

Sure-Seal EPDM

Kleen Non-Reinforced Membranes



- » Numerous studies and real-world experience confirm that Sure-Seal EPDM's 465% elongation and weathering resistance result in superior hail damage resistance (UL 2218 Class 4 rating)
- » EPDM is the most dimensionally stable heat resistant membrane and stays flexible even in extremely cold conditions, down to -40°F (-40°C): see flexibility/torsion DMA data
- » Extruded manufacturing technology results in seamless sheets that are UL Classified and FM Approved
- » Industry-leading 15-, 20-, 25-, and 30-year warranties are available
- » Carlisle manufactures all the major components of a typical roofing system, including membrane, flashings, tapes, adhesives, sealants, insulations, and insulating cover boards

Overview

Carlisle's Sure-Seal Kleen Non-Reinforced roofing membranes are available in thicknesses of 45-mil (1.14 mm), 60-mil (1.52 mm), and 90-mil (2.29 mm). Ideal for new single-ply roof construction and re-roofing applications, Sure-Seal EPDM Kleen Non-Reinforced membranes are available in widths of up to 10' (3 m) and lengths of up to 100' (30 m). These membranes are Fire Retardant (FR), which means they are specially formulated to inhibit the spread of flame and meet or exceed code body testing criteria for fire-retardant roofing membranes.

Features and Benefits

- » Carlisle EPDM has 50 years of proven performance and industry-leading weathering resistance (41,580 kJ/m² total radiant exposure without cracking or crazing)
- » Factory-Applied Tape™ seam technology and a full line of Pressure-Sensitive flashing accessories enhance workmanship quality
- » Dark-colored EPDM is the smart choice in colder climates:
 - Reduces heating costs, which are generally 3–5 times greater than air conditioning costs
 - Reduces carbon footprint by lowering heating costs
 - Reduces safety hazards caused by snow and ice accumulation
 - Reduces hazardous conditions caused by frost, dew, and ice
 - Reduces the potential for condensation problems
- » Life Cycle Assessment using EPA's TRACI model analyzed EPDM, TPO, PVC and Modified Bitumen:
 - EPDM had the lowest global warming potential
 - EPDM had the lowest acid rain impact
 - EPDM had the lowest contribution to smog

Carlisle's Factory-Applied Tape Seam Technology

With Carlisle's patented Factory-Applied Tape seam technology, most of the labor to create seams between membrane panels is completed in a quality-controlled, state-of-the-art environment. This process results in a reliable seam with no entrapped air bubbles. Consistent placement of the Factory-Applied Tape maximizes the splice area resulting in a high-quality seam.

Productivity Boosting Features and Benefits:

- » Pre-cleaned EPDM allows primer to be roller applied
- » With Carlisle's Factory-Applied Tape, most of the labor to create seams between membrane panels is completed in a quality-controlled, state-of-the-art environment
- » Factory-Applied Tape is available on all Sure-Seal Kleen membranes up to 10' (3 m) in width, providing the fastest way to complete a seam in today's roofing market



30-Year Warranty

Carlisle's 30-year Sure-Seal EPDM roof system features a thicker, more durable membrane complemented by enhanced details and accessories. Carlisle's 90-mil EPDM is used for 30-year warranty installations to provide long-term value and performance. In addition to 30 years of guaranteed protection, this system is available with warranties to cover hail, accidental punctures, and wind speeds up to 120 mph.

Sure-Seal EPDM

Kleen Non-Reinforced Membranes

Installation

Sure-Seal Kleen 45-mil (1.14 mm), 60-mil (1.52 mm), and 90-mil (2.29 mm) membranes are utilized primarily in Design A (Fully Adhered roofing systems).

Design A (Fully Adhered Roofing System): insulation is mechanically fastened or adhered to the roof deck. The substrate and membrane are coated with the appropriate Carlisle bonding adhesive. The membrane is then rolled into place and broomed down. To complete seams between two adjoining membrane panels, apply primer to the splice area in conjunction with Carlisle's Factory-Applied Tape. As an alternative, Carlisle's hand-applied SecurTAPE™ may be used.

Follow these steps for splicing in temperatures below 40°F (5°C):

- Heat the primed area of the bottom membrane with a hot-air gun as the top sheet with Factory-Applied Tape is applied and pressed into place.
- Prior to rolling the splice area with a 2"-wide steel hand roller, apply heat to the top side of the membrane with a hot-air gun. The heated surface should be hot to the touch. Be careful not to burn or blister the membrane.

Consult Carlisle specifications for complete installation information.

Precautions

- » Use proper stacking procedures to ensure sufficient stability of the materials.
- » Exercise caution when walking on wet membrane. Membranes are slippery when wet.
- » Membranes with Factory-Applied Tape should not be exposed to prolonged jobsite storage temperatures in excess of 90°F (32°C), otherwise the shelf life of the tape may be affected.
- » When membranes with Factory-Applied Tape are used in warm, sunny weather, shade the tape end of the rolls until ready to use.
- » Factory-Applied Tape has a shelf life of one year.

LEED® Information

Pre-consumer Recycled Content	5%
Post-consumer Recycled Content	0%
Manufacturing Location	Carlisle, PA
Solar Reflectance Index	9
Corporate Sustainability Report	Yes

Typical Properties and Characteristics

Physical Property	Test Method	SPEC. (PASS)	Typical
Tolerance on Nominal Thickness, %	ASTM D412	±10	±10
Weight, lbs/ft² (kg/m²)			
45-mil			0.29 (1.43)
60-mil			0.39 (1.91)
90-mil			0.59 (2.86)
Tensile Strength, min, psi (MPa)	ASTM D412	1305 (9)	1600 (11.0)
Elongation, Ultimate, min, %	ASTM D412	300	465
Tear Strength, min, lbf/in (kN/m)	ASTM D624 (Die C)	150 (26.3)	200 (35.0)
Factory Seam Strength, min	Modified ASTM D816	Membrane Rupture	Membrane Rupture
Resistance to Heat Aging* Properties after 28 days @ 240°F (116°C)	ASTM D573		
Tensile Strength, min, psi (MPa)	ASTM D412	1205 (8.3)	1450 (10.0)
Elongation, Ultimate, min, %	ASTM D412	200	280
Tear Strength, min, lbf/in (kN/m)	ASTM D624	125 (21.9)	215 (37.6)
Linear Dimensional Change, max, %	ASTM D1204	±1.0	-0.5
Ozone Resistance* Condition after exposure to 100 pphm Ozone in air for 168 hours @ 104°F (40°C) Specimen is at 50% strain	ASTM D1149	No Cracks	No Cracks
Brittleness Temp., max, °F (°C)*	ASTM D746	-49 (-45)	-49 (-45)
Resistance to Water Absorption* After 7 days immersion @ 158°F (70°C) Change in mass, max, %	ASTM D471	+8, -2	+2.0
Water Vapor Permeance* Max, perms	ASTM E 96 (Proc. B or BW)	0.10	0.03
Flexibility/Torsion DMA	ASTM D5279-08	N/A	225 MPa @ -40°F
Fungi Resistance	ASTM G21	N/A	0 (No Growth)
Resistance to Outdoor (Ultraviolet) Weathering* Xenon-Arc, total radiant exposure at 0.70 W/m ² irradiance, 80°C black panel temperature	ASTM G155	No Cracks No Cracking 7,560 kJ/m ² 3,000 hrs	No Cracks No Cracking 41,480 kJ/m ² 16,500 hrs
At 0.35 W/m ² irradiance, 80°C black panel temperature		6,000 hrs	33,000 hrs
Air Permeance	ASTM E2178	(0.02 L/s*m ²)	Pass

*Not a quality control test due to the time required for the test or the complexity of the test. However, all tests are run on a statistical basis to ensure overall long-term performance of the sheeting.

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.

Note: Sure-Seal Kleen Non-Reinforced EPDM Membrane meets or exceeds the minimum requirements set forth by ASTM D4637 for Type I non-reinforced EPDM single-ply roofing membranes.