

EXTENDING THE LIFE OF EXTRACTED NATURAL RESOURCES

## Flexisurf Fire Testing Data

**FLEXISURF** was tested according to ASTM E84-91a Standard Test Method for Surface Burning Characteristics of Building Materials. This test method is also published under the following designations: NASI 2.5, NFPA 255, UBC 42-1 and UL 723.

**Test Objective:** The ASTM E84-91a (25 foot tunnel) test method is intended to compare the surface flame spread and smoke developed measurements to those obtained from the tests of mineral fiber cement board and select grade red oak flooring. The test specimen surface (18" wide by 24 feet long) is exposed to a flaming fire exposure, adjusted to cause a 25-foot spread of flame along a red oak calibration specimen in 5.5 minutes. During the 10-minute test duration, flame spread over the specimen surface and density of the resulting smoke are measured and recorded. Test results are presented as the computed comparisons to the standard calibration materials. The mineral fiber/cement board forms the zero point, while the red oak flooring is set as 100 for smoke measurements. Thus, with a relative zero established by the non-combustible cement board, all test specimens are compared to select grade red oak flooring, and the results expressed as Flame Spread Index and Smoke Developed Index.

Test Results:	Flame	Smoke	Specimen Data:	Specimen	Red Oak
	Spread	Developed			
	Index	Index			
Mineral Fiber/Cement Board	0	0	Flexisurf Thickness	00.250	
Red Oak Flooring	100	100	Time to Ignition (min:sec):	00:24	00:50
Flexisurf	20	1110	Time to Max. Flame Spread (min:sec):	09:28	
			Max. Flame Spread (ft):	6.0	
			Max. Temperature (deg. F):	599	
			Time to Max. Temperature (min:sec):	10:00	
			Flame Spread x Time Area (min x ft):	37	
			Smoke x Time Area (min x %s):	930	84
			Temperature x Time Area (min x deg. F):	4764	9381
			Unbounded Flame Spread Index:	18.89	
			Unbounded Smoke Developed Index:	1107.72	
			Total Fuel (natural gas) Consumed (ft <sup>3</sup> ):	47.65	
			Temperature x Time Area for GRC Board (min x deg. F):	5653	

### Conclusion:

Flexisurf meets the UL Class 1 for Flame Spread but does not meet UL Class 1 for Smoke Developed. Smoke content: HCL, CO and CO<sub>2</sub>

**FLEXISURF** was tested according to ASTM E-648 "critical radiant flux of floor covering systems, using a radiant heat energy source". To pass the test, the critical radiant flux (CRF) must be larger than 0.12 w/cm<sup>2</sup>. The CRF is related to the time of burn, the distance of the burn and the heat required to sustain a flame. The CRF will be less than 0.12 w/cm<sup>2</sup> if the burn distance is more than 90 cm. As you can see from the report, the minimum CRF achieved was .61 w/cm<sup>2</sup> and the maximum burn distance was 34 cm. In essence, the Flexisurf product was tested at UL and the determination was made that the materials passed this ASTM E-648 test well within acceptable limits. It should be understood that the results as shown below apply only to the particular samples submitted for testing. The test results indicated in this Report are not intended to imply Listing, Classification or other Recognition of any product or materials.

Test #	Sample Type	Burn Time (mins)	Total Burn Distance (cm)	Critical Radiant Flux (w/cm <sup>2</sup> )
1	1/8" grid	8:00	13	0.99
2	1/4" grid	12:38	10	1.01
3	1/8" mat	13:04	34	0.61
4	1/4" grid	13:20	20	0.89

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