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ASTM E 84 Surface Burning Characteristics of "VITTSPOL 2106 / VITTSPOL 2520"

A Report To:	**WESTIN RESINS & POLYMERS PRIVATE LTD.** Gut Number 205, Hissa No. 2(PT) Village Abitghar, Taluka Wada; Dist Palghar Maharashtra 421303 India
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Submitted by:	Exova Fire Testing
Report No.	19-002-066(Revision 1) 4 Pages
Date:	March 14, 2019

ACCREDITATION To ISO/IEC 17025 for a defined Scope of Testing by the International Accreditation Service

SPECIFICATIONS OF ORDER

Determine the Flame Spread and Smoke Developed Indices based upon a single test conducted in accordance with ASTM E 84-18b, as per Exova Metallurgical Services Private Limited Purchase Order No. POI-006688-V2 dated January 24, 2019.

Note: This report supersedes Exova Test Report No. 19-002-066, originally issued on March 4, 2019. It is revised by request, to enhance the Sample Identification.

SAMPLE IDENTIFICATION (Exova sample identification number 19-002-S0066)

FRP Panel system described as: "VITTSPOL 2106: Isophthalic Acid Base Fire Retardant Resin; VITTSPOL 2520: Isophthalic Acid Base Fire Retardant Gelcoat", identified as:
"VITTSPOL 2106 / VITTSPOL 2520"

TEST PROCEDURE

The method, designated as ASTM E 84-18b "*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, where the material under test is mounted so that it forms the ceiling of a horizontal fire tunnel. A specified airflow is introduced through the tunnel and a specified flame is applied to one end. Observations are then made regarding the rate of flame spread along the specimen. Results are expressed in terms of Flame Spread Index (FSI) and Smoke Developed Index (SDI). There is no established relationship between those two values.

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 specimen consisted of a total of three sections of material, each approximately 0.309 inches (8 mm) in measured thickness by 22 inches (559 mm) in width by 96 inches (2438 mm) in length. The sections were butted together to create the specimen length. Prior to testing, the specimen was conditioned to constant weight at a temperature of 73 ± 5°F (23 ± 3°C) and a relative humidity of 50 ± 5%. During testing, the specimen was self-supporting and the gelcoat surface was exposed to the test flame.

The testing was performed on: 2019-02-08

SUMMARY OF TEST PROCEDURE

The tunnel is preheated to 150 ± 5°F (66 ± 2.8°C), as measured by the floor-embedded thermocouple located 23.25 feet (7087 mm) downstream of the burner ports, and is allowed to cool to 105 ± 5°F (40.5 ± 2.8°C), as measured by the floor-embedded thermocouple located 13 feet (3962 mm) from the burners. The tunnel lid is then 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, approximately 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 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 second. Flame spread distance versus time is plotted. Calculations ignore all flame front recessions and Flame Spread Index (FSI) is determined by calculating the total area under the curve for the test sample. If the area under the curve (A) is less than or equal to 97.5 min·ft, then FSI = 0.515·A; if greater, FSI = 4900/(195-A). FSI is then rounded to the nearest multiple of 5.
Smoke Developed Index (SDI) is determined by dividing the total area under the obscuration curve by that of red oak, and multiplying by 100. SDI is then rounded to the nearest multiple of 5 if less than 200. SDI values over 200 are rounded to the nearest multiple of 50.

TEST RESULTS

SAMPLE: **"VITTSPOL 2106 / VITTSPOL 2520"**

Approx. Time to Ignition (s)	Maximum Flame Front Distance	Time to Maximum Flame Front (s)	Flame Spread Index (FSI)	Smoke Developed Index (SDI)
84	(ft.): 6.8 (m): 2.07	563	**20**	**400**

Observations of Burning Characteristics

The specimen ignited approximately 84 seconds after exposure to the test flame.

Interpretation of Test Results

Industry documents such as the International Building Code (IBC) or NFPA 101 Life Safety Code refer to ASTM E 84 (UL 723, NFPA 255) test results using the following material classification categories:

	Flame-Spread Index (FSI)	Smoke Development Index (SDI)
Class 1 or Class A	0 - 25	450 Maximum
Class 2 or Class B	26 - 75	450 Maximum
Class 3 or Class C	76 - 200	450 Maximum

Results Classification (if applicable):	**Class 1 or Class A**

Francis Williams,
Technician.

Ian Smith,
Technical Manager.

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.

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ASTM E 84-18b Test Charts

Sample: "VITTSPOL 2106 / VITTSPOL 2520"

Chart 1. FLAME SPREAD

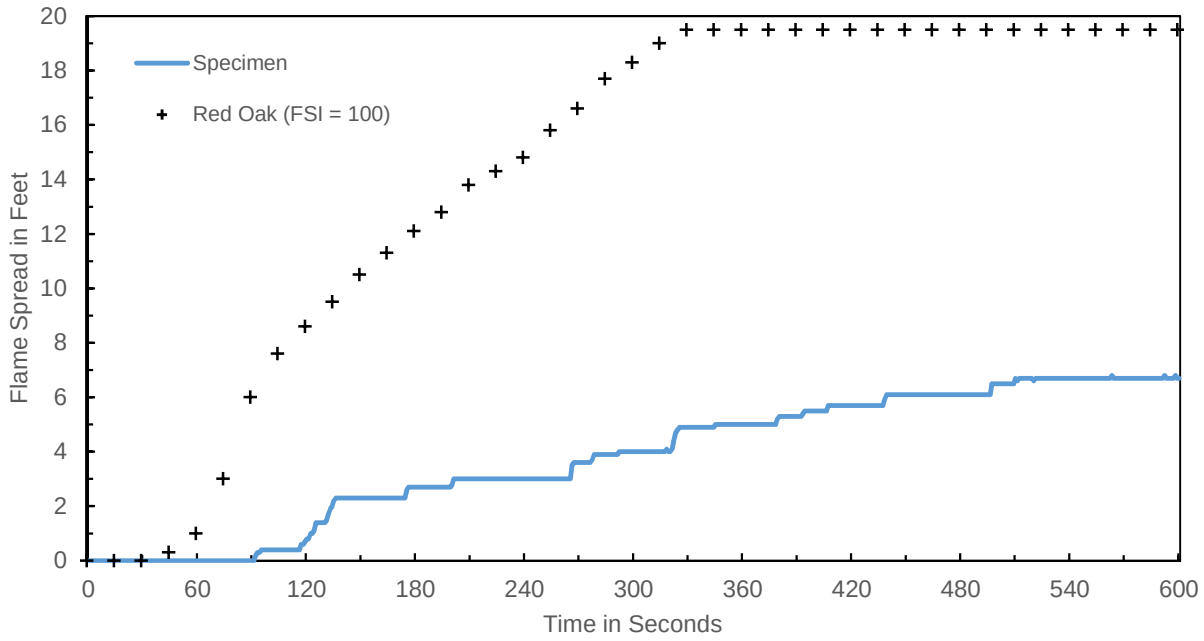
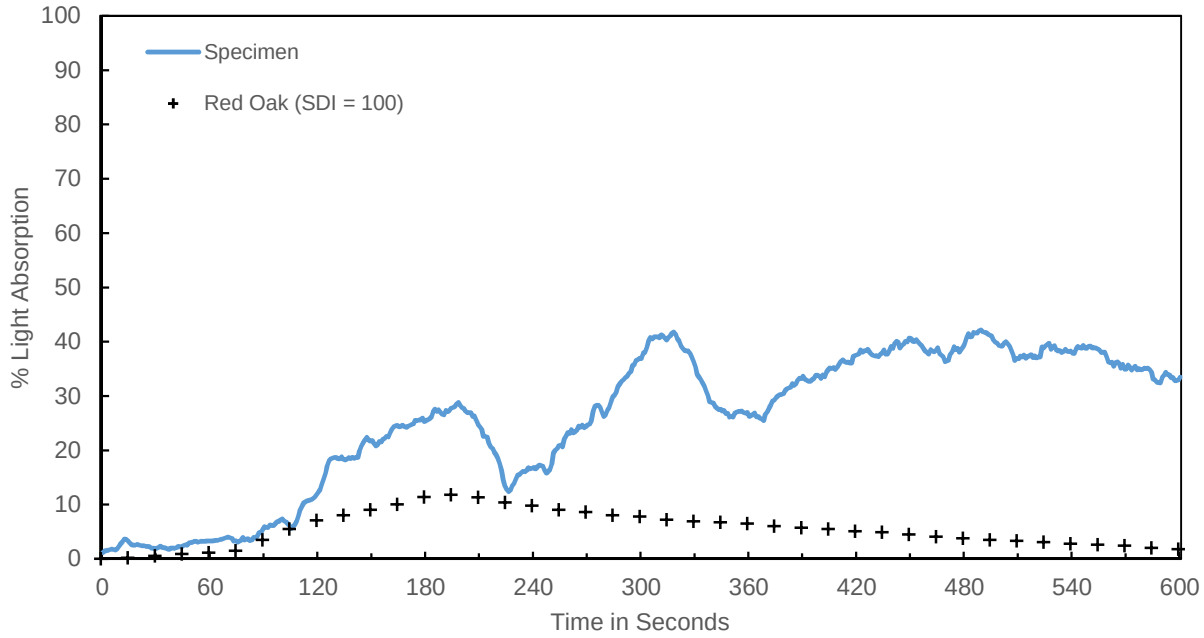


Chart 2. SMOKE DEVELOPED



Calculated Flame Spread (CFS)	Rounded Flame Spread Index (**FSI**)	Calculated Smoke Developed (CSD)	Rounded Smoke Developed Index (**SDI**)	Maximum 23' Air Temperature (°F)
19.5	**20**	376.8	**400**	556