

## Get the Royal Edge Advantage with RPI



### RE-FLEX FLEECE-BACK TPO MEMBRANE

#### RPI RE-FLEX TPO MEMBRANES

#### DESCRIPTION

RPI Re-Flex Fleece-Back TPO membrane is manufactured using an extrusion process that completely encapsulates the polyester scrim. The added enhancement of fleece results in available total sheet thicknesses of 100, 115, and 130 mils offering increased hail and puncture resistance. Designed to be installed as part of a premium performance, single ply membrane system that provides a durable, lightweight, puncture and chemical resistant, Energy Star rated alternative to other low slope roofing systems.

Re-Flex TPO provides the benefits of a white reflective membrane that can be installed with RPI Re-Flex Seam Tapes, Flashings and Accessories, or heat welded seams.

#### THE RPI ROYAL EDGE ADVANTAGE

- Available in multiple widths and lengths to accommodate large or small installation requirements.
- Installed using RPI Re-Flex Seam Tapes and Flashings or Heat Welding resulting in a high performance system and ease of installation.
- Highly resistance to outdoor weathering and UV radiant exposure without cracking or crazing.
- Excellent resistance to chemicals, acids, restaurant exhaust, and petroleum based products.
- Reduces carbon footprint by lowering air conditioning costs.
- Re-Flex Fleece-Back TPO membrane provides superior puncture resistance and weathering performance resulting in excellent hail damage resistance meeting a UL 2218 Class 4 hail rating.
- Available with RPI Clean-Start Release Film which protects the field membrane from job-site dirt, stains, and scuffs that may occur during the installation process. Clean-Start Release Film is easily removed upon completion of the installation.
- A complete line of UL and FM approved Re-Flex TPO flashings, adhesives and accessories.

#### APPLICATION INSTRUCTIONS

RPI Re-Flex Fleece-Back TPO is designed to be installed as part of a fully adhered or mechanically attached system using RPI Water Based adhesives, Flashings, Tapes, and other accessories. Refer to RPI Specification Manual for more complete installation details.

#### INSTALLATION PRECAUTIONS

Due to Re-Flex TPO's highly reflective surface, UV filtering sunglasses should be worn during installation.

During wet or cold conditions, extreme caution should be exercised when walking on the membrane. Frost and accumulations of ice and snow may be difficult to detect and will make the surface slippery.

Maintain a clean work area, free of debris. Ice or frost may remain under scraps of membrane causing a hazardous condition. When installation temperatures are at 50° F or falling, the following seaming procedures are required when using RPI Re-Flex Tapes.

1. Using a hot-air gun, warm the primed area of the bottom sheet as the tape is applied and pressed into place.
2. Prior to hand rolling the top sheet seam area into position, apply heat to the top side of the membrane, warming the sheet.  
Caution: The sheet should not be hot to the touch. Do not overheat, burn, or blister the membrane.
3. To ensure complete and proper adhesion in cold weather applications (temperature of 50° F or lower), keep the flashings stored in a warming box until installation. The primed area and flashing membrane may be warmed with a hot- air gun while installing the flashings.

#### APPROVALS

RPI Re-Flex TPO is a .045, .060, .080 mil thermoplastic polyolefin membrane designed to be installed as part of a FM Approved, UL Classified Assembly.

#### Radiative Properties for Energy Star\*

#### Cool Roof Rating Council (CCRC) and LEED

Physical Property	Test Method	White	Tan	Grey
ENERGY STAR Initial solar reflectance	Solar Spectrum Reflectometer	0.79	0.71	N/A
ENERGY STAR Solar Reflectance after 3 yrs.	Solar Spectrum Reflectometer (after cleaning)	0.70	0.64	N/A
CCRC Initial solar reflectance	ASTM C1549	0.79	0.71	0.46
CCRC Solar reflectance after 3 yrs.	ASTM C1549 (uncleaned)	0.70	0.64	0.43
CCRC Initial thermal emittance	ASTM C1371	0.90	0.86	0.89
CCRC Initial thermal emittance after 3 yrs.	ASTM C1371 (uncleaned)	0.86	0.87	0.88
LEED® Thermal emittance	C 1371	0.90	0.86	0.85
SRI-Initial Solar Reflectance Index	ASTM E1980	99	86	53

\* The ENERGY STAR program recommends using the Roof Savings Calculator available at [rsc.enr.com](http://rsc.enr.com) to calculate and determine if a white reflective membrane roof will save or cost you money compared to a dark-colored membrane. The results are dependent upon geographic climate conditions, the building location, and other variables.

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#### MEMBRANE PHYSICAL PROPERTIES

Physical Properties	Test Method	Spec. (Min.)	Fleece Back TPO Typical
Tolerance on Nominal Thickness, %	ASTM D751	± 10	± 10
Thickness Over Fleece, minimum			
100 - mil (2.54 mm)	—	—	.045 (1.114)
115 - mil (2.92 mm)	—	—	.060 (1.52)
135 - mil (3.43 mm)	—	—	.080 (2.03)
Breaking Strength, min. lbf (kN)	ASTM D751 Grab Method	220 (1) 350 (1.6)	450 (2) 500 (92.2)
100 - mil			
115 - mil			
135 - mil			
Elongation break of internal fabric, %	ASTM D751	15	25
Tearing Strength, min. lbf (N)	ASTM D751 B Tongue Tear	55 (245)	100 (445)
100 mil & 115 mil, 135 mil			
Puncture Resistance, Joules	ASTM D5635		
100 mil			17.5
115 mil			22.5
135 mil			30.0
Puncture Resistance, lbf	FTM 101C Method 2031	350 400 425	450 500 525
100 mil			
115 mil			
135 mil			
Brittleness point, max, °F (°C)	ASTM D2137	-40 (-40)	-50 (-46)
Linear Dimensional Change, %	ASTM D1204	± 1 max.	-0.2 typical
Weight, lbf/ft <sup>2</sup>			
100 mil	—	—	0.27
115 mil	—	—	0.33
135 mil	—	—	0.46
Water Vapor Permeance, perms	ASTME96 Proc B		0.10 max 0.05 typical
Resistance to water absorption after 7 days immersion @ 158°F (70°C)	ASTM D471	± 3.0	0.90
Change in mass, max, % (one side)			
Ozone Resistance	ASTM D1149	No Cracks	No Cracks
Field Seam Strength, lbf/in (kN/m) tested in peel	ASTM D1876		
100 mil		25 (4.4)	50 (8.8)
115 mil		25 (4.4)	69 (10.5)
135 mil		40 (7.0)	70 (12.3)
Resistance to Microbial Surface Growth 1 (poor), 10 (no growth)	ASTM D3274	—	9-10 typical
Properties After Heat Aging ASTM D573, 670 hours @ 240°F	ASTM D573		
Breaking strength, % retained		—	90 min
Elongation Reinf. % retained		—	90 min
Tearing Strength, % retained		—	60 min
Weight Change, %			± 1.0 max
Resistance to Outdoor Ultraviolet Weathering Xenon-Arc, total radiant exposure at 0.70 W/m <sup>2</sup> irradiance, 80 C black panel temp.	ASTM G155	No Cracks No loss of breaking strength	No Cracks No loss of breaking strength
100 mil			17,640 kJ/m <sup>2</sup>
115 mil			20,160 kJ/m <sup>2</sup>
135 mil			27,720 kJ/m <sup>2</sup>

#### Xenon-Arc Weather Test

ASTM TEST	Re-Flex TPO Results			
	ASTM D6878 Requirement	45-mil	60-mil	80-mil
kJ/m <sup>2</sup> at 340 nm	10,080	17,640	20,160	27,720

Xenon-arc exposes the membrane samples to the combined effect of UV, visible and infrared radiation as well as ozone, heat and water spray to greatly accelerated the effects of outdoor weathering. The radiation is measured in kilojoules per square meter at 340 nm machine UV wavelength. The irradiance power of the xenon arc lamp is measured in watts per square meter (W/m<sup>2</sup>).

#### Heat Aging Test

ASTM TEST	ASTM Requirement	Re-Flex TPO Requirement
240°F	32 weeks**	52 weeks

\*\*Comparable to 1,024 weeks (20 years at 185°F for 6 hours per day).

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

Criterion - no visible cracks after bending aged test specimen around 0.25" diameter mandrel.

#### AVAILABLE MEMBRANE COLOR

RPI Re-Flex TPO Membrane is available in standard colors of White, Tan, Rock Brown, Patina Green, and Grey. Although some accessories may not be available in all colors, they may be color matched using a custom color paint formula by Sherwin Williams and painted with a high quality satin finish exterior latex paint.

#### RE-FLEX RELEASE CLEAN MEMBRANE

Re-Flex TPO is also available with a Release Clean Film that remains on the membrane protecting against scuffs, dirt, debris, and stains from foot traffic. The film may remain on the membrane for up to 90 days or until the installation is completed protecting the membrane until the contractor peels the film from the membrane.

Release Clean Film is available only for white 60 mil Re-Flex TPO membrane in 6ft. and 10ft. widths by 100ft. lengths.

#### RE-FLEX RELEASE CLEAN QUESTIONS AND ANSWERS:

- Q: Are there installation temperature restrictions when using Re-Flex TPO with Release Clean Film?  
A: There are no temperature restrictions.
- Q: What is the shelf life of the Release Clean Film.  
A: There is no shelf life.
- Q: Does the heat welder affect the film?  
A: On membrane with the overlap line, the film is 1/2" away from the line to prevent contact of the welding nozzle and the film. Do not allow the welder nozzle to come into contact with the Release Clean Film.

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Q: How are the end laps welded?

A: Prior to welding the end laps, remove the release film from several inches of the bottom membrane, exposing the weld area. After the end lap is welded, lay the release film over the welded seam and apply pressure. The film will re-adhere to the membrane.

Q: How do I repair leaks or damage to the membrane that may occur during or before the installation is completed?

A: The film must be peeled back from around the damaged area. Once the repair is completed, the film may be re-adhered to the repaired area.

Important: On installations that require staging of materials and foot traffic from other trades, the Release Clean Film may remain in place for up to 90 days before the roofing contractor removes the film.

#### *PACKAGING*

<b>Widths</b>	<b>Lengths</b>
4 ft. and 6 ft. perimeter sheets	25 ft., 50 ft., and 100 ft. rolls
8 ft., 10 ft., and 12 ft. field sheets	

#### *PRECAUTIONS*

1. When moving/transporting: avoid dragging rolls. Do not allow membrane to come into contact with objects that can puncture, cut, or tear the membrane.
2. Membrane rolls are heavy. Take adequate precautions when moving or positioning and installing.

Refer to Safety Data Sheets (SDS) for safety information and disposal.

#### *RECOMMENDED STORAGE*

1. Before stocking/loading rooftop, check existing structure to ensure dead limitations are not exceeded. Consultation with a structural engineer is recommended.
2. Keep product protected from weather in original wrappers.



See UL Roofing Materials and Systems Directory  
R10073

#### **LEED® Information**

Pre-consumer Recycled Content	10%
Post-consumer Recycled Conte	0%
Manufacturing Location	Carlisle, PA Senatobia, MS Toolel, UT
Solar Reflectance Index (SRI)	White: 99 Tan: 86 Gray: 53

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