the test. Partial collapse in the form of falling shards of glass was observed.
- Smoke Developed was recorded during the test (see accompanying chart).

Authorities having jurisdiction usually refer to these categories:

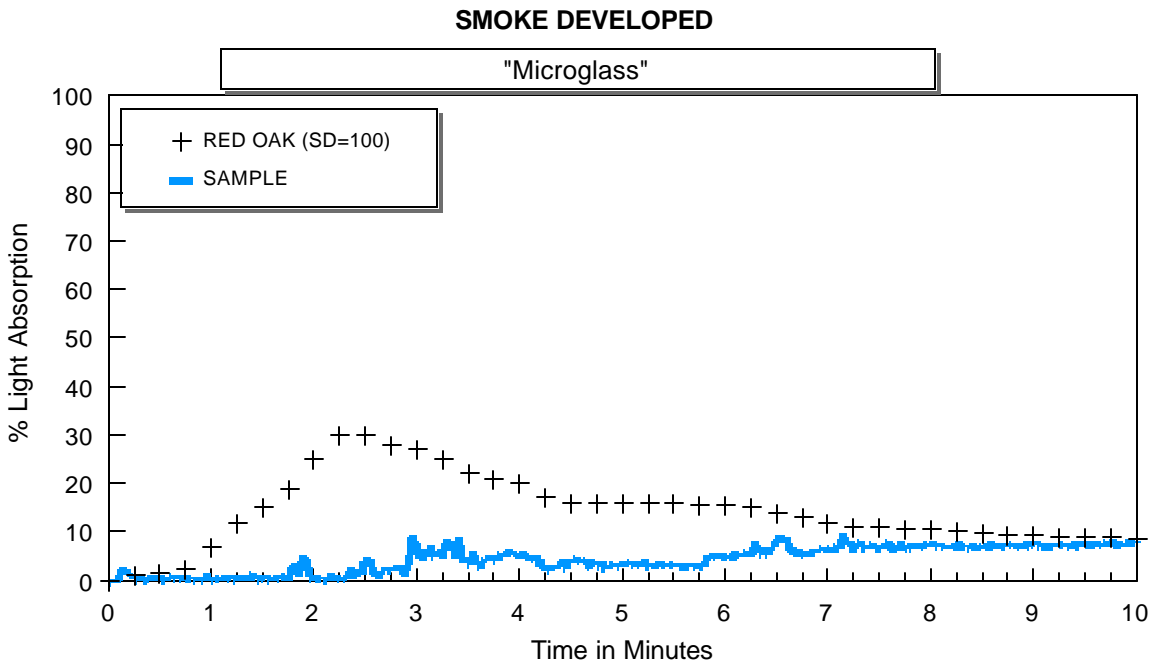
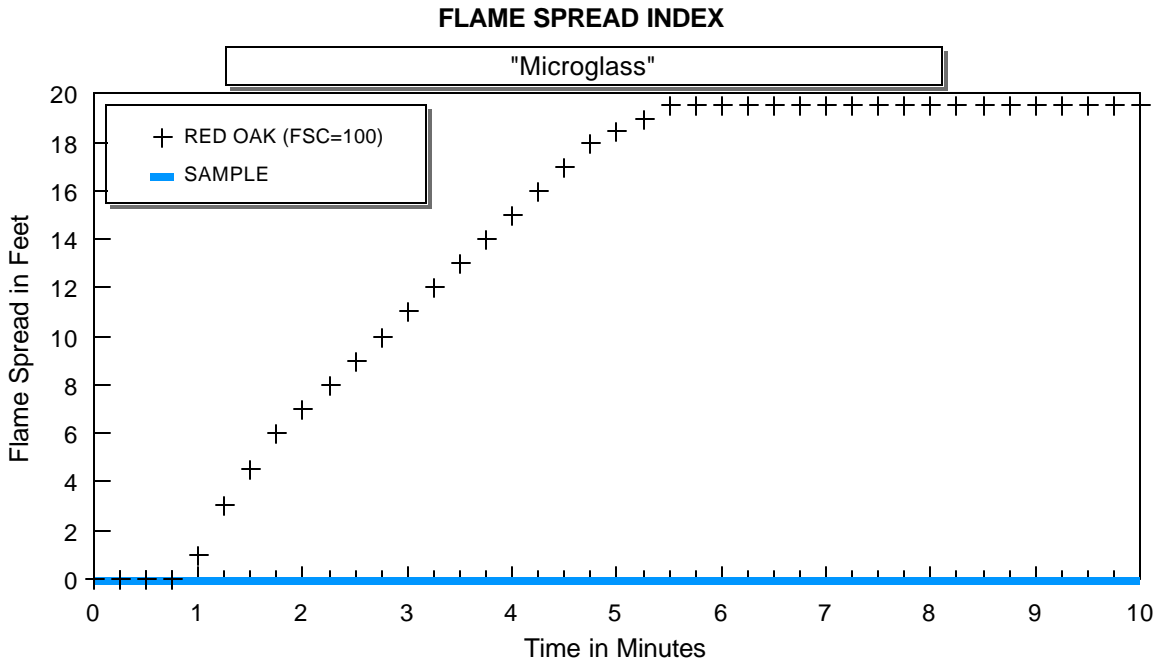
	<u>Flame-Spread Index</u>	<u>Smoke Development</u>
Class 1 or A	0 - 25	450 Maximum
Class 2 or B	26 - 75	450 Maximum
Class 3 or C	76 - 200	450 Maximum

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.



FSI
0

SD
30