

Flame Spread Test & NRC

Determine the Flame Spread and Smoke Developed Values based upon triplicate tests conducted.

PET Felt material, approximately 9 mm in thickness, identified as: "Hush Acoustic PET Felt".

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).

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.

Preparation

Each test specimen consisted of a total of three sections of material, each approximately 10mm in thickness by 533mm in width by 2438mm in length. The sections were butted together to create the specimen length. Prior to testing, each specimen was conditioned to constant weight at a temperature of $23 \pm 3^\circ\text{C}$ and a relative humidity of $50 \pm 5\%$. At the time of test initiation, the specimen was self-supporting.

Test Procedure

The tunnel is preheated to 85°C , as measured by the back wall-embedded thermocouple located 7090mm downstream of the burner ports, and allowed to cool to 40°C , as measured by the back wall-embedded thermocouple located 4000mm 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 7315mm long, 305mm 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 Values (FSV) are determined by calculating the total area under the curve for each test sample. If the total area under the curve (AT) is less than or equal to 29.7 m²/min, $\text{FSV} = 1.85 \cdot \text{AT}$; if greater, $\text{FSV} = 1640 / (59.4 - \text{AT})$.

Test Result

Sample: 9mm

Test	Flame Spread Value - FSV	Smoke Developed Value - SDV	Max - Temperature
1	0	26	275
2	0	45	277
3	0	46	250
Average	0	39	

Rounded Average Flame Spread Rating FSR: 0
 Rounded Average Smoke Developed Classification SDC: 40

Test Result

Sample: 12mm

Test	Flame Spread Value - FSV	Smoke Developed Value - SDV	Max - Temperature
1	0	35	287
2	0	42	290
3	0	25	276
Average	0	34	

Rounded Average Flame Spread Rating FSR: 0
 Rounded Average Smoke Developed Classification SDC: 35