

VersiFleece® AC TPO Membranes



Overview

Versico's VersiFleece AC (Asphalt Compatible) TPO membranes are manufactured using a hot-melt extrusion process for complete scrim encapsulation. Once the TPO is reinforced and enhanced with 10-ounce (75-mil) AC fleece, the total sheet thicknesses available are 120-, 135- and 155-mil creating a very tough, durable and versatile sheet that is ideal for re-roofing or new construction projects. VersiFleece AC TPO sheets are chlorine free and plasticizer free with excellent chemical resistance to acids, bases, restaurant oils and greases.

VersiWeld TPO with Octaguard XT™ weathering package technology withstands extreme durability testing intended to simulate exposure to severe climates. VersiWeld TPO is based on advanced polymerization technology that combines the flexibility of ethylene-propylene (EP) rubber with the heat weldability of polypropylene.

Intended Uses

VersiFleece AC TPO is ideally suited for recovering aged smooth BUR, mineral cap sheets or SBS modified bitumen roofs due to its added toughness/durability and the ability to incorporate one of Versico's base sheets for a multi-ply, redundant system.

Features and Benefits

- White 120-, 135- and 155-mil membranes are UL Class A rated
- Hot Mopped or Cold Applied Adhesive
- 75% fewer seams than modified bitumen
- Wide window of weldability

- Ability to design a multiple-ply redundant system
- Greater puncture resistance than non-fleece single-py
- Greater puncture resistance than Modified Bitumen
- Excellent hail damage resistance
 - Passes FM's severe hail test
 - Passes UL-2218 Class 4 rating
 - Passes National Bureau of Standards – 23 Ice Ball test up to 3"-diameter hail with the membrane cooled to 32°F
- 10-ounce AC fleece resists asphalt staining

Installation

Adhered Roofing System - Insulation is mechanically attached or adhered with ASTM Type III, IV or Modified Asphalt to the roof deck. When adhering insulation with asphalt, the insulation boards are limited to 4' x 4'. Cover boards are required over the insulation for hot asphalt installations. If a 2-ply system is specified, install Versico base sheet with hot asphalt or Cold Applied Adhesive over an approved substrate. Apply Type III, IV Modified Asphalt or Cold Applied Adhesive to the substrate or Versico approved base sheet and set AC cap sheet membrane into the asphalt or adhesive. Broom the AC membrane with a stiff-bristle push broom to ensure full embedment. Splices are hot-air welded. End laps are sealed with reinforced TPO. AC cap sheet membrane may be adhered directly to existing smooth BUR, mineral cap sheet, or SBS modified bitumen after priming the surface with Cut-Back Asphalt primer.

REVIEW CURRENT VERSICO SPECIFICATIONS AND DETAILS FOR SPECIFIC INSTALLATION REQUIREMENTS.

Precautions

- Use proper stacking procedures to ensure sufficient stability.
- Exercise caution when walking on wet membrane.
- UV-resistant sunglasses are required for VersiWeld TPO membranes.
- White surfaces reflect heat and may become slippery due to frost and ice accumulation.
- Care must be exercised when working close to a roof edge when the surrounding area is snow covered.
- VersiFleece AC TPO membrane rolls must be tarped and elevated to keep dry prior to installation. If the fleece gets wet, use a wet vac system to help remove moisture from the fleece.
- Once installed, VersiFleece AC TPO membrane edges must be sealed on a daily basis to prevent water from wicking into the fleece.
- VersiWeld membrane exposed to the weather must be prepared with Weathered Membrane Cleaner prior to hot-air welding.



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LEED® Information

Pre-consumer Recycled Content	10%
Post-consumer Recycled Content	0%
Manufacturing Location	Senatobia, MS or Tooele, UT
Solar Reflectance Index	White: 99

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

Physical Property	Test Method	White
CRRC – Initial solar reflectance	ASTM C1549	0.79
CRRC – Solar reflectance after 3 years	ASTM C1549 (uncleaned)	0.70
CRRC – Initial thermal emittance	ASTM C1371	0.90
CRRC – Initial thermal emittance after 3 years	ASTM C1371 (uncleaned)	0.86
LEED –Thermal emittance	ASTM E408	0.95
Solar Reflectance Index (SRI)	ASTM E1980	99

Versico Extreme Testing - Heat Aging

	ASTM Requirement	VersiWeld Results
ASTM Test 240°F	670 hours or 4 weeks	5,376 hours or 32 weeks*
Versico Extreme Test 275°F	N/A	1,344 hours or 8 weeks

*Comparable to 1,024 weeks (20 years) at 185°F for 6 hrs/day.

Heat aging accelerates the oxidation rate that roughly doubles for each 18°F (10°C) increase in roof membrane temperature. Oxidation (reaction with oxygen) is one of the primary chemical degradation mechanisms of roofing materials.

Versico Extreme Testing–Environmental Cycling

–10 days heat aging at 240°F (116°C) followed by 5 days water immersion at 158°F (70°C) or with another specimen set

–5 eight-hour cycles in Kesternich sulfur dioxide chamber (sulfurous acid fog) followed by 5040 kJ/m² (2000 hrs at 0.70 W/m² irradiance) xenon-arc exposure

Environmental cycling subjects the membrane to repeated cycles of heat aging, hot-water immersion or acid fog followed by xenon-arc exposure. The acid fog accelerates acid etching that may occur from acid rain if the roof membrane is not resistant to acidic conditions.

Typical Properties and Characteristics

Physical Property	Test Method	SPEC. (PASS)	VersiFleece AC TPO
Tolerance on Nominal Thickness, %	ASTM D751	+/-10	+/-10
Thickness over Fleece, min	ASTM D4637 Annex		
120-mil (3.05 mm)		.030 (.762)	.045 (1.14)
135-mil (3.43 mm)		.045 (1.14)	.060 (1.52)
155-mil (3.94 mm)		.080 (2.03)	.080 (2.03)
Weight, lbf/ft ²			
120-mil	—	—	0.31
135-mil	—	—	0.40
155-mil	—	—	0.50
Breaking Strength, min, lbf (kN)	ASTM D751 Grab Method	90 (0.4)	300 (1.3) 400 (1.8) 425 (1.9)
Elongation at break of internal fabric, %	ASTM D751	—	25
Tearing Strength, min, lbf (kN)	ASTM D751 B Tongue Tear	10 (45)	55 (245)
Puncture Resistance, Joules	ASTM D5635		
120-mil		—	17.5
135-mil		—	22.5
155-mil		—	30.0
Puncture Resistance, lbf	FTM 101C Method 2031	350 400 425	525 575 600
Brittleness point, max, °F (°C)	ASTM D2137	-40 (-40)	-50 (-46)
Linear Dimensional Change, %	ASTM D1204	± 1 max	-0.2 typical
Field Seam Strength, lbf/in. (kN/m)	ASTM D1876		
ASTM D1876 tested in peel			
120-mil		25 (4.4)	40 (7.4)
135-mil		25 (4.4)	60 (10.5)
155-mil		40 (7.0)	70 (12.3)
Water Vapor Permeance, Perms	ASTM E96 Proc B	—	0.10 max 0.05 typical
Resistance to Microbial Surface Growth, Rating (1 is very poor, 10 is no growth)	ASTM D3274	—	9-10 typical
Properties after heat aging –ASTM D573, 670 hrs at 240°F	ASTM D573		
Breaking strength, % retained		—	90 min
Elongation reinf. % retained		—	90 min
Tearing Strength, % retained		—	60 min
Weight Change, %		—	± 1.0 max
Ozone Resistance 100 pphm, 168 hours	ASTM D1149	No cracks	No cracks
Resistance to Water Absorption After 7 days immersion @ 158°F (70°C)	ASTM D471	+4	+2
Change in mass, max, %			
Resistance to Outdoor (Ultraviolet) Weathering Xenon-Arc, total radiant exposure at 0.70 W/m ² irradiance, 80°C black panel temp.	ASTM G155	No cracks No loss of breaking or tearing strength	No cracks No loss of breaking or tearing strength
120-mil			17,640 kJ/m ²
135-mil			20,160 kJ/m ²
155-mil			27,720 kJ/m ²



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