



**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 Self-Adhering Modified Bitumen Roof System Over Recover 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 consists of pages 1 through 12.

The submitted documentation was reviewed by Frank Zuloaga, RRC



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ROOFING ASSEMBLY APPROVAL

<u>Category:</u>	Roofing
<u>Sub-Category:</u>	Modified Bitumen
<u>Materials</u>	SBS/APP/TPO
<u>Deck Type:</u>	Recover
<u>Maximum Design Pressure</u>	-45 psf
<u>Fire Classification:</u>	See General Limitation #1

TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY APPLICANT:

TABLE 1

<u>Product</u>	<u>Dimensions</u>	<u>Test Specification</u>	<u>Product Description</u>
SA-SBS Cap Sheet FR	32' 6" x 3' 3-3/8"	ASTM D 6164	Self-adhered, polyester reinforced, SBS modified bitumen membrane with a self-adhering back face and a granule top surface.
SA-SBS Cap Sheet	32' 6" x 3' 3-3/8"	ASTM D 6164	Self-adhered, polyester reinforced, SBS modified bitumen membrane with a self-adhering back face and a granule top surface.
SA-APP Cap Sheet (G) (FR)	32' 6" x 3' 3-3/8"	ASTM D 6222	Self-adhered, polyester reinforced, APP modified bitumen membrane with a self-adhering back face and a granule top surface.
SA-APP Cap Sheet (G)	32' 6" x 3' 3-3/8"	ASTM D 6222	Self-adhered, polyester reinforced, APP modified bitumen membrane with a self-adhering back face and a granule top surface.
SA-APP Cap Sheet (S)	32' 6" x 3' 3-3/8"	ASTM D 6222	Self-adhered, polyester reinforced, APP modified bitumen membrane with a self-adhering back face and a smooth or sanded top surface.
SA Base Sheet (FR)	65' 6" x 3' 3-3/8"	ASTM D 6163	Self-adhered, fiberglass reinforced, SBS modified bitumen membrane with a self-adhering back face and a smooth top surface.
SA Base Sheet	65' 6" x 3' 3-3/8"	ASTM D 6163	Self-adhered, fiberglass reinforced, SBS modified bitumen membrane with a self-adhering back face and a smooth top surface.
Nail Base	65' 6" x 3' 3-3/8"	ASTM D 6163	Self-adhered, fiberglass reinforced, SBS modified bitumen membrane with a self-adhering back face and a smooth top surface.
Elastoflex SA-V (G) FR	32' 6" x 3' 3-3/8"	ASTM D 6163	Self-adhered, fiberglass reinforced, SBS modified bitumen membrane with a self-adhering back face and a granule top surface.
Elastoflex SA-V (G)	32' 6" x 3' 3-3/8"	ASTM D 6163	Self-adhered, fiberglass reinforced, SBS modified bitumen membrane with a self-adhering back face and a granule top surface.



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APPROVED INSULATIONS:

TABLE 2

Product Name	Product Description	Manufacturer (With Current NOA)
Polytherm	Polyisocyanurate foam insulation	Polyglass USA, Inc.
Polytherm Composite	Polyisocyanurate/perlite composite insulation.	Polyglass USA, Inc.
Poly ISO 2	Polyisocyanurate foam insulation	Mule-Hide Products Co., Inc.
Poly ISO 2 Composite	Polyisocyanurate/perlite composite insulation	Mule-Hide Products Co., Inc.
ACFoam II	Polyisocyanurate foam insulation	Atlas Energy Products
ConPearl	Expanded perlite mineral fiber	Conglas
Esgard Fiberboard	Wood fiber board	EMCO Ltd.
GAF Permalite	Expanded mineral fiber	GAF Mat. Corp.
GAF Fiberboard	Wood fiber board	GAF Mat. Corp.
High Density Wood Fiberboard	Wood fiber insulation board	Generic
Perlite Insulation	Perlite insulation board	Generic
Dens-Deck	Gypsum insulation board	Georgia-Pacific
Armor Board Regular Fiberboard	Wood fiber board	Honeywell Int'l. Inc.
Armor Board High Density Wood Fiberboard	Wood fiber insulation board	Honeywell Int'l. Inc.
Hubert Fiberboard	Wood fiber board	Huebert Fiberboard, Inc.
ENRGY-2	Polyisocyanurate foam insulation	Johns Manville Corp.
Fesco Board	Expanded mineral fiber	Johns Manville Corp.
Kop-R Wood Fiber	Polyisocyanurate foam insulation	Koppers Industries, Inc.
Structodek, Structodek FS	Wood fiber board	Masonitec



APPROVED FASTENERS:

TABLE 3

Fastener Number	Product Name	Product Description	Dimensions	Manufacturer (With Current NOA)
1.	Polygrip Fasteners #14 & #15	Insulation fastener for wood, steel and concrete decks		Polyglass USA, Inc.
2.	Polygrip Hex Plate	Galvalume hex stress plate.	2 7/8" x 3-1/4"	Polyglass USA, Inc.
3.	Polygrip 2-1/2" Membrane Plate	Galvalume barbed stress plate	2.5" round	Polyglass USA, Inc.
4.	Dekfast Fasteners #14 & #15	Insulation fastener for wood, steel and concrete decks		Construction Fasteners Inc.
5.	HWH Dekfast Fasteners	Insulation fastener for wood, and steel decks		Construction Fasteners Inc.
6.	Omega Fasteners	Insulation fastener for wood, and steel decks		Construction Fasteners Inc.
7.	Dekfast Hex Plate	Galvalume hex stress plate.	2 7/8" x 3 1/4"	Construction Fasteners Inc.
8.	Dekfast Autoset Plate	Galvalume stress plate.	2-7/8" x 3-1/4"	Construction Fasteners Inc.
9.	Dekfast 2 1/2" HS membrane Plate	Galvalume stress plate.	2.5" round	Construction Fasteners Inc.
10.	#14 & #15 Roofgrip Fasteners	Insulation fastener for wood, steel and concrete decks.		ITW Buildex Corp.
11.	Metal Plate	Galvalume stress plate.	3" round 3" square	ITW Buildex Corp.
12.	2-3/8" Round Barbed Seam Plates	Galvalume stress plate.	2-3/8" round	ITW Buildex Corp.
13.	#14 HD Insul-Fixx Fastener	Insulation fastener for wood, steel and concrete decks		SFS Stadler, Inc.
14.	Extra Load Fasteners	Insulation fastener for wood, steel and concrete decks		SFS Stadler, Inc.
15.	Insul-Fixx S Plate	Galvalume AZ50 steel plate	3" round	SFS Stadler, Inc.
16.	IF-2.375 Plates	Galvalume AZ55 steel plate	2.37" round	SFS Stadler, Inc.



APPROVED FASTENERS:

TABLE 3

Fastener Number	Product Name	Product Description	Dimensions	Manufacturer (With Current NOA)
17.	IF/IFT-70x70 Plates	Galvalume steel plate	2.75" square	SFS Stadler, Inc.
18.	TruFast DP, TP, HD, EHD & CF Fasteners	Insulation and membrane fasteners for wood, steel and concrete decks		TruFast Corp.
19.	TruFast Insulation Plates	Galvalume steel plates	3" round 3.23" round 2" round barbed	TruFast Corp.
20.	Mule-Hide DP, TP, HD, EHD & CF Fasteners	Insulation and membrane fasteners for wood, steel and concrete decks		Mule-Hide Products Co., Inc.
21.	Mule-Hide Insulation and Membrane Plates	Galvalume Steel Plates	3" round 3.23" round 2" round barbed	Mule-Hide Products Co., Inc.

EVIDENCE SUBMITTED:

<u>Test Agency/Identifier</u>	<u>Report No.</u>	<u>Date</u>
Factory Mutual Research Corporation	J.I. 2W7A7.AM	08.04.94
	J.I. 3001334	02.15.00
	J.I. 3000857	01.12.00
	J.I. 3004091	01.12.00
Exterior Research & Design, LLC.	#11752.09.99-1	02.08.00



APPROVED ASSEMBLIES:

- Deck Type 7I:** Recover
- Deck Description:** Concrete / Steel
- System Type B:** Base layers of insulation mechanically fastened, top layer fully adhered with approved asphalt.

All General and System limitations apply.

One or more layers of any of the following insulations:

Base Insulation Layer	Insulation Fasteners (Table 3)	Fastener Density/ft²
H-Shield, H-Shield P, Polytherm or Polytherm Composite P Minimum 1.5" thick	1, 4, 5, 6, 18* or 21*	1:4 ft²

Note: Base layers of insulation shall be mechanically attached using the fastener density listed. The 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. Insulation fasteners shall be tested for withdrawal resistance in compliance with Protocol TAS 105 to confirm compliance with the wind load requirements. Please refer to Roofing Application Standard RAS 117 for insulation attachment.

*** Must be HD, CF or EHD fasteners**

Top Insulation Layer	Insulation Fasteners (Table 3)	Fastener Density/ft²
Fesco Board Minimum 3/4" thick	N/A	N/A

Note: Optional top layer of insulation shall be adhered with approved hot asphalt within the EVT range and at a rate of 20-40 lbs/100 ft². Please refer to Roofing Application Standard RAS 117 for insulation attachment. Composite insulation boards used as a top layer shall be installed with the polyisocyanurate face down.

- Base Sheet:** (Optional if using self-adhered membranes noted below) One ply of Nail Base adhered in a full mopping of approved asphalt applied within the EVT range and at a rate of 20-40 lbs./sq.
- Ply Sheet:** (Optional) One or more plies of SA Base Sheet (FR) or SA Base Sheet self adhered to the base sheet or to a listed polyisocyanurate layer (no coverboard).
- Membrane:** One ply of SA-SBS Cap Sheet (FR), SA-SBS Cap Sheet, SA-APP Cap Sheet (G) (FR), SA-APP Cap Sheet (G), SA-APP Cap Sheet (S), Elastoflex SA V (G) (FR) or Elastoflex V (G) self adhered.



Surfacing:

(Optional) Install one of the following to obtain required fire classification.

1. Gravel or slag at 400 lbs/sq or 300 lbs/sq, respectively, in a flood coat of approved asphalt at 60 lbs/sq.
2. Karnak 97 Fibrated Aluminum Asphalt Roof Coating or Asbestos Free Aluminum Roof Coating at 1½ gal/sq.
3. Kokem Products Sunguard Acrylic Roof Coating at 1 gal/sq.
4. Monsey Endure Aluminum Roof Coating, Weather Check or Pro-Grade Aluminum Roof Coating at 1½ gal/sq.
5. Grundy al MB Aluminum Roof Coating at 1-2 gal/sq.
6. Fields F350 Heat Shield Aluminum Coating or F630 Heat Shield Fibrated Aluminum Coating at 1½ gal/sq.

Maximum Design
Pressure:

-45 psf; (See General Limitation #9.)



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Deck Type 7I: Recover

Deck Description: Concrete / Steel

System Type D(1): All layers of insulation and base sheet simultaneously attached.

All General and System limitations apply.

One or more layers of any of the following insulations:

Insulation Layer	Insulation Fasteners (Table 3)	Fastener Density/ft²
ACFoam II, Multi-Max FA, POLYTHERM A1, H-Shield, Tapered H-Shield, Therमारoof Composite, Polytherm Composite Minimum 1.5" thick	N/A	N/A
Fiberbond Minimum 5/8" thick	N/A	N/A
Armor Board Regular Fiberboard, Armor Board High Density Fiberboard, Esgard Fiberboard Roof Insulator, Fiberboard, High Density Fiberboard, Traffic Top Fiberboard, GAFTEMP Fiberboard, GAFTEMP High Density Fiberboard, Huebert Fiberboard, Kop-R Wood Fiber, Fiber Base HD1, Fiber Base HD6, Structodek Minimum 1/2" thick	N/A	N/A
ConPerl, GAFTEMP Permalite, Permalite or Fesco Board Minimum 3/4" thick	N/A	N/A
Standard or Wide Flute Armor-R Glass, Standard or Wide Flute Fiberglas Roof Insulation, Standard or Wide Flute Fiber Glass Roof Insulation Minimum 15/16" thick	N/A	N/A

Note: Top layer shall have preliminary attachment, prior to installation of the base sheet, 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. All layers of insulation and base sheet shall be simultaneously fastened. See base sheet below for fasteners and density.

Base Sheet: One ply of Nail Base fastened to the deck as described below:

Fastening: Attach base sheet using Mule-Hide Insulation Plates and Mule-Hide Fasteners, CF Dekfast Hex Plates or Dekfast Autoset Plates with #14 Dekfast fasteners or Isofast IF/IG-70x70 plates with Isofast IF2 fasteners (steel only) spaced 12" o.c. in a 4" lap and 18" o.c. in two equally spaced staggered rows in the center of the sheet. Fasteners shall penetrate through the existing roof to the structural deck.

Ply Sheet: (Optional) One or more plies of SA Base Sheet or SA Base Sheet (FR) self adhered.

Membrane: One ply of SA-SBS Cap Sheet (FR), SA-SBS Cap Sheet, SA-APP Cap Sheet (G) (FR), SA-APP Cap Sheet (G), SA-APP Cap Sheet (S), Elastoflex SA V (G) (FR) or Elastoflex V (G) self adhered.



Surfacing:

- (Optional) Install one of the following to obtain required fire classification.
1. Gravel or slag at 400 lbs/sq or 300 lbs/sq, respectively, in a flood coat of approved asphalt at 60 lbs/sq.
 2. Karnak 97 Fibrated Aluminum Asphalt Roof Coating or Asbestos Free Aluminum Roof Coating at 1½ gal/sq.
 3. Kokem Products Sunguard Acrylic Roof Coating at 1 gal/sq.
 4. Monsey Endure Aluminum Roof Coating, Weather Check or Pro-Grade Aluminum Roof Coating at 1½ gal/sq.
 5. Grundy al MB Aluminum Roof Coating at 1-2 gal/sq.
 6. Fields F350 Heat Shield Aluminum Coating or F630 Heat Shield Fibered Aluminum Coating at 1½ gal/sq.

Maximum Design
Pressure:

-45 psf; (See General Limitation #9.)



Deck Type 7: Recover

Deck Description: Concrete / Steel

System Type E(1): Base sheet mechanically attached.

All General and System limitations apply.

Base Sheet: One ply of Nail Base fastened to the deck as described below:

Fastening: Attach base sheet using Mule-Hide DP, HD (steel) or CF, HD (concrete) Fasteners and Mule-Hide Insulation Plates, CF Dekfast Hex Plates or Dekfast Autoset Plates with #14 Dekfast fasteners or Isofast IF/IG-70x70 plates with Isofast IF2 fasteners (steel only) spaced 12" o.c. in a 4" lap and 18" o.c. in two equally spaced staggered rows in the center of the sheet. Fasteners shall penetrate through the existing roof to the structural deck.

Ply Sheet: (Optional) One or more plies of SA Base Sheet (FR) or SA Base Sheet self adhered.

Membrane: One ply of SA-SBS Cap Sheet (FR), SA-SBS Cap Sheet, SA-APP Cap Sheet (G) (FR), SA-APP Cap Sheet (G), SA-APP Cap Sheet (S), Elastoflex SA V (G) (FR) or Elastoflex V (G) self adhered.

Surfacing: (Optional) Install one of the following to obtain required fire classification.

1. Gravel or slag at 400 lbs/sq or 300 lbs/sq, respectively, in a flood coat of approved asphalt at 60 lbs/sq.
2. Karnak 97 Fibrated Aluminum Asphalt Roof Coating or Asbestos Free Aluminum Roof Coating at 1½ gal/sq.
3. Kokem Products Sunguard Acrylic Roof Coating at 1 gal/sq.
4. Monsey Endure Aluminum Roof Coating, Weather Check or Pro-Grade Aluminum Roof Coating at 1½ gal/sq.
5. Grundy al MB Aluminum Roof Coating at 1-2 gal/sq.
6. Fields F350 Heat Shield Aluminum Coating or F630 Heat Shield Fibered Aluminum Coating at 1½ gal/sq.

Maximum Design Pressure: -45 psf; (See General Limitation #9.)



Deck Type 7: Recover

Deck Description: Concrete / Steel

System Type F(1): Optional base sheet fully adhered with approved asphalt.

All General and System Limitations apply.

Note: Existing smooth roof surface shall be primed with ASTM D 41 asphalt primer and allowed to dry prior to application of base sheet.

Base Sheet: (Optional) One ply of Nail Base adhered in a full mopping of approved asphalt applied within the EVT range and at a rate of 20-40 lbs./sq.

Ply Sheet: (Optional) One or more plies of SA Base Sheet (FR) or SA Base Sheet self-adhered.

Membrane: One ply of SA-SBS Cap Sheet (FR), SA-SBS Cap Sheet, SA-APP Cap Sheet (G) (FR), SA-APP Cap Sheet (G), SA-APP Cap Sheet (S), Elastoflex SA V (G) (FR) or Elastoflex V (G) self adhered.

Surfacing: (Optional) Install one of the following to obtain required fire classification.

1. Gravel or slag at 400 lbs/sq or 300 lbs/sq, respectively, in a flood coat of approved asphalt at 60 lbs/sq.
2. Karnak 97 Fibrated Aluminum Asphalt Roof Coating or Asbestos Free Aluminum Roof Coating at 1½ gal/sq.
3. Kokem Products Sunguard Acrylic Roof Coating at 1 gal/sq.
4. Monsey Endure Aluminum Roof Coating, Weather Check or Pro-Grade Aluminum Roof Coating at 1½ gal/sq.
5. Grundy al MB Aluminum Roof Coating at 1-2 gal/sq.
6. Fields F350 Heat Shield Aluminum Coating or F630 Heat Shield Fibrated Aluminum Coating at 1½ gal/sq.

Maximum Design Pressure: -45 psf; (See General Limitation #9.)

RECOVER SYSTEM LIMITATIONS:

- 1 All System Limitations and General Limitations shall apply. See specific deck type Notice of Acceptance for deck type System Limitations.



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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 Professional Engineer, Registered 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. 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 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



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