



DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION

MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION
11805 SW 26 Street, Room 208
Miami, Florida 33175-2474
T (786) 315-2590 F (786) 315-2599
www.miamidade.gov/pera

NOTICE OF ACCEPTANCE (NOA)

Mule-Hide Products Co., Inc.
1195 Prince Hall Dr.
Beloit, WI 53511

SCOPE:

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER - Product Control Section to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Section (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein, and has been designed to comply with the Florida Building Code including the High Velocity Hurricane Zone of the Florida Building Code.

DESCRIPTION: Mule-Hide Single Ply TPO Roof Systems over Wood Decks

LABELING: Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

RENEWAL of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

TERMINATION of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

ADVERTISEMENT: The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

INSPECTION: A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This renews NOA# 13-0411.03 and consists of pages 1 through 8.
The submitted documentation was reviewed by Alex Tigera.



NOA No.: 14-0326.03
Expiration Date: 08/31/18
Approval Date: 09/11/14
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ROOFING SYSTEM APPROVAL

Category: Roofing
Sub-Category: Single Ply
Material: TPO
Deck Type: Wood
Maximum Design Pressure -67.5 psf

TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY APPLICANT:

TABLE 1

<u>Product Name</u>	<u>Dimensions</u>	<u>Test Specifications</u>	<u>Product Description</u>
TPO-c	various	TAS 131	Reinforced white or colored TPO membrane.
TPO-c EXTRA	various	TAS 131	Reinforced white or colored TPO membrane.
TPO-c Fleece Back	various	TAS 131	Reinforced white or colored TPO membrane with Fleece backing.
TPO-c FR	various	TAS 131	Reinforced white or colored FR TPO membrane.
Carlisle FAST 100 Adhesive	various	TAS 110	Polyurethane Adhesive
OMG Olybond 500 BA	various	TAS 110	Polyurethane Adhesive
Millennium One-Step Foamable Adhesive	various	TAS 110	Polyurethane Adhesive
Mule-Hide TPO Bonding Adhesive	various	TAS 110	Solvent-based bonding adhesive.
WBBA 2000	various	TAS 110	Water-Based Bonding Adhesive



APPROVED INSULATIONS:

TABLE 2

<u>Product Name</u>	<u>Product Description</u>	<u>Manufacturer (With Current NOA)</u>
Poly ISO 1-NB, Mule-Hide Poly ISO 1	Polyisocyanurate roof insulation.	Mule-Hide Products Co., Inc.
Dens Deck, Dens Deck Prime	Silicon treated gypsum	Georgia Pacific Gypsum Corp.
Wood Fiberboard	Regular wood fiber insulation	Generic
High Density Wood Fiberboard	High Density Wood Fiber insulation board.	Generic
XPS	Extruded polystyrene	Generic
Structodek High Density Fiberboard Insulation	High Density Wood Fiber insulation board.	Blue Ridge Fiberboard, Inc.

APPROVED FASTENERS:

TABLE 3

<u>Fastener Number</u>	<u>Product Name</u>	<u>Product Description</u>	<u>Dimensions</u>	<u>Manufacturer (With Current NOA)</u>
1.	OMG XHD	Insulation and membrane fastener	Various	OMG, Inc.
2.	OMG 2-3/8" Barbed XHD Plate	Barbed Metal plates used for membrane securement with OMG XHD & OMG Super XHD fasteners.	2-3/8" dia	OMG, Inc.
3.	#12 Standard Roofgrip, #14 Roofgrip	Insulation and membrane fastener	Various	OMG, Inc.
4.	#12 Standard Stainless Steel	Stainless steel insulation and membrane fastener	Various	OMG, Inc.
5.	Mule-Hide HDP Fastener	Insulation and membrane fastener	Various	Mule-Hide Products Co., Inc.
6.	Mule-Hide Drill Point Fastener	Insulation and membrane fastener	Various	Mule-Hide Products Co., Inc.
7.	Mule-Hide 3" Insulation Plate	Insulation and membrane fastener	Various	Mule-Hide Products Co., Inc.
8.	Mule-Hide 2.4" Seam Plate	Insulation and membrane fastener	Various	Mule-Hide Products Co., Inc.



EVIDENCE SUBMITTED:

<u>Test Agency</u>	<u>Test Identifier</u>	<u>Description</u>	<u>Date</u>
Architectural Testing Inc.	ATI-37490.01	ASTM D 2137	7/7/00
Factory Mutual Research Corp.	3Z9A1.AM	FMRC Standard 4470	10/15/97
	Approval Guide Excerpt	Wind Uplift Classification Listings	5/00
	Letter	Wind Uplift Classification	5/2/00
	3006110	Class 4470	6/13/01
	3011220	ASTM E 108	8/16/01
Celotex Corporation Testing Services	520257	PA 131-95	4/19/00
SGS U.S. Testing Company Incorporated	131248-R2	ASTM D 1149	1/6/00
Atlantic & Caribbean Roof Consulting, LLC	ACRC 07-059	TAS 114-J	10/23/07
	ACRC 07-051	TAS 114-J	09/05/07
Trinity ERD	C46470.07.14-1A	TAS 131	07/16/14
	C46470.07.14-1B	TAS 131	07/16/14
	C46470.07.14-2A	TAS 131	07/30/14
	C46470.07.14-4-R1	TAS 131	07/21/14



APPROVED ASSEMBLIES

Membrane Type:	Single Ply, Thermoplastic, TPO, Reinforced, Fleece Back
Deck Type 1I:	Wood, Insulated
Deck Description:	¹⁹ / ₃₂ " or greater plywood or wood plank
System Type C(1):	All layers of insulation simultaneously attached; membrane fully adhered.

All General and System Limitations apply. Roof accessories not listed in Table 1 of this NOA are not approved and shall not be installed unless said accessories demonstrate compliance with prescriptive Florida Building Code requirements and are field fabricated utilizing the approved membranes listed in Table 1.

<u>Base Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
One of the following covered with the boards listed in Top Layer or Base or Top Layer. XPS Minimum 1" thick	N/A	N/A

Note: All layers shall be simultaneously fastened; see top layer below for fasteners and density. Insulation panels listed are minimum sizes and dimensions; if larger panels are used, the number of fasteners shall be increased maintaining the same fastener density. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Single and multiple layers of insulation can be attached to base layer with Carlisle FAST 100 Adhesive, OMG Olybond 500, Millennium One-Step Foamable Adhesive.

<u>Base or Top Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
Mule-Hide Poly ISO 1, Poly ISO 1-NB Minimum 1.5" thick Minimum 2" thick	1, 3, 4 1, 5, 6	1:2 ft ² 1:4 ft ²
Structodek High Density Fiber Board Insulation Minimum 1" thick	1, 3, 4, 5, 6	1:2 ft ²
High Density Wood Fiberboard Minimum ³ / ₄ " thick	3, 4, 5, 6	1:2.67 ft ²
Structodek High Density Fiber Board Insulation Minimum ¹ / ₂ " thick	3, 4	1:2 ft ²
Wood Fiberboard Minimum 1" thick	1, 3, 4, 5, 6	1:2 ft ²

<u>Top Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
Required over the insulations listed in Base Layer or optional over any of the insulations listed as Base or Top Layer: Structodek High Density Fiber Board Insulation (for use over all insulation. types) Minimum ¹ / ₂ " thick	1, 5	1:2 ft ²



Note: Insulation panels listed are minimum sizes and dimensions; if larger panels are used, the number of fasteners shall be increased maintaining the same fastener density. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Vapor Retarder: (Optional) Any UL or FM approved vapor retarder applied to the roof deck or over a base layer of insulation.

Barrier: 1/4", 3/8", 1/2", or 5/8" gypsum.

Membrane #1: TPO-c, TPO-c FR, Reinforced, 45 or 60 mil membrane or TPO-c EXTRA, 80 mil membrane fully adhered to the insulation using Mule-Hide TPO Bonding Adhesive applied to the substrate at a rate of 1 gal/60 ft.² (finished surface) or WBBA 2000 bonding adhesive applied to the substrate at a rate of 1 gal/120 ft.²
Maximum Design Pressure –45 psf (See General Limitation #9)

Membrane #2: TPO-c Fleece Back 100 or 115 mil membrane fully adhered to the insulation using WBBA 2000 bonding adhesive applied to the substrate at a rate of 1 gal/120 ft.²
Maximum Design Pressure –45 psf. (See General Limitation #9)

TPO-c Fleece Back 100 or 115 mil membrane fully adhered to the insulation using Carlisle FAST 100 Adhesive applied to the substrate at a rate of 1 gal/sq.
Maximum Design Pressure –45 psf. (See General Limitation #9)

Maximum Design Pressure: See Membrane Options Above



Membrane Type: Single Ply, Thermoplastic, TPO, Reinforced, Fleece Back
Deck Type II: Wood, Insulated
Deck Description: ¹⁹/₃₂" or greater plywood or wood plank
System Type D(1): Membrane mechanically attached over preliminarily fastened insulation.

All General and System Limitations apply. Roof accessories not listed in Table 1 of this NOA are not approved and shall not be installed unless said accessories demonstrate compliance with prescriptive Florida Building Code requirements and are field fabricated utilizing the approved membranes listed in Table 1.

<u>Insulation Layer</u>	<u>Insulation Fasteners (Table 3)</u>	<u>Fastener Density/ft²</u>
Mule-Hide Poly ISO 1 Minimum 1.5" thick	N/A	N/A

Note: All layers of insulation and base sheet shall be simultaneously attached. See base sheet below for fasteners and density. Refer to Roofing Application Standard RAS 117 for insulation attachment requirements. Insulation shall have preliminary attachment, prior to the installation of the roofing membrane. At an application rate of two fasteners per board for insulation boards having no dimension greater than 4 ft., and four fasteners for any insulation board having no dimension greater than 8 ft.

Vapor Retarder: (Optional) Any UL or FM approved vapor retarder applied to the roof deck or over a base layer of insulation.

Barrier: ¹/₄", ³/₈", ¹/₂", or ⁵/₈" gypsum.

Membrane: TPO-c, TPO-c FR, TPO-c EXTRA, Reinforced, secured through the preliminarily attached insulation as specified below.

Fastening #1: OMG XHD fasteners with OMG 2-3/8" Barbed XHD Plates 6" o.c. through the membrane in the 5 1/2" side lap in rows spaced 6' o.c. followed by applying a 1 1/2" wide heat weld.
Maximum Design Pressure -67.5 psf. (See General Limitation #7)

Fastening #2: OMG XHD fasteners with OMG 2-3/8" Barbed XHD Plates 6" o.c. through the membrane in the 5 1/2" side lap in rows spaced 8' o.c. followed by applying a 1 1/2" wide heat weld.
Maximum Design Pressure -52.5 psf. (See General Limitation #7)

Maximum Design Pressure: See Membrane Options Above



WOOD DECK SYSTEM LIMITATIONS:

- 1 A slip sheet is required with Ply 4 and Ply 6 when used as a mechanically fastened base or anchor sheet.

GENERAL LIMITATIONS:

1. Fire classification is not part of this acceptance, refer to a current Approved Roofing Materials Directory for fire ratings of this product.
2. Insulation may be installed in multiple layers. The first layer shall be attached in compliance with Product Control Approval guidelines. All other layers shall be adhered in a full mopping of approved asphalt applied within the EVT range and at a rate of 20-40 lbs./sq., or mechanically attached using the fastening pattern of the top layer
3. All standard panel sizes are acceptable for mechanical attachment. When applied in approved asphalt, panel size shall be 4' x 4' maximum.
4. An overlay and/or recovery board insulation panel is required on all applications over closed cell foam insulations when the base sheet is fully mopped. If no recovery board is used the base sheet shall be applied using spot mopping with approved asphalt, 12" diameter circles, 24" o.c.; or strip mopped 8" ribbons in three rows, one at each sidelap and one down the center of the sheet allowing a continuous area of ventilation. Encircling of the strips is not acceptable. A 6" break shall be placed every 12' in each ribbon to allow cross ventilation. Asphalt application of either system shall be at a minimum rate of 12 lbs./sq.

Note: Spot attached systems shall be limited to a maximum design pressure of -45 psf.

5. Fastener spacing for insulation attachment is based on a Minimum Characteristic Force (F') value of 275 lbf., as tested in compliance with Testing Application Standard TAS 105. If the fastener value, as field-tested, are below 275 lbf. insulation attachment shall not be acceptable.
6. Fastener spacing for mechanical attachment of anchor/base sheet or membrane attachment is based on a minimum fastener resistance value in conjunction with the maximum design value listed within a specific system. Should the fastener resistance be less than that required, as determined by the Building Official, a revised fastener spacing, prepared, signed and sealed by a Florida Registered Engineer, Architect, or Registered Roof Consultant may be submitted. Said revised fastener spacing shall utilize the withdrawal resistance value taken from Testing Application Standards TAS 105 and calculations in compliance with Roofing Application Standard RAS 117.
7. Perimeter and corner areas shall comply with the enhanced uplift pressure requirements of these areas. Fastener densities shall be increased for both insulation and base sheet as calculated in compliance with Roofing Application Standard RAS 117 and/or RAS 137. Calculations prepared, signed and sealed by a Florida registered Professional Engineer, Registered Architect, or Registered Roof Consultant **(When this limitation is specifically referred within this NOA, General Limitation #9 will not be applicable.)**
8. All attachment and sizing of perimeter nailers, metal profile, and/or flashing termination designs shall conform with Roofing Application Standard RAS 111 and applicable wind load requirements.
9. The maximum designed pressure limitation listed shall be applicable to all roof pressure zones (i.e. field, perimeters, and corners). Neither rational analysis, nor extrapolation shall be permitted for enhanced fastening at enhanced pressure zones (i.e. perimeters, extended corners and corners). **(When this limitation is specifically referred within this NOA, General Limitation #7 will not be applicable.)**
- 10 All membranes or packaging shall bear the imprint or identifiable marking of the manufacturer's name or logo and the following statement: "Miami-Dade County Product Control Approved" or the Miami-Dade County Product Control Seal as shown below.



11. All products listed herein shall have a quality assurance audit in accordance with the Florida Building Code and Rule 61G20-3 of the Florida Administrative Code.

END OF THIS ACCEPTANCE



NOA No.: 14-0326.03
Expiration Date: 08/31/18
Approval Date: 09/11/14
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