

## Fire Testing on Magic Wallcovering Display Media

Magic display 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. Inorganic Rain Forest Cement Boards or Gypsum Wallboards were used as mounting substrates. Standard wallcovering pastes were used for mounting. Commercial areas require a flame spread of 25 or less. Wallpaper is typically 15-25. Smoke development should be 50 or less. This test procedure is similar to UL-723, ANCI 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  
 B. Flame Spread Index =  $4900/(195-A_t)$  when  $A_t$  is greater than 97.5 minute foot  
 Where  $A_t$  = total area under the time distance curve expressed in minute-foot.

Class	Flame-Spread
A	0-25
B	26-75
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	Spread	Flame Dev.	Smoke	(feet)	Flame Distance (seconds)	Classification (A, B, C)
GFIOP140	Cement Board	0		3.0		1.0 6:40	A
	5/8" Gypsum/Liquid Lam	20		5.0		4.0 0:36	A
GFIOP212	Cement Board	0		5.0		1.0 6:35	A
	5/8" Gypsum/Liquid Lam	20		5.0		4.1 1:02	A
GFTRP	Cement Board	0		3.0		0 0:37	A
	5/8" Gypsum/Liquid Lam	25		4.0		5.0 1:00	A
DMiBOP10	5/8" Gypsum	20		20.0		4.0 0:36	A
	5/8" Gypsum/Liquid Lam	45		10.0		9.6 1:03	B
Mural-Pro	5/8" Gypsum	20		20.0		4.0 0:36	A
	5/8" Gypsum/Liquid Lam	45		10.0		9.6 1:03	B

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