



Fire Testing on Fine Art Media

Selected fine art products were tested for flammability following ASTM E84 Tunnel Test for Surface Burning Characteristics of Building Materials. The purpose of the testing is to ensure that materials used inside buildings are not highly flammable or cause poisonous smoke. Samples are typically mounted on rods & wire or on Inorganic Rain Forest Cement Boards. Commercial areas require a flame spread of 25 or less. The most stringent requirements may be for the Coast Guard where ships require 10 or less. This test procedure is similar to UL-723, ANSI No. 2.5, NFPA No. 255, and UBC 42-1.

FLAME SPREAD

The flame spread index of the material is derived by plotting the progression of the flame front on a time-distant scale, ignoring any flame front recession, and using one of the calculation methods described below:

A. Flame Spread Index = $0.515 A_t$ when A_t is less than or equal to 97.5 minute-foot	Class	Flame-Spread
	A	0-25
B. Flame Spread Index = $4900/(195-A_t)$ when A_t is greater than 97.5 minute foot	B	26-75
Where A_t = total area under the time distance curve expressed in minute-foot.	C	76-100

Class A is the desired rating. Class A material can be used in any room of a building, ship, or even airplanes. B & C can still be widely used in all areas except the hallways leading to exits. Check local fire codes.

SMOKE DEVELOPMENT

The smoke development during the test is indicated by the output of a photoelectric circuit operating across the furnace flue pipe. A curve is developed by plotting values of light absorption (decrease in cell output) against time. The calculated value for smoke development index is derived by expressing the net area under the curve for this material as the percentage of the area under the curve for untreated red oak. The smoke development index is expressed as:

$$\text{Smoke development index} = (A_m - A_{ro}) \times 100$$

Where: A_m = The area under the curve for the test material
 A_{ro} = The area under the curve for untreated red oak

FLAME DISTANCE

The maximum distance the flame spreads along the length of the sample from the end of the igniting flame is determined by observation.

TEST RESULTS

Product	Test Substrate	Flame Spread	Smoke Dev.	Flame Distance (feet)	Distance (seconds)	Classification (A, B, C)
Torino 17M	Rods & Wire	5.0	15.0	3.0	0:41	A
Mural-Pro /DMiBOP10	Rods & Wire	5.0	5.2	1.0	0.25	A
	5/8" Gypsum	20.0	20.0	4.0	0.36	A
FAB-6	Rods & Wire	15.0	10.0	3.0	0.19	A

FAB-6 In compliance with Germany B1 fire regulations testing

USA
28 GAYLORD STREET
SOUTH HADLEY MA 01075-2894



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