MIAMI-DADE

BUILDING CODE COMPLIANCE OFFICE (BCCO)
PRODUCT CONTROL DIVISION

MIAMI-DADE COUNTY, FLORIDA
METRO-DADE FLAGLER BUILDING
140 WEST FLAGLER STREET, SUITE 1603
MIAMI, FLORIDA 33130-1563
(305) 375-2901 FAX (305) 375-2908

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 by Miami-Dade County Product Control Division and accepted by the Board of Rules and Appeals (BORA) 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 Division (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. BORA reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Division 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.

DESCRIPTION: Mule-Hide Single-Ply TPO Roof Systems over Cementitious Wood Fiber 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 and revises NOA 03-0708.07 and consists of pages 1 through 10.
The submitted documentation was reviewed by Alex Tigera.

MIAMI-DADE COUNTY APPROVED

ROOFING SYSTEM APPROVAL

Category:	Roofing
Sub-Category:	Single Ply
Material:	TPO
Deck Type:	Cementitous Wood Fiber
Maximum Design Pressure	-120 psf
Fire Classification:	See General Limitation #1

TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY APPLICANT:

TABLE 1

Product Name	Dimensions	Test Specifications	Product Description
TPO-c Fleece Back	various	TAS 131	Reinforced white or colored TPO membrane with fleece backing.
TPO-c Fleece Back Plus	Various	TAS 131	Reinforced white or colored TPO membrane with fleece backing.
TPO-c, TPO-c EXTRA	various	TAS 131	Reinforced white or colored TPO membrane.
TPO-c FR	various	TAS 131	Reinforced white or colored FR TPO membrane.
Sure-Weld Bonding Adhesive	various	TAS 110	Solvent-based bonding adhesive.
Mule-Hide TPO Bonding Adhesive	various	TAS 110	Solvent-based bonding adhesive.
Aqua Base 120 Bonding Adhesive	Various	TAS 110	Water-based bonding adhesive
WBBA 2000 Adhesive	Various	TAS 110	Water-based bonding adhesive
Cold Applied Adhesive	Various	TAS 110	Asphalt-modified Polyether adhesive

APPROVED INSULATIONS:

TABLE 2

Product Name	Product Description	Manufacturer (With Current NOA)
Hy Therm, Pyrox, White Line	Isocyanurate Insulation	Apache Products Co.
ACFoam Composite	Isocyanurate Insulation with perlite facer	Atlas Roofing Corp.
ACFoam I, ACFoam II	Isocyanurate Insulation	Atlas Roofing Corp.
Poly ISO 2 Composite	Isocyanurate Insulation with perlite facer	Mule-Hide Products Co., Inc.
Poly ISO 2	Isocyanurate Insulation	Mule-Hide Products Co., Inc.
Polyisocyanurate HP, HP-N, HP-W	Polyisocyanurate roof insulation.	Carlisle Syntec, Inc.

APPROVED INSULATIONS:

TABLE 2

Product Name	Product Description	Manufacturer (With Current NOA)
Polyisocyanurate HP-H, HP-WF, HP-NB	Polyisocyanurate roof insulation.	Carlisle Syntec, Inc.
Sure-Seal HP Recovery Board	High Density Wood Fiberboard.	Carlisle Syntec, Inc.
Sure-Seal EPS/Fiberboard	High Density Wood Fiberboard bonded to EPS.	Carlisle Syntec, Inc.
Carlisle Foamular 150, 250, 400, 404, 600	Extruded Polystyrene insulation	Carlisle Syntec, Inc.
Carlisle Foamular Durapink-FA Insulation	Extruded Polystyrene for white or black adhered system.	Carlisle Syntec, Inc.
Carlisle Foamular Durapink Insulation	Extruded Polystyrene for white or black mechanically fastened roof systems.	Carlisle Syntec, Inc.
Carlisle Foamular ½" Board	Extruded Polystyrene recovery board.	Carlisle Syntec, Inc.
Sure Seal EPS Insulation	Expanded Polystyrene.	Carlisle Syntec, Inc.
Styrofoam	Extruded polystyrense insulation	Dow
Dens Deck	Silicon treated gypsum	G-P Products
Ultra/M-II II Iso/glas	Polyisocyanurate foam insulation	Homasote Co.
ENRGY 2, ENERGY PSI-25	Isocyanurate Insulation	Johns Manville
Fesco Foam	Isocyanurate Insulation with perlite facer	Johns Manville
Wood Fiberboard	Regular wood fiber insulation	Generic
High Density Wood Fiberboard	High Density Wood Fiber insulation board.	Generic
Perlite Insulation Board	Perlite Insulation	Generic
Type X Gypsum	Gypsum Wallboard	Generic
XPS	Extruded polystyrene	Generic
Structodeck	High Density Wood Fiber insulation board.	Masonite
Multi-Max FA	Isocyanurate Insulation	Rmax, Inc.
Fiber Base	Asphalt coated wood fiber insulation	Temple Inland Forest Products Corp.

APPROVED FASTENERS:

TABLE 3

Fastener Number	Product Name	Product Description	Dimensions	Manufacturer (With Current NOA)
1.	Sure-Seal HP Lightweight	Insulation fastener for cementitious and gypsum decks	Various	Carlisle Syntec, Inc.
2.	Sure-Seal HP Lightweight	Metal plates used for membrane securement with Carlisle HP fasteners.	3" dia	Carlisle Syntec, Inc.
3.	Sure-Seal HP Locking Seam Plates	Metal plates with plastic inserts used for membrane securement with fasteners.	2" dia	Carlisle Syntec, Inc.
4.	Sure-Seal Polymer Seam Plates	Plastic plates used for membrane securement with fasteners.	2" dia	Carlisle Syntec, Inc.
5.	Lite-Deck Fasteners	Insulation fastener for cementitious and gypsum decks	Various	Olympic Mfg. Group
6.	NTB Magnum	Insulation fastener for cementitious and gypsum decks	Various	Olympic Mfg. Group
7.	GTL Fastener	Insulation fastener for cementitious and gypsum decks with a 3" round head plate.	Various	Olympic Mfg. Group
8.	Lite-Deck Plate	3" round Galvalume AZ55 stress plate	3" round	Olympic Mfg. Group
9.	NTB Plate	3" round Galvalume AZ55 stress plate	3" round	Olympic Mfg. Group
10.	NTB Metal Barbed Stress Plate	2" round Galvalume AZ55 stress plate	2" round	Olympic Mfg. Group
11.	NTB Plastic Plate	Plastic plates for NTB 2" head fasteners.	3" round	Olympic Mfg. Group
12.	Powerlite	Insulation fastener for cementitious and gypsum decks	Various	Powers Fasteners Inc.
13.	Powerlite	3" round Galvalume AZ55 stress plate	3" round	Powers Fasteners Inc.

EVIDENCE SUBMITTED:

Test Agency	Test Identifier	Description	Date
Architectural Testing Inc.	ATI-37490.01	Membrane Brittleness Testing	7/7/00
Factory Mutual Research Corp.	3Z9A1.AM	Wind Uplift Classification	10/15/97
Factory Mutual Research Corp.	Approval Guide Excerpt	Wind Uplift Classification	5/00
Factory Mutual Research Corp.	3003337	Class 4470	06/11/99
Factory Mutual Research Corp.	3011220	Class 4470	08/16/01
Factory Mutual Research Corp.	3012879	Class 4470	04/04/03
Factory Mutual Research Corp.	30013584	Class 4470	
Celotex Corporation Testing Services	520257	Membrane Physical Property Testing	4/19/00
SGS U.S. Testing Company Incorporated	131248-R2	Membrane Ozone Resistance Testing	1/6/00

APPROVED ASSEMBLIES

Membrane Type: Single Ply, Thermoplastic, TPO, Reinforced, Fleece Back

Deck Type 5I: Cementitious Wood Fiber, Insulated

Deck Description: Minimum 2" thick Tectum Panel secured to ¼" thick supports at a maximum spacing of 3ft o.c. secured with two #14 Dekfast fasteners and 2" diameter metal plates per panel per support.

System Type A: One or more layers of insulation adhered with approved asphalt or Olybond 500BA. Membrane fully adhered.

All General and System Limitations apply.

Insulation Layer	Insulation Fasteners (Table 3)	Fastener Density/ft^2
ENRGY-2, PSI-25, ACFoam II, Poly ISO 1, PYROX, Polyisocyanurate HP, HP-H, HP-N, HP-W Minimum 1" thick	**N/A**	**N/A**

Note: All insulation shall be adhered to the deck in full mopping of approved asphalt within the EVT range and at a rate of 20-40 lbs/100 ft^2. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

Vapor Retarder: None.

Barrier: None.

Membrane fastening Option #1: TPO-c Fleece Back 100 or 115 mil membrane fully adhered to the insulation using WBBA 2000 adhesive applied to the substrate at a rate of 1 gal/120 ft.^{2}

Maximum Design Pressure: -120 psf. (See General Limitation #9)

Membrane fastening Option #2: TPO-c or TPO-c FR, Reinforced, 45 or 60 mil membrane or TPO-c EXTRA, 72 or 80 mil membrane fully adhered to the insulation using TPO Bonding Adheisve applied to the substrate at a rate of 1 gal/60 ft^2, or WBBA 2000 adhesive applied to the substrate at a rate of 1 gal/60 ft.^{2}

Maximum Design Pressure: -90 psf. (See General Limitation #9)

Membrane fastening Option #3:	TPO-c Fleece Back Plus membrane fully adhered to the insulation in a full mopping of approved asphalt applied within the EVT range and at a rate of 20-25 lbs./sq. or Cold Applied Adhesive applied to the substrate at a rate of 1 gal/67 ft.^{2}
Maximum Design Pressure:	-45 psf. (See General Limitation #9)

Membrane Type: Single Ply, Thermoplastic, TPO, Reinforced, Fleece Back

Deck Type 5I: Cementitious Wood Fiber, Insulated

Deck Description: Cementitious wood fiber

System Type C: All layers of insulation simultaneously fastened; membrane fully adhered.

All General and System Limitations apply.

Base Insulation Layer	**Insulation Fasteners (Table 3)**	**Fastener Density/ft²**
One of the following covered with the boards listed in Top Layer or Base or Top Layer.		
Extruded Polystyrene, Energy-Lok, ACFoam-II, Poly ISO 2 **Minimum 1" thick**	**N/A**	**N/A**
Perlite **Minimum ¾" 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.

Base or Top Insulation Layer	**Insulation Fasteners (Table 3)**	**Fastener Density/ft²**
Ultra/M-II Iso/glas **Minimum 1.2" thick**	**1, 5, 6, 7 or 12**	**1:2 ft²**
ENRGY-2, PSI-25, WHITELINE, PYROX, AP, Polyisocyanurate HP **Minimum 1.4" thick**	**1, 5, 6, 7 or 12**	**1:2 ft²**
AC FOAM II, Poly ISO 2, ACFoam Composite, Poly ISO 2 Composite, Rhoflex Composite, Fesco Foam, Polyisocyanurate HP-W **Minimum 1.5" thick**	**1, 5, 6, 7 or 12**	**1:2 ft.²**
Sturdi Top, HP Recovery, Fiber Base **Minimum ½" thick**	**1, 5, 6, 7 or 12**	**1:2ft²**
High Density Fiberboard **Minimum ¾" thick**	**1, 5, 6, 7 or 12**	**1:2 ft²**
Wood Fiber **Minimum 1" thick**	**1, 5, 6, 7 or 12**	**1:2 ft²**

Top Insulation Layer	**Insulation Fasteners (Table 3)**	**Fastener Density/ft²**
Required over the insulations listed in Base Layer or optional over any of the insulations listed as Base or Top Layer: **HP Recovery** (for use over all insulation. types) **Fiber Base** (for use over polyisocyanurate, gypsum or perlite) **Minimum ½" thick**	**1, 5, 6, 7 or 12**	**1:2 ft²**

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 Retarders:	(Optional) Any UL or FMRC approved vapor retarder applied to the roof deck or over a base layer of insulation.
Barrier:	None.
Membrane #1:	TPO-c or TPO-c FR, Reinforced, 45 or 60 mil membrane or TPO-c EXTRA, 72 or 80 mil membrane fully adhered to the insulation using Mule-Hide TPO Bonding Adhesive or Sure-Weld Bonding Adhesive applied to the substrate at a rate of 1 gal/60 ft.^{2} or WBBA 2000 adhesive applied to the substrate at a rate of 1 gal/60 ft.^{2}
Membrane #2:	TPO-c Fleece Back 100 or 115 mil membrane fully adhered to the insulation using WBBA 2000 adhesive applied to the substrate at a rate of 1 gal/120 ft.^{2}
Membrane #3:	TPO-c Fleece Back Plus membrane fully adhered to the insulation in a full mopping of approved asphalt applied within the EVT range and at a rate of 20-25 lbs./sq. or Cold Applied Adhesive applied to the substrate at a rate of 1 gal/67 ft.^{2}
Maximum Design Pressure:	-45 psf (See General Limitation #9)

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.

MIAMI-DADE COUNTY APPROVED

11. All products listed herein shall have a quality assurance audit in accordance with the Florida Building Code and Rule 9B-72 of the Florida Administrative Code.

END OF THIS ACCEPTANCE