

Sure-Flex™ PVC

Membrane



Overview

Carlisle's Sure-Flex PVC is an advanced-formula, heat-weldable PVC membrane that is designed for long-term weatherability and performance. The physical properties of the membrane are enhanced by a tenacious, anti-wicking, weft-inserted polyester fabric that is encapsulated by thick PVC-based top and bottom plies. The membrane's smooth surfaces facilitate a permanent weld for a consistent, watertight, monolithic roof assembly.

Features and Benefits

- » Exceptional fire and chemical resistance
- » Fully formulated monolithic top-ply for long-term weatherability
- » Enhanced physical characteristics meeting ASTM D4434 Type IV requirements
- » Antimicrobials throughout the polymer for increased resistance to mold, mildew, and algae growth
- » Highly flexible with a wide window of weldability for ease of installation
- » Available colors:



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
- » Fully recyclable when used in mechanically-attached systems
- » 3rd-party verified Environmental Product Declaration available
- » California Title 24 compliant*
- » Available with APEEL Protective Film to preserve cleanliness/reflectivity
- » 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 systems:

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

Mechanically Fastened – membrane is attached to a suitable substrate utilizing plates and fasteners which are overlapped with membrane

Induction-Welded – membrane is attached to a suitable substrate via an induction welding tool being placed over the membrane where a fastened PVC induction welding plate is located to weld the two components together

Review Carlisle specifications and details for complete installation information.

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Optional APEEL™ Protective Film

Shield Carlisle's Sure-Flex PVC membrane from dirt and scuffs during installation with APEEL Protective Film. Factory-applied and easy to remove, APEEL eliminates the need for rooftop cleaning upon project completion.



- » Ideal for re-roofing, re-cover, and new construction projects
- » Simple and easy to remove
- » Film utilizes 50% recycled content
- » Saves time and money when compared to pressure washing
- » Protecting from dirt maintains maximum membrane reflectivity

Installation

Simply order membrane with APEEL, install, and remove the film to reveal a clean, new roof.

- » APEEL Protective film can be left in place for up to 90 days without affecting the integrity of the film
- » After 30 days, membrane sections covered by APEEL should be cleaned with PVC/KEE HP membrane cleaner prior to welding
- » Be sure to clean any excess cleaners, solvents, or adhesives spilled on APEEL protective film

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.

Supplemental Approvals, Statements and Characteristics

- » Sure-Flex PVC meets or exceeds the requirements of ASTM D4434 Standard Specification for Poly (Vinyl Chloride) Sheet Roofing. Sure-Flex PVC is classified as Type III and/or Type IV as defined by ASTM D4434.
- » Sure-Flex reinforced PVC was tested for dynamic puncture resistance per ASTM D5635-04 using the most recently modified impact head. 50-mil thick membrane was watertight after an impact energy of 22.5 J (16.6 ft-lbf), which passes the ASTM D4434 requirement.
- » Sure-Flex reinforced PVC was tested for static puncture resistance per ASTM D5602-98 and exceeded 33 lbf (145 N), which passes the ASTM D4434 requirement.

Typical Properties and Characteristics

| Physical Property | ASTM D4434 Requirement | 50-mil | 60-mil | 80-mil |
|--|------------------------|-----------------------------|-----------------------------|-----------------------------|
| Thickness over scrim , in. (mm) ASTM D4434 optical method average of 3 areas | 0.016 min (0.40) | 0.022 (0.559) | 0.027 (0.686) | 0.037 (0.940) |
| Weight , lbs/ft ² (kg/m ²) | No requirement | 0.33 (1.61) | 0.40 (1.95) | 0.55 (2.68) |
| Breaking strength (MD x CD), lbf/in (kN/m) ASTM D751 grab method | 275 min (48) | 320 x 300 (56 x 53) | 330 x 300 (58 x 55) | 360 x 330 (63 x 58) |
| Elongation break of reinforcement (MD x CD), % ASTM D751 grab method | 25 min | 30 x 30 | 30 x 30 | 30 x 30 |
| Tearing strength (MD x CD), lbf (N) ASTM D751 proc. B, 8 in. x 8 in. | 90 min (400) | 100 x 120 (445 x 534) | 100 x 130 (445 x 578) | 100 x 132 (445 x 587) |
| Low temperature bend , ASTM D2136, no cracks 5x at -40°C | PASS | PASS (-40°C) | PASS (-40°C) | PASS (-40°C) |
| Linear dimensional change , % ASTM D1204, 6 hours at 176°F | ±0.5 max | 0.4 | 0.4 | 0.4 |
| Ozone resistance , no cracks 7x ASTM D1149, 100pphm, 168 hrs | PASS | PASS | PASS | PASS |
| Water absorption resistance , mass % ASTM D570, 166 hours at 158°F water | ±3.0 max | 2.0 | 2.0 | 2.0 |
| Field seam strength , lbf/in. (kN/m) ASTM D1876 tested in peel | No requirement | 25 (4.4) min 60 (10.5) typ. | 25 (4.4) min 60 (10.5) typ. | 25 (4.4) min 60 (10.5) typ. |
| Water vapor permeance , Perms, ASTM E96 proc. B | No requirement | 0.10 max 0.05 typ | 0.10 max 0.05 typ | 0.10 max 0.05 typ |
| Puncture resistance - Federal, lbf (kN) FTM 101C, method 2031 | No requirement | 280 | 320 | 380 |
| Puncture resistance - Dynamic, J (ft-lbf) ASTM D5635 | 20 (14.7) | PASS | PASS | PASS |
| Puncture resistance - Static, lbf (N) ASTM D5602 | 33 (145) | PASS | 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 | PASS |
| Properties after heat aging ASTM D3045, 56 days at 176°F Breaking strength, % retained Elongation reinf., % retained | 90 min | 90 min | 90 min | 90 min |

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

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

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: 89, Gray: 70, Light Gray: 91, Slate Gray: N/A |

