

VERSIFLEECE® TPO MEMBRANES



Overview

VersiFleece TPO membranes with Octaguard XT™ are manufactured using a hot-melt extrusion process for complete scrim encapsulation. Once the VersiWeld® TPO is reinforced and enhanced with fleece, the total sheet thicknesses available are 100, 115 and 135 mils creating a very tough, durable and versatile sheet that is ideal for re-roofing or new construction projects. VersiFleece TPO sheets are chlorine free and plasticizer free with excellent chemical resistance to acids, bases, restaurant oils and greases.

All VersiFleece TPO membranes utilize OctaGuard XT weathering package technology to withstand extreme durability testing intended to simulate exposure to severe climates. VersiFleece TPO's advanced polymerization technology combines the flexibility of ethylene-propylene (EP) rubber with the heat weldability of polypropylene.

VersiFleece TPO membranes are intended to be used with adhered or mechanically fastened roofing systems. VersiFleece TPO is ideally suited for roof garden and solar panel applications and projects demanding superior wind uplift resistance due to its added toughness and durability. VersiFleece TPO is also a great solution for buildings requiring low noise and odors during roofing application.

Features and Benefits

- Choice of white, gray or tan membranes that are UL Class A rated

- Superior wind uplift performance and ratings (up to an FM 1-945) due to a mechanical bond between fleece and adhesive
- 75% fewer seams than Modified Bitumen
- Wide window of weldability
- Fleece reinforcement adds toughness, durability and enhanced puncture resistance
 - 115-mil membrane delivers 33% greater puncture resistance and 33% greater breaking strength than 60-mil TPO
 - 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

Installation

Insulation is mechanically fastened or adhered with DASH™ Adhesive to the roof deck. When adhering insulation with DASH Adhesive, the adhesive is applied to the substrate and allowed to rise and foam. Once DASH Adhesive develops string/body/gel (typically 1½–2 minutes) place insulation into the adhesive and walk it in. Roll the insulation with a 30"-wide 150-pound weighted roller to ensure full embedment. Extrude DASH Adhesive to the substrate and allow foam to develop string/body/ gel (typically 2 minutes) prior to setting VersiFleece TPO into the DASH Adhesive. Roll VersiFleece TPO membrane with a 30"-wide 150-pound weighted roller to ensure full embedment. Splices are hot-air welded. End laps are butted and sealed with reinforced membrane or a head sheet may be utilized.

REVIEW CURRENT VERSICO SPECIFICATIONS AND DETAILS FOR SPECIFIC INSTALLATION REQUIREMENTS.

Precautions

1. Use proper stacking procedures to ensure sufficient stability.
2. Exercise caution when walking on wet membrane.
3. UV-resistant sunglasses are required for VersiFleece TPO membranes.

4. White surfaces reflect heat and may become slippery due to frost and ice accumulation.
5. Care must be exercised when working close to a roof edge when the surrounding area is snow covered.
6. VersiFleece 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. **DO NOT INSTALL MEMBRANE IF FLEECE IS WET.**
7. VersiFleece TPO membrane exposed to the weather must be prepared with Weathered Membrane Cleaner prior to hot-air welding.

LEED® INFORMATION

Pre-consumer Recycled Content	10%
Post-consumer Recycled Content	0%
Manufacturing Location	Tooele, UT, Senatobia, MS
Solar Reflectance Index	White: 99 Gray: 53 Tan: 86

RADIATIVE PROPERTIES FOR ENERGY STAR®, COOL ROOF RATING COUNCIL (CRRC) AND LEED

Physical Property	Test Method	White	Gray	Tan
ENERGY STAR – Initial solar reflectance	Solar Spectrum Reflectometer	0.79	N/A	0.71
ENERGY STAR – Solar reflectance after 3 years	Solar Spectrum Reflectometer (after cleaning)	0.70	N/A	0.64
CRRC – Initial solar reflectance	ASTM C1549	0.79	0.46	0.71
CRRC – Solar reflectance after 3 years	ASTM C1549 (uncleaned)	0.70	0.43	0.64
CRRC – Initial thermal emittance	ASTM C1371	0.90	0.89	0.86
CRRC – Initial thermal emittance after 3 years	ASTM C1371 (uncleaned)	0.86	0.88	0.87
LEED – Thermal emittance	C1371	0.90	0.89	0.86
Solar Reflectance Index (SRI)	ASTM E1980	99	53	86

VERSICO EXTREME TESTING – HEAT AGING

	ASTM Requirement	VersiFleece TPO Results
ASTM Test	240°F 670 hours or 4 weeks	5,376 hours or 32 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 10°C (18°F) 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)
- Followed by 5,040 kJ/m² (2,000 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.

VERSIFLEECE TPO MEMBRANES

Physical Property	Test Method	SPEC. (Pass)	VersiFleece TPO
Tolerance on Nominal Thickness, %	ASTM D751	+/-10	+/-10
Thickness over Fleece, min			
100-mil (2.54 mm)			.045 (1.14)
115-mil (2.92 mm)			.060 (1.52)
135-mil (3.43 mm)			.080 (2.03)
Weight, lbf/ft ²			
100-mil	—	—	0.27
115-mil	—	—	0.33
135-mil	—	—	0.46
Breaking Strength, min, lbf (kN)	ASTM D751 Grab Method	220 (1)	350 (1.6) 450 (2) 500 (2.2)
Elongation at break of internal fabric, %	ASTM D751	15	25
Tearing Strength, min, lbf (N)	ASTM D751 B Tongue Tear	55 (245)	100 (445)
Puncture Resistance, Joules	ASTM D5635		
100-mil		—	17.5
115-mil		—	22.5
135-mil		—	30.0
Puncture Resistance, lbf	FTM 101C Method 2031		
100-mil		350	450
115-mil		400	500
135-mil		425	525
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			
100-mil		25 (4.4)	50 (8.8)
115-mil		25 (4.4)	60 (10.5)
135-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	ASTM D1149	No cracks	No cracks
100 pphm, 168 hours			
Resistance to Water Absorption	ASTM D471	±3.0	0.90
After 7 days immersion @ 158°F (70°C)			
Change in mass, max, % (one side)			
Resistance to Outdoor (Ultraviolet) Weathering	ASTM G155	No cracks	No cracks
Xenon-Arc, total radiant exposure at 0.70 W/m ² irradiance, 80°C black panel temp.		No loss of breaking or tearing strength	No loss of breaking or tearing strength
100-mil			17,640 kJ/m ²
115-mil			20,160 kJ/m ²
135-mil			27,720 kJ/m ²

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.