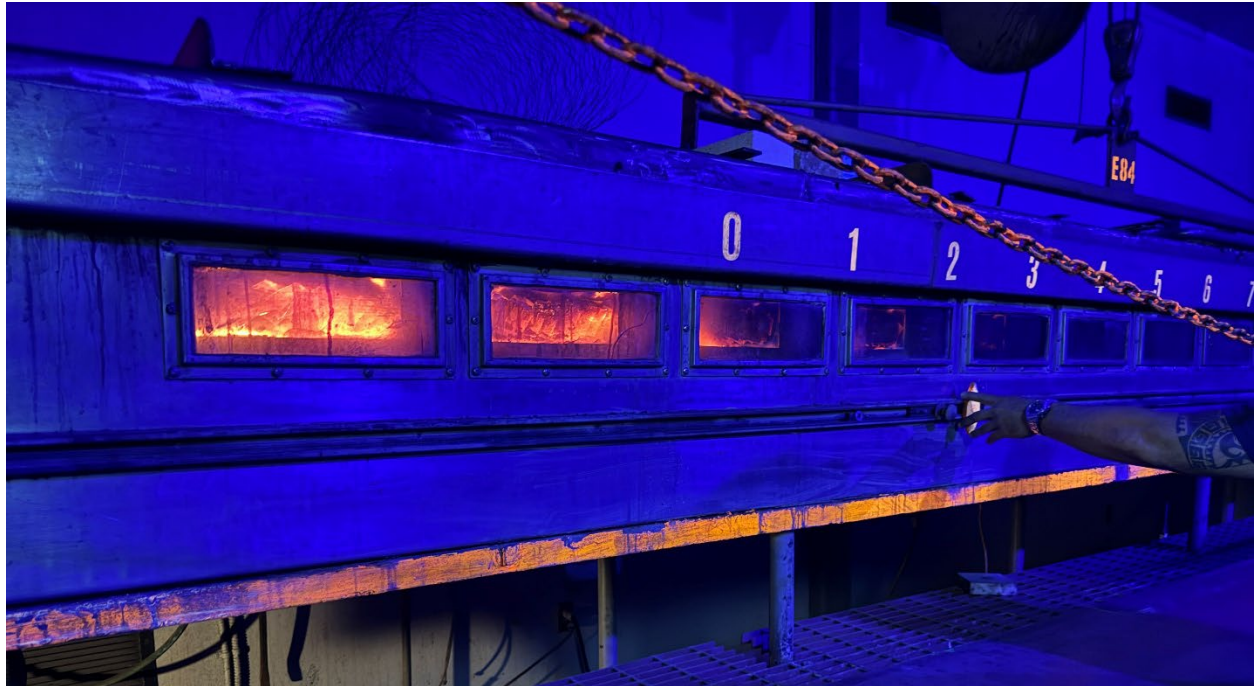




ASTM E84 FIRE PERFORMANCE EVALUATION

Assessing the Surface Burning Characteristics of Riken's Thermofoil:

ASTM E84 testing was performed by Southwest Research Institute to evaluate the surface burning characteristics of Riken's two PVC thermofoil films. Both products achieved a Flame Spread Index (FSI) of 10 and Smoke Developed Index (SDI) values of 135 and 200, respectively. Based on ASTM E84 classification criteria, both materials qualify as **Class A (Class I)** interior finish materials.

Test Information

	Detail	Tested Products
Testing Laboratory	Southwest Research Institute (SwRI)	
Project Number	01.29790.02.031a	R086SM6 Serenity SM6
Project Number	01.29790.02.031b	RK002 Carleton
Test Date	April 9, 2026	

The Testing Process and Setup

The Steiner Tunnel has been used for decades to compare the relative surface burning characteristics of construction materials. The tunnel contains a 25 ft × 17¾ in. × 12 in. (L × W × H) fire chamber with two burners at one end. During testing, the 24" wide x 24' long sample is placed and it forms the ceiling of the test chamber while a controlled gas flame is applied at one end.



During the test, the following measurements were taken:

- **Flame Spread Index (FSI):** Determined from the distance of flame travel along the specimen and the rate at which the flame front advanced during the 10-minute exposure.
- **Smoke Developed Index (SDI) Measurement:** Determined using a photometer system consisting of a white light source and a photocell installed within the apparatus. The photocell output is proportional to the amount of smoke, soot particles, and other combustion effluents passing between the light source and the photocell, allowing calculation of the smoke-developed index.

ASTM E84 does not evaluate fire resistance, structural integrity, heat transmission, combustibility, or the performance of complete wall or ceiling assemblies. The test provides comparative surface burning characteristics only.

ASTM E84 Performance

Products	FSI	SDI	ASTM Classification
Serenity SM6	10	135	Class A (Class I)
Carleton	10	200	Class A (Class I)

Both products achieved flame spread values substantially below the Class A threshold of 25 and smoke developed values well below the maximum permitted value of 450.

Classification Interpretation

Under commonly recognized ASTM E84 criteria:

- **Class A (Class I):** FSI 0–25, SDI 0–450
- **Class B (Class II):** FSI 26–75, SDI 0–450
- **Class C (Class III):** FSI 76–200, SDI 0–450



Statement of Applicability

The reported results apply to the thermofoil films tested. Performance of finished panels or assemblies may vary depending on substrate type, adhesive systems, manufacturing processes, assembly configuration, and installation conditions. Additional information can be obtained from the respected manufactures.

These results indicate excellent surface burning performance under ASTM E84 testing conditions and meet commonly recognized Class A requirements for flame spread and smoke development.

