Product Evaluation

The following product has been evaluated for compliance with the wind loads specified in the International Residential Code (IRC) and the International Building Code (IBC).

This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.

This product evaluation is intended for use by those individuals who are following the design wind load criteria in Chapter 3 of the IRC and Section 1609 of the IBC. The design loads determined for the building or structure shall not exceed the design load rating specified for the products shown in the limitations section of this product evaluation. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Insurance Code, the Texas Administrative Code, and the Texas Engineering Practice Act.

For more information, contact TDI Engineering Services Program at (800) 248-6032.

Evaluation ID: RC-431

Effective Date: February 1, 2015
Re-evaluation Date: January 2019

Product Name: Mule-Hide TPO-C Over Steel Decks

Manufacturer: Mule-Hide Products Co., Inc.
P.O. Box 1057
Beloit, Wisconsin 53512
Telephone: (800) 786-1492

General Description:
Mule-Hide TPO-c roof membranes are nominal 0.045" thick or thicker flexible TPO (thermoplastic olefin) sheets.

Limitations and Installation:
All IRC and IBC requirements must be satisfied and manufacturer's installation instructions followed, unless otherwise specified by this product evaluation. The roof framing members shall be spaced a maximum of 24" on center.

For all applications: The roof must have a minimum slope of 1/4:12.

TPO Mechanically Attached over Grade C Steel Roof Deck							
Assembly No.	Substrate	Base Insulation Layer(s)		Top Insulation Layer		Roof Cover	
		Type	Attachment	Type	Attach-ment	Membrane	Fasteners
1	Minimum 22-gauge ASTM A 446 Grade C Steel Deck	(Optional) Minimum 1.2" thick Poly ISO 1, Poly ISO 2, or AC Foam II	Loose laid or preliminary attached	(Optional) Minimum 1/4" thick Dens Deck or Dens Deck Prime; or Minimum 1/2" thick Structodeck, Fiber Base or Wood Fiber	Preliminary attached	Mule-Hide TPO-c	Mule-Hide EHD No. 15 fasteners and 2.4" Seam Plates
Design Pressure		Field Seam	Reinforced Universal Secure Strip (RUSS)	Fastener Spacing		Row Spacing*	Maximum Sheet Width**
-52.5		Yes	Yes	6" on center		11'-7"	12'-0"
-60		Yes	Yes	12" on center***		11'-7"	12'-0"
-45		Yes	Yes	12" on center***		7'-7"	8'-0"
-52.5		Yes	Yes	12" on center		3'-6"	4'-0"
-82.5		Yes	N/A	6" on center		3'-6"	4'-0"
Notes:		Field Seam: Fasteners and plates are placed in field seam, overlapped a minimum of 5" and heat-welded. RUSS: RUSS is positioned over insulation at row spacing indicated and attached with roof cover fasteners and plates as indicated. * Row spacing is the maximum allowed for design pressure. Narrower roof spacing/sheets may be used for same design pressure rating. **Maximum sheet width for field seam attachment only. ***Requires use of HP-Xtra Fasteners and Piranha Xtra Plates.					

TPO Mechanically Attached over Grade E (high strength) Steel Roof Deck							
Assembly No.	Substrate	Base Insulation Layer(s)		Top Insulation Layer		Roof Cover	
		Type	Attachment	Type	Attachment	Membrane	Fasteners
2	Minimum 22-gauge ASTM A 446 Grade E Steel Deck	(Optional) Minimum 1.2" thick Poly ISO 1, Poly ISO 2, or AC Foam II	Loose laid or preliminary attached	(Optional) Minimum 1/4" thick Dens Deck or Dens Deck Prime; or Minimum 1/2" thick Structodeck, Fiber Base or Wood Fiber	Preliminary attached	Mule-Hide TPO-c	Mule-Hide EHD No. 15 fasteners and 2.4" Seam Plates

Design Pressure	Field Seam	Reinforced Universal Secure Strip (RUSS)	Fastener Spacing	Row Spacing*	Maximum Sheet Width**
-60	Yes	Yes	6" on center	11'-7"	12'-0"
-45	Yes	Yes	12" on center***	9'-7"	10'-0"
-52.5	Yes	Yes	9" on center	9'-7"	10'-0"
-67.5	Yes	N/A	6" on center	7'-7"	8'-0"
-60	Yes	Yes	6" on center	9'-7"	10'-0"
-82.5	Yes	N/A	6" on center	3'-6"	4'-0"
-112.5	Yes	N/A	6" on center	3'-6"	4'-0"

Notes:

Field Seam: Fasteners and plates are placed in field seam, overlapped a minimum of 5" and heat-welded.

RUSS: RUSS is positioned over insulation at row spacing indicated and attached with roof cover fasteners and plates as indicated. RUSS is adhered to underside of membrane. Any sheet width may be used.

*Row spacing is the maximum allowed for design pressure. Narrower roof spacing/sheets may be used for same design pressure rating.

**Maximum sheet width for field seam attachment only.

***Requires use of HP-Xtra Fasteners and Piranha Xtra Plates.

TPO RHINOBOND Installed Over Steel Roof Decks					
Assembly No.	Substrate	Insulation		Roof Cover	
		Type	Attachment	Membrane	Fasteners
3	Minimum 22 gauge ASTM A 446 Grade E Steel Deck as noted below	Minimum 2" thick Poly ISO 1, Poly ISO 2, or AC Foam II	Attached with roof cover fasteners as shown below. Additional insulation fasteners may be added as required.	Mule-Hide TPO-c	Mule-Hide EHD No. 15 fasteners and RHINOBOND Plates (TPO)
Grade of Steel	Design Pressure	Attachment	Linear Fastener Spacing	Linear Row Spacing	Field Fastener Density
C	-45	Field Attached	N/A	N/A	1 per 5.33 square feet
C	-52.5	Field Attached	N/A	N/A	1 per 4 square feet
E	-37.5	Linear	12" on center	60" on center	N/A
E	-37.5	Linear	6" on center	120" on center	N/A
E	-67.5	Linear	6" on center	60" on center	N/A
E	-60	Field Attached	N/A	N/A	1 per 4 square feet
Notes:		Linear Attached: Roof cover plates and fasteners are installed in rows over insulation. Membrane is induction welded to Rhinobond plates. Linear Row Spacing: Linear row spacing is the maximum allowed for design pressure rating. Narrower row spacing may be used for same rating. Field Attached: Roof cover plates and fasteners are installed over insulation in specified pattern. Membrane is induction welded to Rhinobond plates. Field Fastener Density. The field fastener density is the maximum allowed for design pressure rating. Additional fasteners may be added for the same rating.			

Note: Keep the manufacturer's installation instructions available on the job site during the installation. Use corrosion resistant fasteners as specified in the IRC, the IBC, and the Texas Revisions.