

Sure-Seal® EPDM

Kleen Non-Reinforced Membranes



Overview

Sure-Seal Kleen 45-mil (1.14 mm), 60-mil (1.52 mm) and 90-mil (2.29 mm) roofing membranes are non-reinforced Ethylene Propylene Diene Terpolymer (EPDM)-based elastomeric homogenous roof coverings. These roofing membranes may be used for new single-ply roof construction and re-roofing applications. 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 are specially formulated to inhibit spread of flame and meet or exceed code body testing criteria for the fire-retardant roofing membranes.

Features and Benefits

- » Carlisle EPDM has 50 years of proven performance
- » Industry leading resistance to outdoor weathering with 41,580 kJ/m² total radiant exposure without cracking or crazing
- » Factory-Applied Tape™ Seam Technology and 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 hazard from snow and ice accumulation
 - Reduces hazardous conditions from frost, dew or ice that is difficult to see on white membranes
 - Reduces potential condensation problems that can erode performance

- » 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
- » 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 (see Flexibility/Torsion DMA data)
- » Extruded manufacturing technology results in seamless sheets that are UL and FM approved
- » 45-mil, 60-mil and 90-mil membranes are pre-cleaned and are available for 15, 20 and 30 year warranties
- » Carlisle manufactures all the major components of a typical roofing system including membrane, flashings, tapes, adhesives, sealants, insulations and insulating cover boards

Carlisle's Factory-Applied Tape Seam Technology

With Carlisle's patented Factory-Applied Tape (FAT) 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 greater peel and shear strengths and with no entrapped air bubbles. Consistent placement of the FAT also maximizes the splice area and results in a high-quality seam. Carlisle FAT 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

The 30-year Sure-Seal EPDM roof system features a thicker, more durable membrane that's complemented by enhanced details and accessories, creating the most comprehensive roofing solution available today. 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.

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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.

For Design A: Fully Adhered Roofing System

Insulation is mechanically attached or adhered to the roof deck. The substrate and membrane are coated with 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 FAT. As an alternative, Carlisle's hand-applied SecurTAPE™ may be used.

For cold weather splicing below 40°F (5°C), these steps must be followed:

1. Heat the primed area of the bottom membrane with a hot-air gun as the top sheet with FAT is applied and pressed into place.
2. 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 a wet membrane. Membranes are slippery when wet.
- » Membranes with FAT should not be exposed to prolonged jobsite storage temperatures in excess of 90°F (32°C), otherwise the shelf life of the FAT may be affected.
- » When membranes with FAT are used, shade the tape end of the rolls until ready to use in warm, sunny weather.

LEED® Information	
Pre-consumer Recycled Content	5%
Post-consumer Recycled Content	0%
Manufacturing Location	Carlisle, PA
Solar Reflectance Index	9

Typical Properties and Characteristics

Physical Property	Test Method	SPEC. (PASS)	Typical
Tolerance on Nominal Thickness, %	ASTM D412	±10	±10
Weight, lbs/ft ² (kg/m ²)			
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

*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.