

# **Bodycote** MATERIALS TESTING ORTECH LABORATORY

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## **ASTM E 84 Surface Burning Characteristics of ARPRO® Black FR Porous EPP - 2" thick**

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**A Report To:** JSP International  
273 Great Valley Parkway  
Malvern, PA  
USA 19355-1308

**Attention:** John R. Maravich  
Business Development Manager

**Submitted by:** Fire & Flammability

**Report No.** 99-J52-99-55-438(D)  
3 Pages

**Date:** August 18, 1999

## **Bodycote Ortech Inc.**

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**ACCREDITATION** Standards Council of Canada, Registration #1.

**REGISTRATION** ISO 9002-1994, registered by QMI, Registration #001109.

### **SPECIFICATIONS OF ORDER**

Determine the Flame Spread and Smoke Developed Indices based upon a single test conducted in conformance with ASTM E 84, as per your letter of July 19, 1999 and our quotation accepted July 30, 1999.

### **SAMPLE IDENTIFICATION**

ARPRO® Black FR Porous Expanded Polypropylene (EPP) bead foam plank, 2" thick.

(Bodycote Ortech Inc. sample identification number 99-J52-S0438-4)

### **TEST PROCEDURE**

The method, designated as ASTM E 84-98, "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 sample, which consisted of six sections 4 feet long and 21 inches wide, was conditioned to constant weight at a temperature of 73°F and a relative humidity of 50% prior to testing.

### **SUMMARY OF TEST PROCEDURE**

The tunnel is preheated to 150°F, as measured by the floor-embedded thermocouple located 23.25 ft. downstream of the burner ports, and allowed to cool to 105°F, as measured by the floor-embedded thermocouple located 13 ft. 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 ft. long, 12 inches 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. 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>
ARPRO® Black FR Porous EPP - 2" thick	5	113

Observations of Burning Characteristics

- The sample began to melt immediately upon exposure to the test flame. Some of the molten material in the area of direct test flame impingement ignited for a brief period prior to dripping/falling to the floor of the test chamber. The flaming drips extinguished upon hitting the floor.
- The flame front propagated to a distance of 1.0 foot during the first 45 seconds of the test and then receded to the baseline. At approximately 8.5 minutes, the smouldering molten material located on the ledges of the test chamber directly in front of the test burners ignited, causing a second flame advance to a distance of 1.5 feet at the end of the 10 minute test period.
- Maximum amounts of smoke developed were recorded during the latter minutes of the test. Smoke production emanated from the smouldering molten material located directly in front of the test burners (see accompanying charts).

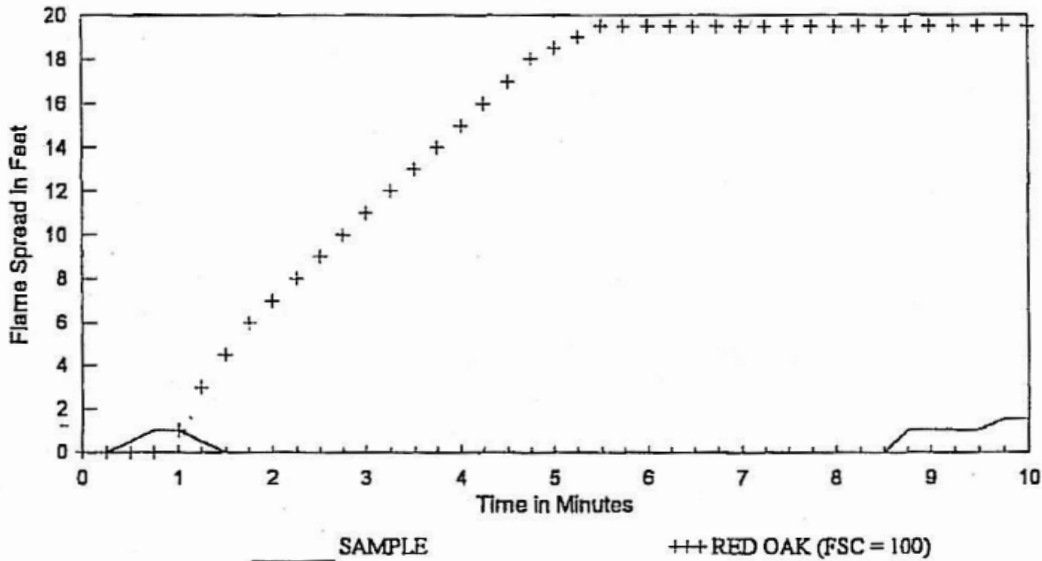
Authorities having jurisdiction usually refer to these categories:

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

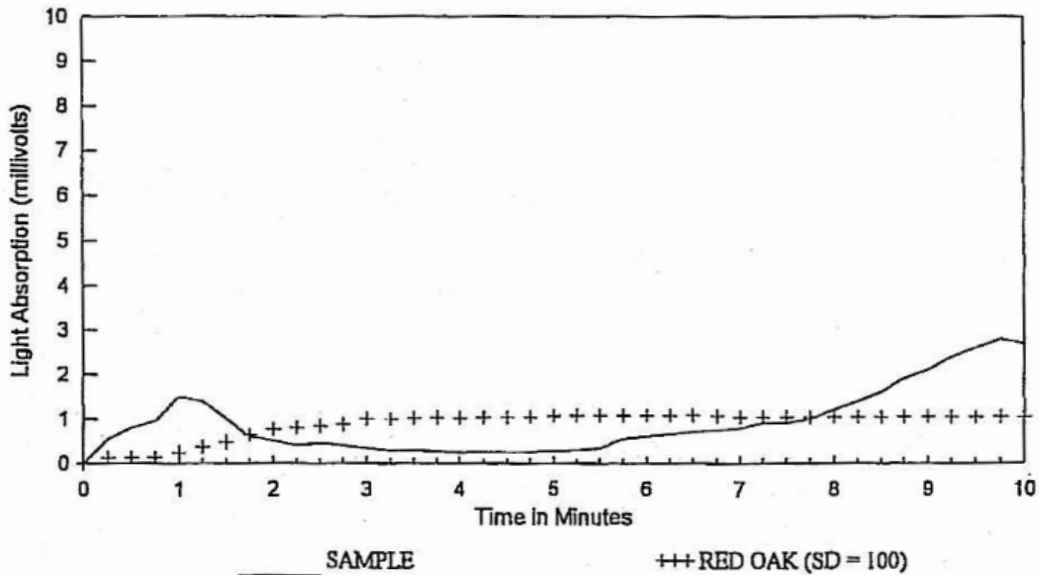
Richard J. Lederle  
Fire & Flammability.

E.W. Simmons  
Fire & Flammability.

**FLAME SPREAD INDEX**  
ARPRO® Black FR Porous EPP - 2" thick



**SMOKE DEVELOPED**  
ARPRO® Black FR Porous EPP - 2" thick



ESI  
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SD  
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