

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
- » Available in white, gray, and tan in a variety of thicknesses
- » Excellent chemical resistance
- » Exceptional heat weldability and low-temperature flexibility
- » Resistant to impact, punctures, UV, ozone, and oxidation
- » Simple installation process
- » Reflective PVC FRS can help reduce cooling and air conditioning costs

Installation

With minimal labor and few components required, PVC FRS is quick and simple to install.

Fully Adhered Roofing Systems

The fully adhered system starts with a suitable surface upon which the Sure-Flex Low-VOC PVC Bonding Adhesive or HydroBond™ Water-Based PVC Bonding Adhesive will be applied.

HydroBond Water-Based PVC Bonding Adhesive

Refer to HydroBond Product Data Sheet for detailed information.

HydroBond water-based, one-sided, wet lay-in adhesive is first applied with a medium nap roller to the approved substrate. Once the adhesive is applied, roll the membrane in place. Applying the adhesive 3'–4' at a time ahead of the roll is recommended to prevent drying of the adhesive. Immediately broom the membrane, starting from the center of the sheet and working out to the sides of the sheet, using a soft-bristle push broom to work out any air bubbles. Immediately after brooming, roll the adhered membrane in two directions in a crossways pattern using a 100-lb (45 kg) split steel membrane roller.

Sure-Flex Low-VOC PVC Bonding Adhesive

Refer to Sure-Flex Low-VOC PVC Bonding Adhesive Product Data Sheet for detailed information.

Roll the membrane onto the adhesive-coated substrate while avoiding wrinkles. Immediately brush down the bonded portion of the sheet with a soft-bristle push broom or a clean dry roller applicator to achieve maximum contact.

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.
- » Smooth surfaces may become slippery due to frost and ice buildup. Exercise caution during cold conditions to prevent falls.
- » 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.
- » Exercise caution when walking on wet membranes; membranes may be slippery when wet.
- » Store PVC FRS membrane in its original, undisturbed plastic wrap in a cool, shaded area and cover with light-colored, breathable, waterproof tarpaulins. PVC FRS membrane that has been exposed to the weather or contaminated with dirt must be prepared with Sure-Flex PVC Membrane Cleaner prior to hot-air welding.

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Supplemental Approvals, Statements and Characteristics

1. Reinforced PVC FRS 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.

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

Radiative Property	Test Method	White PVC	Tan PVC	Gray PVC
ENERGY STAR - E-903 Initial Solar Reflectance	Solar Spectrum Reflectometer	0.86	0.73	0.59
ENERGY STAR - E-903 Solar Reflectance after 3 years	Solar Spectrum Reflectometer (Uncleaned)	0.63	Pending	Pending
CRRC - Initial Solar Reflectance	ASTM C1549	0.86	0.72	0.59
CRRC - Solar Reflectance after 3 years	ASTM C1549 (uncleaned)	0.63	0.60*	0.49*
CRRC - Initial Thermal Emittance	ASTM C1371	0.89	0.87	0.89
CRRC - Thermal Emittance after 3 years	ASTM C1371 (uncleaned)	0.87	0.86*	0.86*
Solar Reflective Index (SRI) Initial SRI	ASTM E1980	108	88	70
Solar Reflective Index (SRI) SRI after 3 years	ASTM E1980	75	71*	56*

* Rapid Results

LEED Information

Pre-consumer Recycled Content	10%
Post-consumer Recycled Content	0%
Manufacturing Location	Hillside, NJ
Solar Reflectance Index (SRI), Initial	White: 108, Tan: 89, Gray: 69

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/ft ² (kg/m ²)	No Requirement	0.44 (2.15)	0.54 (2.63)
Breaking Strength, lbf/in (kN/m), MD x CD, ASTM D751 Proc A	55 (10) minimum	80 x 85 (14 x 15)	80 x 85 (14 x 15)
Elongation at break percentage, MD x CD, ASTM D751 Proc A	250 x 220 minimum	310 x 250	380 x 290
Tear Resistance, lbf (N), MD x CD, ASTM D1004	10 (45) minimum	20 x 20 (88 x 88)	25 x 25 (111 x 111)
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	PASS	PASS
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 (N), ASTM D5602	33 (145)	PASS	PASS
Xenon-Arc Resistance, no cracks/crazing 10x, ASTM G155, 0.35 W/m ² at 340-nm & 63°C B.P.T. 12,600 kJ/m ² total radiant exposure 10,000 hours	PASS	PASS	PASS
Properties After Heat Aging, ASTM D3045, 56 days at 176°F Breaking strength, percent retained Elongation, percent retained	90 min. 90 min.	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