

WeatherBond TPO

Fleece Membrane



Overview

WeatherBond TPO Fleece membranes with OctaGuard XT™ are manufactured using a hot-melt extrusion process for complete scrim encapsulation. Once the WeatherBond 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. TPO sheets are chlorine free and plasticizer free with excellent chemical resistance to acids, bases, restaurant oils, and greases.

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

WeatherBond TPO Fleece membranes are intended to be used with adhered or mechanically attached roofing systems. WeatherBond TPO Fleece is ideally suited for roof garden, solar panel applications, and projects demanding superior wind uplift resistance due to its added toughness and durability. WeatherBond TPO Fleece 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



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- 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
- APEEL™ Protective Film application guards the TPO membrane's surface from scuffs and dirt accumulation during installation, improving the roof system's appearance and long-term performance
- APEEL Protective Film can be left in place for up to 90 days without degrading due to its excellent heat- and UV-resistance



Installation

Insulation is mechanically attached or adhered. Spray apply or extrude Flexible DASH™ Adhesive to the substrate and allow foam to “string/body” approximately 1½–2 minutes prior to setting the membrane into the adhesive. Roll the WeatherBond TPO Fleece 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 WEATHERBOND INSTALLATION INSTRUCTIONS 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 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. WeatherBond TPO Fleece 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. WeatherBond TPO Fleece 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 Locations	Tooele, UT; Senatobia, MS
Solar Reflectance Index (SRI)	White: 99, Gray: 53, Tan: 86

Radiative Properties for ENERGY STAR®, Cool Roof Rating Council (CRRC) & 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

Extreme Testing – Heat Aging

ASTM Test	240°F	ASTM Requirement	WeatherBond TPO Results
		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.

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.

TPO Membranes

Physical Property	Test Method	SPEC. (Pass)	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		
100-mil	Grab Method	220 (1)	350 (1.6)
115-mil			450 (2)
135-mil			500 (2.2)
Elongation at break of internal fabric, %	ASTM D751	15	25
Tearing Strength, min, lbf (N)	ASTM D751		
100- & 115-mil, 135-mil	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		
100-mil	Method 2031	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 100 ppm, 168 hours	ASTM D1149	No cracks	No cracks
Resistance to Water Absorption	ASTM D471	±3.0	0.90
After 7 days immersion @ 158°F (70°C)			
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
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



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Single-Ply Simplified

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