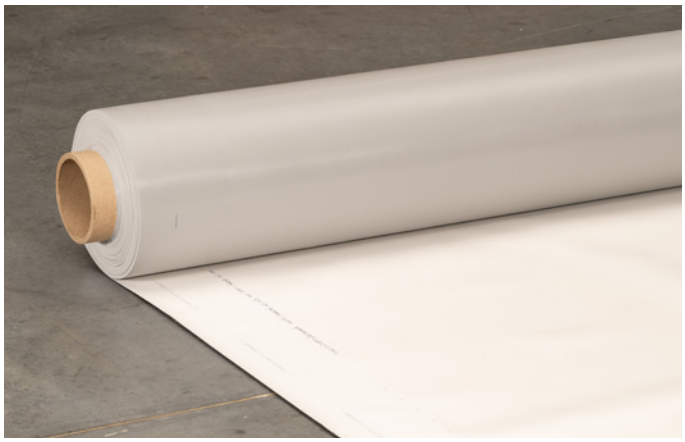
CARLISLE SYNTEC SYSTEMS

Sure-Flex™ PVC
FRS Membrane (All Material Minimum Thickness)



Overview

Carlisle's Sure-Flex PVC FRS is an advanced-formula, heat-weldable PVC membrane used exclusively in fully adhered applications that utilize liquid-applied bonding adhesives. Designed to provide long-term weatherability and performance, thick PVC-based top and bottom plies encapsulate the membrane's internal fiberglass reinforcement, enhancing dimensional stability. The membrane's smooth surface facilitates a permanent weld for a consistent, watertight, monolithic roof assembly. All PVC FRS membranes are manufactured to exceed minimum thickness specifications.

Features and Benefits

- Manufactured to exceed minimum thickness specifications
- Exceptional fire and chemical resistance
- Fully formulated monolithic top-ply for long-term weatherability
- Meets or exceeds the requirements of ASTM D4434 Type II requirements
- Antimicrobials throughout the polymer for increased resistance to mold, mildew, and algae growth
- Highly flexible with wide window of weldability for ease of installation
- Avaiable colors:

White | Gray | Tan | Light Gray

Sustainable Attributes

Carlisle SynTec Systems' focus has always been innovation - Innovation to solve problems, improve performance, reduce labor, and above all, improve sustainability. Carlisle is committed to driving sustainable and efficient processes in the design and manufacturing of our products.

- PVC polymer derived from less than 50% fossil fuels
- Up to 10% pre-consumer recycled content
- 3rd-party verified Environmental Product Declaration available
- California Title 24 compliant*
- See Radiative Properties and LEED® Information tables below for additional attributes

*White and light gray only.

Installation

Installation requires minimal labor and few components, making it quick and easy to install. Sheet seams are heat-welded together using hot-air welding equipment to create a monolithic, water-tight roof system.

Sure-Flex PVC is suitable for the following roof system:

Fully-Adhered – membrane is adhered to a suitable substrate utilizing an appropriate bonding adhesive

Review Carlisle specifications and details for complete installation information.

Precautions

- Sunglasses that filter out ultraviolet light are strongly recommended when working on reflective membranes. Roofing technicians should dress appropriately and wear sunscreen.
- Exercise caution when walking on wet membranes; membranes may be slippery when wet or due to frost and ice buildup.
- Care must be exercised while working close to a roof edge when the surrounding area is snow-covered, as the roof edge may not be clearly visible.
- Use proper stacking procedures to ensure sufficient stability of the materials.
- Store membrane in its original, undisturbed plastic wrap in a cool, shaded area and cover with light-colored, breathable, waterproof tarpaulins.
- Membrane that has been exposed to the weather or contaminated with dirt must be prepared with Sure-Flex PVC/KEE HP Membrane Cleaner prior to hot-air welding.

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Supplemental Approvals, Statements and Characteristics

1. Reinforced PVC FRS membrane meets or exceeds the requirements of ASTM D4434 Standard Specification for Poly (Vinyl Chloride) Sheet Roofing. Reinforced PVC FRS is classified as type II as defined by ASTM D4434.
2. Reinforced PVC FRS was tested for dynamic puncture resistance per ASTM D5635 using the most recently modified impact head. 60-mil membrane was watertight after an impact energy of 10.0 J (14.75 ft-lbf), which passes the ASTM D4434 requirement.
3. Reinforced PVC FRS was tested for static puncture resistance per ASTM D5602 and exceeded 33 lbf (145 N), which passes the ASTM D4434 requirement.
4. UL 2218 Class 4 Rating for impact resistance

Radiative Properties for Cool Roof Rating Council (CRRC) and LEED®

Radiative Property	Test Method	White PVC	Tan PVC	Gray PVC	Lt Gray PVC
CRRC - Initial Solar Reflectance	ASTM C1549	0.87	0.72	0.59	0.74
CRRC - Solar Reflectance after 3 years	ASTM C1549 (uncleaned)	0.70	0.56	0.49	0.59
CRRC - Initial Thermal Emittance	ASTM C1371	0.89	0.87	0.89	0.88
CRRC - Thermal Emittance after 3 years	ASTM C1371 (uncleaned)	0.88	0.87	0.89	0.89
Solar Reflective Index (SRI) Initial SRI	ASTM E1980	110	89	70	91
Solar Reflective Index (SRI) SRI after 3 years	ASTM E1980	86	65	57	70

LEED Information

Pre-consumer Recycled Content	Up to 10%
Post-consumer Recycled Content	0%
Manufacturing Location	Greenville, IL
Solar Reflectance Index (SRI), Initial	White: 110, Tan: 88, Gray: 70, Light Gray: 91, Slate Gray: N/A

Typical Properties and Characteristics

Physical Property	ASTM D4434 Requirement	60-mil Minimum	80-mil Minimum
Thickness over scrim, in. (mm) ASTM D7635	0.016 (0.40) minimum	0.034 (0.86)	0.040 (1.02)
Weight, lbs/ft² (kg/m²)	No Requirement	0.44 (2.15)	0.54 (2.63)
Breaking Strength, lbf/in (N), MD x CD, ASTM D751 Proc B	55 (245) minimum	118 x 114 (525 x 507)	159 x 150 (707 x 667)
Elongation at break percentage, MD x CD, ASTM D751 Proc B	250 x 220 minimum	276 x 220	301 x 277
Tear Resistance, lbf (N), MD x CD, ASTM D1004	10 (45) minimum	21 x 24 (93 x 107)	34 x 33 (151 x 147)
Low Temperature Bend, no cracks 5x at -40°C, ASTM D2136	-40°C	PASS	PASS
Linear Dimensional Change, percentage ASTM D1204, 6 hours at 176°F	0.1 maximum	0.05 x 0.05	0.06 x 0.05
Ozone Resistance, no cracks 7x, ASTM D1149, 168 hours at 100pphm	PASS	PASS	PASS
Water Absorption Resistance, mass percentage, ASTM D570, 166 hours at 158°F water	± 3.0 maximum	PASS	PASS
Puncture Resistance – Dynamic, J (ft-lbf), ASTM D5602	10 (7.4)	PASS	PASS
Puncture Resistance – Static, lbf (Kg), ASTM D5635	33 (15)	PASS	PASS
Xenon-Arc Resistance, no cracks/crazing 10x, ASTM G155, 0.35 W/m² at 340-nm & 63°C B.P.T. 12,600 kJ/m² total radiant exposure 10,000 hours	PASS	PASS	PASS
Properties After Heat Aging, ASTM D3045, Tensile Strength ASTM D638, Elongation percent of original	90 min. 90 min.	PASS	PASS
Seam Strength, percent of original	75 mi.	PASS	PASS

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification range for any particular property of this product.

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