



# SA-TPO-c MEMBRANE (Self Adhering)

## **PRODUCT DESCRIPTION**

Mule-Hide SA-TPO-c Membrane is a polyester reinforced .060 or .080 thick, polyolefin based, thermoplastic, heat-weldable membrane laminated to an elastomeric pressure-sensitive adhesive. High breaking strength, tearing strength, and puncture resistance is achieved by encapsulating a strong polyester fabric between the top and bottom plies. All Mule-Hide TPO membranes include the MHP Weathering Package, an industry leading, state of the art weather package that enables Mule-Hide TPO membranes to withstand the extreme weatherability testing which simulates exposure to severe climates. The membrane is environmentally friendly and safe to install with its VOC-free pressure-sensitive adhesive and heat-welded seams.

Revision Date: Jan 2021



## **BASIC USES**

The SA-TPO-c membrane is used in fully adhered roofing systems in new construction, reroofing and recover (retrofit) applications. It may also be used to flash walls and curbs when installing TPO-c membrane roofing systems. The system must be installed over acceptable roof insulation or other suitable substrate. See the Mule-Hide TPO Specifications Manual for complete specifications and details.

## **PRESSURE-SENSITIVE ADHESIVE**

The pressure-sensitive adhesive is a 100%-solid hot-melt adhesive, which virtually eliminates VOC and odor problems associated in other fully adhered systems. The adhesive is factory applied to ensure an even thickness for consistent field performance. One edge of the membrane is uncoated to allow for heat welding of field seams. A silicone-coated release liner provides an easy release from the adhesive.

## **BENEFITS & SUPPLEMENTAL STATEMENTS**

- White is Energy Star qualified, Title-24 compliant and can contribute to LEED credits,
- Factory Mutual, Underwriters Laboratory and CRRC rated
- Improved adhesion formulation for superior bonding to substrates
- Self adhering technology allows for substantial labor savings during installation
- Solvent free, no VOCs or odors
- Double-sided release liner
- Exclusive lay-flat technology
- Enhanced with the MHP Weathering Package

## **PRODUCTIVITY BOOSTING FEATURES & BENEFITS**

- Consistent adhesive application
- No wait time for adhesive flash-off
- Eliminate need to stir adhesive
- Allows for up to 80% labor savings compared to traditional bonding adhesive

## **CODE APPROVALS/COMPLIANCE**

A variety of Factory Mutual Ratings and Underwriters Laboratories Classifications are available. Contact the Mule-Hide Technical Department for additional information.

<b>LEED Information</b>	
Pre-consumer Recycled Content	8%
Post-consumer Recycled Content	0%
Manufacturing Location	Tooele, UT

## SA-TPO-c Membrane (Self Adhering)

**PHYSICAL PROPERTIES AND SPECIFICATIONS**

Physical Properties*	Test Method	Test Value .060	Test Value .080
Nominal thickness with adhesive, in. (mm) 60-mil (adhesive nominal thickness is 0.010)	ASTM D-751	0.070 (1.78)	.090 (2.286)
Thickness over scrim, in. (mm) 60-mil	ASTM D-6878 (avg. of 3 areas)	Typical 0.024 (0.610)	Typical 0.034 (0.864)
Breaking Strength, lbf (kN)	ASTM D-751 (Grab Method)	250 (1.1) min 360 (1.6) typ.	350 (1.6) min 425 (1.9) typ.
Elongation at break of fabric, %	ASTM D-751	25 typical	25 typical
Tear Strength, lbf (N) 8 by 8 in. specimen	ASTM D-751 (B Tongue Tear)	55 (245) min. 130 (578) typical	55 (245) min. 130 (578) typical
Brittleness point, °F (°C)	ASTM D-2137	40 °F (-40 °) max. -50 °F (-46 °) typical	40 °F (-40 °) max. -50 °F (-46 °) typical
Linear Dimensional Change (shrinkage) % change - 6 hours @ 158° F (70° C)	ASTM D-1204	± 0.5 max - 0.2 typ.	± 1 max - 0.2 typ.
Ozone resistance, 100 pphm, 168 hrs.	ASTM D-1149	No Cracks	No Cracks
Resistance to water absorption After 7 days immersion 158°F (70°C) Change in mass, %	ASTM D471 (top surface only)	3.0 max 2.0 typ.	3.0 max 2.0 typ.
Field seam strength, lbf/in. (kN/m) Seams tested in peel	ASTM D-1876	25 (4.4) min. 60 (10.5) typical	40 (7.0) min. 70 (12.3) typical
Resistance to microbial surface growth Rating (1 is very poor, 10 is no growth)	ASTM D3274 2 yr. S. Florida	9-10 typ.	9-10 typ.
Water vapor permeance, Perms	ASTM E-96 proc. B	0.10 max. 0.05 typical	0.10 max. 0.05 typical
Puncture resistance, lbf (N)	FTM 101C Method 2031	300 (1.3) min. 350 (1.6) typical	400 (1.8) min. 450 (2.0) typical
Resistance to xenon-arc weathering <sup>2</sup> Xenon-Arc, 17640 kJ/m <sup>2</sup> total radiant exposure, visual condition at 10 x	ASTM G155 0.70 Wm <sup>2</sup> 80°C B.P.T	No cracks No loss of breaking or tearing strength	No cracks No loss of breaking or tearing strength
Properties After Heat Aging	ASTM D573, 32 weeks @ 240°F or 8 weeks @ 275°F No cracking when bent around 3" diameter mandrel	Pass No cracking	Pass No cracking
Colors Available	N/A	White, Gray, Tan	White

1. Aging conditions are 28 days at 240°F (116°C) equivalent to 400 days at 176°F (80°C) for breaking strength, elongations, tearing strength, ozone and puncture resistance.  
2. Approximately equivalent to 14,000 hours exposure at 0.35 W/m<sup>2</sup> irradiance. B.P.T. is black panel temperature.  
\*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.

**INSTALLATION INSTRUCTIONS**

- SA-TPO membrane is approved for use directly over the following substrates: Mule-Hide Poly ISO roof insulations, Poly ISO 1-HD, Dens Deck Prime, SECUROCK, OSB, plywood, metal and clean concrete block. Contact the Mule-Hide Technical Department with any questions regarding acceptable substrates.
- Installation of Mule-Hide's SA-TPO fully adhered roofing system begins with the insulation/substrate being properly attached in place with an approved insulation adhesive or approved fasteners and plates. Install insulation with its largest dimension perpendicular to the direction of the membrane seams where possible.

- Minimum installation temperature for the Mule-Hide SA-TPO is 50°F.
- Substrate must be thoroughly cleaned prior to application of membrane. Remove all dust and foreign material using a fine push broom or blower. *Note: Priming of the insulation surface is not required.*
- Position sheet in place with proper seam overlap and allow to relax. Position seams to allow water to flow over them.
- Remove the release liner of one half of the sheet starting with the split in the center of the liner. Remove liner at a 45° angle to reduce splitting or tearing.
- Roll membrane onto the substrate while avoiding wrinkles. To achieve the best adhesion, membrane should be rolled at an angle. When installing membrane, maintain a large curve on the leading edge. This will help to avoid creases and bubbles in the membrane. Bubbles and creases built into the membrane cannot be removed.
- Using a minimum 50 pound, segmented roller, roll entire surface of membrane to ensure contact and to promote

# SA-TPO-c Membrane (Self Adhering)

adhesion.

7. Fold back remaining half of sheet and repeat process.

## Heat Welding

1. Refer to System Specification for general heat welding guidelines.
2. Membrane has an uncoated edge along one (long) side of the membrane for heat welding. Adjoining sheets are overlapped a minimum of 2" to provide room for minimum 1 ½" wide heat weld. All seams are to be shingled to avoid bucking of water.
3. At the ends of the rolls, the sheets are butted together and overlaid with a 6" wide strip of standard reinforced membrane that is hot-air welded along all edges. Seal all cut edges of membrane with cut-edge sealant.
4. On projects where a Mule-Hide Standard or Premium Warranty is requested, an authorized Mule-Hide representative shall inspect all completed work. This is only a brief summary and not the complete specification. The Mule-Hide Specifications, Details, Technical Bulletins, and associated documents should be thoroughly reviewed prior to starting any project. Contact Mule-Hide Products for additional information.

## Wall Flashing

1. Walls may be flashed using standard TPO membrane with TPO Bonding Adhesive or with SA-TPO. Review Mule-Hide Specification for installation information.

## PRECAUTIONS

- A static electrical charge may develop when removing the poly release liner from the elastomeric pressure-sensitive adhesive on the back of the TPO sheet. To avoid the possibility of ignition, lid must be closed on any flammable products and a fire extinguisher should be readily available.
- Maximum sustained temperature not to exceed 160°F (71°C) for TPO membrane.
- Use proper stacking procedures to ensure roll stability. Avoid creasing the membrane.
- Surfaces may be slippery when wet, or due to frost and ice build-up. Exercise caution to prevent falls.
- Mule-Hide TPO membranes are highly reflective to sunlight. Workers should dress appropriately, wear sunscreen, and wear sunglasses that filter out UV light.
- Exercise care when working near roof edge as edges may not be visible when surrounding area is covered with snow.
- Store Mule-Hide membrane in original wrappings in a cool, shaded area. Cover with light-colored, breathable, waterproof tarpaulins. Mule-Hide membrane that has been exposed to the elements for approximately 7 days or longer must be prepared with Weathered Membrane Cleaner prior to hot air welding.

## RADIATIVE PROPERTIES FOR ENERGY STAR, Cool Roof Rating Council (CRRC)

DESCRIPTION	TEST METHOD	WHITE TPO-c .060 or .080	Tan TPO-c .060 only	Gray TPO-c .060 only
ENERGY STAR® initial solar reflectance	Solar Spectrum Reflectometer	0.79	0.71	N/A
ENERGY STAR® initial solar reflectance after 3 years (un-cleaned)		0.70	0.64	N/A
CRRC initial solar reflectance	ASTM C1549	0.79	.071	0.46
CRRC solar reflectance after 3 years	ASTM C1549 (un-cleaned)	0.70	0.64	0.43
CRRC initial thermal emittance	ASTM C1371	0.90	0.86	0.89
CRRC thermal emittance after 3 years	ASTM C1371 (un-cleaned)	0.86	0.87	0.88
Solar Reflectance Index (SRI)		99	86	N/A

Solar Reflectance Index (SRI) is calculated per ASTM E 1980. The SRI is a measure of the roof's ability to reject solar heat, as shown by a small temperature rise. It is defined so that a standard black (reflectance 0.05, emittance 0.90) is 0 and a standard white (reflectance 0.80, emittance 0.90) is 100. Materials with the highest SRI values are the coolest choices for roofing. Due to the way SRI is defined, particularly hot materials can even take slightly negative values, and particularly cool materials can even exceed 100.

California Title 24 requires an initial minimum reflectance of 0.70 and emittance of 0.75 as determined by CRRC.

## SUPPLEMENTAL APPROVALS, STATEMENTS AND CHARACTERISTICS

- 1) TPO-c meets and exceeds the requirements of **ASTM D6878** Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing
- 2) TPO-c membranes conform to requirements of the U.S.E.P.A. Toxic Leachate Test (40 CFR part 136) performed by

# SA-TPO-c Membrane (Self Adhering)

---

- an independent analytical laboratory
- 3) TPO-c was tested for dynamic puncture resistance per ASTM D5635 using the most recently modified impact head. It was watertight after an impact energy of 22.5 J (16.6 ft-lbf)

## **PROTECTION & SAFETY**

Mule-Hide maintains Safety Data Sheets on all of its non-exempt products. Safety Data Sheets contain health and safety information for your development of appropriate product handling procedures to protect your employees and customers. Mule-Hide's Safety Data Sheets should be read and understood by all of your supervisory personnel and employees before using Mule-Hide products in your facilities.

## **ADDITIONAL INFORMATION**

The information given on this PDS is subject to change without notice. Always check the Mule-Hide website at [www.mulehide.com](http://www.mulehide.com) for the latest information, changes and updates or contact Mule-Hide Products Company at 800-786-1492.

## **DISCLAIMER**

The statements provided concerning the material shown are intended as a guide for material usage and are believed to be true and accurate at the time of printing. No statement made by anyone may supersede this information, except when done in writing by Mule-Hide Products Co., Inc. Since the manner of use is beyond our control, Mule-Hide does not authorize anyone to make any warranty of merchantability or fitness for any particular purpose or any other warranty, guarantee or representation, expressed or implied, concerning this material. This product may be eligible for a Mule-Hide warranty, please check the Mule-Hide website at [www.mulehide.com](http://www.mulehide.com) or contact Mule-Hide directly at 800-786-1492 for details. Buyer and user accept the product under these conditions and assume the risk of any failure, any injury person or property (including that of the user), loss or liability resulting from the handling, storage or use of the product whether or not it is handled, stored or used in accordance with the directions or specifications. Mule-Hide must be notified in writing of any claims and be given the opportunity to inspect the alleged failure before repairs are made.