



NEMO | etc.

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ENGINEER

EVALUATE

TEST

CONSULT

P.E. EVALUATION REPORT (PEER)

Mule-Hide Products Co., Inc.

1195 Prince Hall Drive, Suite A
Beloit, WI 53511
(608) 365-3111

PEER-MHPLYG-002.B.R1

FL41940-R1 (HVHZ)

Date of Issuance: 02/13/2023

Revision 1: 10/05/2023

SCOPE:

This P.E. Evaluation Report (henceforth 'PEER') is issued under F.A.C. [Rule 61G20-3](#) and the applicable rules and regulations governing the use of construction materials in the State of Florida. The documentation submitted has been reviewed by Robert Nieminen, P.E. for use of the product under the Florida Building Code and Florida Building Code, Residential Volume. The products described herein have been evaluated for compliance with the **8th Edition (2023) Florida Building Code, High Velocity Hurricane Zone** [sections noted herein](#).

DESCRIPTION: Mule-Hide Roof Underlayments (HVHZ)

LABELING: Labeling shall be in accordance with the requirements the Accredited Quality Assurance Agency noted herein and FBC 1518.2.

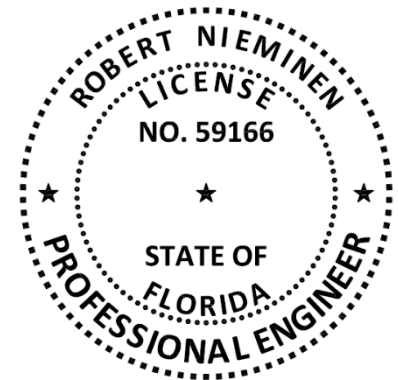
CONTINUED COMPLIANCE: This PEER is valid until such time as the named product(s) changes, the referenced Quality Assurance or production facility location(s) changes, or Code provisions that relate to the product(s) change. Acceptance of our PEERs by the named client constitutes agreement to notify NEMO ETC, LLC of any changes to the product(s), the Quality Assurance, or the production facility location(s). NEMO ETC, LLC requires a complete review of its PEER relative to updated Code requirements with each Code Cycle.

ADVERTISEMENT: The Florida Product Approval Number (FL#) preceded by the words "NEMO P.E. Evaluated" may be displayed in advertising literature. If any portion of the PEER is displayed, then it shall be done in its entirety.

INSPECTION: Upon request, a copy of this entire PEER 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 PEER consists of pages 1 through 9.

Prepared by:



CERTIFICATION OF INDEPENDENCE:

1. NEMO ETC, LLC does not have, nor does it intend to acquire or will it acquire, a financial interest in any company manufacturing or distributing products it evaluates.
2. NEMO ETC, LLC is not owned, operated or controlled by any company manufacturing or distributing products it evaluates.
3. Robert Nieminen, P.E. does not have nor will acquire, a financial interest in any company manufacturing or distributing products for which the PEERs are being issued.
4. Robert Nieminen, P.E. does not have, nor will acquire, a financial interest in any other entity involved in the approval process of the product.
5. This is a building code evaluation. Neither NEMO ETC, LLC nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this PEER, or previous versions thereof, is/was used for permitting or design guidance unless retained specifically for that purpose.

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ROOFING COMPONENT EVALUATION:
1. SCOPE:
Product Category: Roofing

Sub-Category: Underlayment

Product Approval Method: Method 1, Option D – Codified Material, Evaluation by Engineer

Compliance Statement: Mule-Hide Roof Underlayments, as produced by Mule-Hide Products Co., Inc., have demonstrated compliance with the following sections of the 8th Edition (2023) Florida Building Code, High Velocity Hurricane Zone through testing in accordance with the following Standards. Compliance is subject to the [Installation Requirements](#) and [Limitations of Use](#) set forth herein.

2. STANDARDS:

SECTION	PROPERTY	STANDARD	YEAR
RAS 115, TAS 110	Material standard	ASTM D226	2017
TAS 110	Material standard	ASTM D1970	2017
TAS 110	Material standard	TAS 103	2020 (from 2023 Code)
TAS 110	Material standard	ASTM D6163	2016
TAS 110	Material standard	ASTM D6222	2016
TAS 110	Accelerated Weathering	ASTM D4798	2011
1515.2.4	Impact Resistance	ASTM D3746	2015

3. REFERENCES:

ENTITY	EXAMINATION	REFERENCE	DATE
Nemo	PEER	PEER-PLYG-002.B.R10	09/08/2023
NEMO	Traceability	FBC Cross-Listing Agreement	02/13/2023
UL (QUA9625)	Quality Control	Service Confirmation	02/07/2023

4. PRODUCT DESCRIPTION:

TABLE 1: EVALUATED UNDERLAYMENTS			
PRODUCT	MATERIAL STANDARD	PLANT(S)	DESCRIPTION
Nail Base	ASTM D6163	FL	Fiberglass-reinforced, SBS modified bitumen base sheet
APP Torch G Premier	ASTM D6222 TAS 103 (partial)	FL	Polyester-reinforced, APP modified bitumen cap sheet
APP Torch G FR Premier	ASTM D6222 TAS 103 (partial)	FL	Polyester-reinforced, APP modified bitumen cap sheet
SA-APP Cap Sheet	ASTM D6222 TAS 103 (partial)	FL, TX	Polyester-reinforced, APP modified bitumen cap sheet
SA-APP Cap Sheet FR	ASTM D6222 TAS 103 (partial)	FL, TX	Polyester-reinforced, APP modified bitumen cap sheet
Shur-Gard MU Force HT	ASTM D1970 TAS 103	FL, NV, PA, TX	Nominal 60-mil thick rubberized asphalt waterproofing membrane, glass fiber reinforced, surfaced with poly-film surface
Shur-Gard TU Ultra HT	ASTM D1970 TAS 103	FL, PA, TX	Nominal 60-mil thick rubberized asphalt waterproofing membrane with a 190 g/m ² polyester fabric surface
Shur-Gard TU Force HT	ASTM D1970 TAS 103	FL, PA, TX	Nominal 80-mil thick rubberized asphalt waterproofing membrane, glass fiber reinforced, with a polyester fabric surface

5. LIMITATIONS:

- 5.1 This is a building code evaluation. Neither NEMO ETC, LLC nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this PEER, or previous versions thereof, is/was used for permitting or design guidance. PEERs are not to be construed as representing any attributes not specifically listed, nor are PEERs to be construed as an endorsement of the subject, or a recommendation for its use. There is no warranty by NEMO ETC, LLC or Robert Nieminen, P.E., express or implied, as to any finding or other matter in this PEER, or as to any product covered by the PEER.
- 5.2 This PEER is exclusively for use in FBC High Velocity Hurricane Zone jurisdictions, as defined in FBC Chapter 2 (Broward and Miami-Dade Counties).
- 5.3 This PEER pertains to above-deck roof components. Roof decks and structural members shall be in accordance with FBC requirements to the satisfaction of the Authority Having Jurisdiction.
- 5.4 This PEER does not include evaluation of fire classification. Refer to **FBC 1516** for requirements and limitations regarding roof assembly fire classification. Refer to **FBC 2603** for requirements and limitations concerning the use of foam plastic insulation.
- 5.5 **Mule-Hide Roof Underlayments** may be used with any prepared roof cover where the product is specifically referenced within FBC approval documents. If not listed, a request may be made to the Authority Having Jurisdiction for approval based on this evaluation combined with supporting data for the prepared roof covering.
- 5.6 Allowable Roof Covers:

TABLE 2: ROOF COVER OPTIONS						
<u>FBCHVHZ:</u>	<i>RAS 115 1518.2.1</i>	<i>RAS 118, 119 & 120</i>		<i>RAS 133 1518.2.1</i>	<i>1518.2.1</i>	<i>RAS 130 1518.10</i>
UNDERLAYMENT	ASPHALT SHINGLES	CLAY AND CONCRETE TILE		METAL	SLATE OR SLATE- TYPE SHINGLES	WOOD
		MECHANICAL ATTACH	ADHESIVE-SET			
Nail Base	Yes (Alternate to D226, Type II)	Yes (as Base Sheet, See Section 6)	Yes (as Base Sheet, See Section 6)	Yes (Alternate to D226, Type II)	Yes (Alternate to D226, Type II)	Yes (Alternate to D226, Type II)
APP Torch G Premier	No	Yes	No	No	No	No
APP Torch G FR Premier	No	Yes	No	No	No	No
SA-APP Cap Sheet	No	Yes	Yes (Table 2A)	No	No	No
SA-APP Cap Sheet FR	No	Yes	No	No	No	No
Shur-Gard MU Force HT	Yes	Yes	No	Yes	Yes	Yes (Valley Liner)
Shur-Gard TU Ultra HT	No	Yes	Yes (Table 2A)	Yes	No	Yes (Valley Liner)
Shur-Gard TU Force HT	Yes	Yes	Yes (Table 2A)	Yes	Yes	Yes (Valley Liner)

- 5.6.1 Adhesive-set tile is limited to use of the following underlayment / tile-adhesive combinations.

TABLE 2A: ALLOWABLE UNDERLAYMENT / TILE-ADHESIVE COMBINATIONS ¹					
UNDERLAYMENT	TILE-ADHESIVE OPTIONS AND FLORIDA HVHZ PRODUCT APPROVAL				
	DAP GLOBAL		DUPONT DE NEMOURS	ICP CONSTRUCTION	
	STORMBOND	STORMBOND 2	TILE BOND	POLYSET AH-160	POLYSET RTA-1
	NOA 21-0928.04	NOA 22-0512.02	FL22525 & NOA 22-0614.05	NOA 22-0614.10	NOA 22-0614.08
SA-APP Cap Sheet	No	No	No	Yes	No
Shur-Gard TU Ultra HT	No	Yes	Yes	Yes	No
Shur-Gard TU Force HT	No	Yes	Yes	Yes	Yes

¹ Refer to Tile Manufacturer's or Adhesive Manufacturer's Florida Product Approval or NOA for Overturning Moment Resistance Performance.

5.7 Allowable Substrates:

TABLE 3: SUBSTRATE OPTIONS FOR ADHERED UNDERLAYMENTS				
UNDERLAYMENT	APPLICATION	SUBSTRATES (TO MEET WIND LOADS FOR PROJECT)		
		TYPE	PRIMER	MATERIAL(S)
Shur-Gard MU Force HT, Shur-Gard TU Ultra HT, Shur-Gard TU Force HT, SA-APP Cap Sheet or SA-APP Cap Sheet FR	self-adhering	Deck / sheathing	(Optional) ASTM D41	Plywood or Southern Yellow Pine (SYP)
			ASTM D41	structural concrete
		Base Sheet	N/A	ASTM D226, Type II felt, Nail Base
APP Torch G Premier or APP Torch G FR Premier	torch-applied	Deck	ASTM D41	structural concrete
		Base Sheet	N/A	Nail Base

5.8 Attachment Limitations:

5.8.1 Refer to [Section 6](#) for codified prescriptive systems.

5.8.2 Refer to Tables [4A](#) and [4B](#) for underlayment systems which have documented compliance with Section 7 of [TAS 103](#). The Maximum Design Pressure is the result of testing for wind load resistance based on allowable wind loads, and reflects the ultimate passing pressure divided by 2 (the 2 to 1 margin of safety has already been applied). No extrapolation or rational analysis is permitted for assemblies marked with an asterisk*.

TABLE 4A: ALLOWABLE DESIGN PRESSURES, DIRECT-TO-DECK UNDERLAYMENT						
SYSTEM No.	DECK	PRIMER	JOINT TREATMENT	BASE PLY	CAP PLY	MDP (PSF)
UDL-1.	New: Plywood, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category Reroof: Plywood, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	(Optional) 121 Asphalt Primer or ASTM D41	Min. 4-inch wide strips of SA Base Sheet over all plywood joints	(Optional) Shur-Gard MU Force HT, self-adhered and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	SA-APP Cap Sheet, SA-APP Cap Sheet FR, Shur-Gard TU Ultra HT, Shur-Gard TU Force HT or Shur-Gard MU Force HT, self-adhered and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	-135.0
UDL-2.	New: Plywood, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category Reroof: Plywood, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	None	None	None	Shur-Gard TU Ultra HT, Shur-Gard TU Force HT or Shur-Gard MU Force HT, self-adhered and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	-165.0
UDL-3.	New: Plywood, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category Reroof: Plywood, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	(Optional) 121 Asphalt Primer at 0.5 gal/sq.	None	Shur-Gard MU Force HT, self-adhered and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	Shur-Gard TU Ultra HT, Shur-Gard TU Force HT or Shur-Gard MU Force HT, self-adhered and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	-202.5
UDL-4.	New: Plywood, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category Reroof: Plywood, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	121 Asphalt Primer at 0.5 gal/sq.	None	None	Shur-Gard TU Ultra HT, Shur-Gard TU Force HT or Shur-Gard MU Force HT, self-adhered and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	-255.0

**TABLE 4A: ALLOWABLE DESIGN PRESSURES,
DIRECT-TO-DECK UNDERLAYMENT**

SYSTEM No.	DECK	PRIMER	JOINT TREATMENT	BASE PLY	CAP PLY	MDP (PSF)
UDL-5.	Structural concrete	121 Asphalt Primer or ASTM D41	None	(Optional) Shur-Gard MU Force HT, self-adhered and back-nailed using FBC HVHZ approved fasteners and plates, max. 12-inch o.c.	SA-APP Cap Sheet, SA-APP Cap Sheet FR, Shur-Gard TU Ultra HT, Shur-Gard TU Force HT or Shur-Gard MU Force HT, self-adhered and back-nailed using FBC HVHZ approved fasteners and plates, max. 12-inch o.c.	-202.5
UDL-6.	Structural concrete	121 Asphalt Primer or ASTM D41	None	None	APP Torch G Premier, torch-applied and back-nailed using FBC HVHZ approved fasteners and plates, max. 12-inch o.c.	-622.5

**TABLE 4B: ALLOWABLE DESIGN PRESSURES,
2-PLY UNDERLAYMENT SYSTEMS**

SYSTEM No.	DECK	BASE SHEET		BASE PLY	CAP PLY	MDP (PSF)
		TYPE	ATTACH			
UDL-7.	Plywood , APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category	Nail Base	11 ga. x 1.25-inch long x 3/8-inch head diameter annular ring shank roofing nails with 32 ga., 1-5/8-inch diameter tin caps; 8-inch o.c. at the 4-inch wide side laps and 8-inch o.c. at three (3) equally spaced staggered center rows.	None	APP Torch G Premier, torch-applied and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	-60.0
UDL-8.	Plywood , APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category	Nail Base	OMG #12 Standard Roofgrip with OMG Flat Bottom Metal Plates (NOA 23-0718.03); 12-inch o.c. at the 4-inch wide side laps and 12-inch o.c. at two (2) equally spaced staggered center rows.	None	APP Torch G Premier, torch-applied and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	-60.0
UDL-9.	New: Plywood, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category Reroof: Plywood, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	Nail Base	Simplex MAXX Cap Fasteners (NOA 18-1227.05); 6-inch o.c. at the 2-inch wide side laps and 6-inch o.c. at two (2) equally spaced staggered center rows.	None	APP Torch G Premier, torch-applied and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	-90.0
UDL-10.	New: Plywood, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category Reroof: Plywood, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	Nail Base	OMG #12 Standard Roofgrip or OMG #14 Heavy Duty with OMG 3" Round Metal Plates or OMG AccuTrac Flat Bottom Metal Plates (NOA 23-0718.03); 6-inch o.c. at the 4-inch wide side laps and 6-inch o.c. at three (3) equally spaced staggered center rows.	None	APP Torch G Premier, torch-applied and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	-90.0
UDL-11.	Plywood , APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category	Nail Base	11 ga. x 1.25-inch x 3/8-inch head diameter annular ring shank roofing nails with 32 ga., 1-5/8-inch diameter tin caps; 4-inch o.c. at the 4-inch wide side laps and 4-inch o.c. at four (4) equally spaced staggered center rows.	(Optional) Shur-Gard MU Force HT, self-adhered and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	SA-APP Cap Sheet, SA-APP Cap Sheet FR, Shur-Gard TU Ultra HT, Shur-Gard TU Force HT or Shur-Gard MU Force HT, self-adhered and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	-97.5

**TABLE 4B: ALLOWABLE DESIGN PRESSURES,
2-PLY UNDERLAYMENT SYSTEMS**

SYSTEM NO.	DECK	BASE SHEET		BASE PLY	CAP PLY	MDP (PSF)
		TYPE	ATTACH			
UDL-12.	New: Plywood, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category Reroof: Plywood, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	Nail Base	Simplex MAXX Cap Fasteners (NOA 18-1227.05); 6-inch o.c. at the 2-inch wide side laps and 6-inch o.c. at three (3) equally spaced staggered center rows.	None	APP Torch G Premier, torch-applied and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	-105.0
UDL-13.	Plywood , APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category	Nail Base	11 ga. x 1.25-inch x 3/8-inch head diameter annular ring shank roofing nails with 32 ga., 1-5/8-inch diameter tin caps; 6-inch o.c. at the 4-inch wide side laps and 6-inch o.c. at four (4) equally spaced staggered center rows. 121 Asphalt Primer or ASTM D41 primer at all tin-caps.	Shur-Gard MU Force HT, self-adhered and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	SA-APP Cap Sheet, SA-APP Cap Sheet FR, Shur-Gard TU Ultra HT, Shur-Gard TU Force HT or Shur-Gard MU Force HT, self-adhered and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	-112.5
UDL-14.	New: Plywood, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category Reroof: Plywood, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category	Nail Base	OMG #12 Standard Roofgrip or OMG #14 Heavy Duty with OMG 3" Round Metal Plates or OMG AccuTrac Flat Bottom Metal Plates (NOA 23-0718.03); 6-inch o.c. at the 4-inch wide side laps and 6-inch o.c. at five (5) equally spaced staggered center rows.	None	APP Torch G Premier, torch-applied and back-nailed using 12 ga. x 1¼" ring shank nails through 32 ga., 1-5/8" diameter tin caps spaced 12-inch o.c.	-120.0

5.9 Exposure Limitations:

TABLE 5: EXPOSURE LIMITATIONS		
UNDERLAYMENT	PREPARED ROOF COVER INSTALLATION TYPE	MAXIMUM EXPOSURE (DAYS)
Nail Base	Mechanically attached	30
Shur-Gard MU Force HT or Shur-Gard TU Ultra HT	Any type (per Table 2)	180
Shur-Gard TU Force HT	Any type (per Table 2)	360
SA-APP Cap Sheet	Adhesive-set tile roof system	180
APP Torch G Premier, APP Torch G FR Premier, SA-APP Cap Sheet or SA-APP Cap Sheet FR	Mechanically attached	UNLIMITED

5.10 Tile Slippage Limitations: When loading roof tiles on the underlayment, the maximum roof pitch shall be as follows. These pitch limitations can only be exceeded by using battens during loading of the roof tiles.

TABLE 6: TILE SLIPPAGE LIMITATIONS			
UNDERLAYMENT	TILE PROFILE	STAGING METHOD	MAXIMUM STAGING PITCH
APP Torch G Premier or APP Torch G FR Premier	Flat or Lugged	6-tile stack (4 over 2)	4:12
SA-APP Cap Sheet or SA-APP Cap Sheet FR	Flat or Lugged	6-tile stack (4 over 2)	4:12
Shur-Gard MU Force HT	Flat	6-tile stack (4 over 2)	5:12
	Lugged	6-tile stack (4 over 2)	4:12
Shur-Gard TU Ultra HT	Flat	6-tile stack (4 over 2) or 10-tile stack	7:12
	Lugged	6-tile stack (4 over 2)	7:12
	Lugged	10-tile stack	6:12
Shur-Gard TU Force HT	Flat or Lugged	6-tile stack (4 over 2)	7:12
	Flat or Lugged	10-tile stack	6:12

6. INSTALLATION:

- 6.1 **Mule-Hide Roof Underlayments** shall be installed in accordance with **Mule-Hide** published installation instructions subject to the Limitations set forth in [Section 5](#) herein and the specifics noted below.
- 6.1.1 Consult Mule-Hide requirements for back-nailing at pitch 2:12 or greater.
- 6.1.2 All fabric-surfaced, aggregate-surfaced and granule-surfaced end-laps shall have a 6-inch wide, uniform layer of 241 Premium Modified Flashing Cement, 421 Mod Bit Adhesive – Trowel Grade, 251 Premium Wet/Dry Elastomeric Flashing Cement or RGA 1 Flashing Cement applied within the end-lap.
- 6.2 Re-fasten any loose decking panels, and check for protruding nail heads. Sweep the substrate thoroughly to remove any dust and debris prior to application, and prime the substrate (if applicable).
- 6.3 Refer to Section 6.4 for underlayments having prescriptive codified minimum attachment or Tables [4A](#) and [4B](#) for underlayment systems having maximum design pressures, determined in accordance with Section 7 of [TAS 103](#).

6.4 Assemblies with Prescriptive Minimum Attachment:

6.4.1	DECK TYPE 1:	Wood, Non-Insulated
	DECK DESCRIPTION:	Min. 19/32" plywood or wood plank
	SYSTEM TYPE E:	Underlayment mechanically fastened to deck
	UNDERLAYMENT:	One or more plies of Nail Base with a minimum 4-inch side lap and 6-inch end lap, mechanically fastened to deck.
	FASTENING:	FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5), 6-inch o.c. at the lap-edges and 12-inch o.c. in a grid-pattern between the overlaps.
	SURFACING:	Refer to Table 2 .
6.4.2	DECK TYPE 1:	Wood, Non-Insulated
	DECK DESCRIPTION:	Min. 19/32" plywood or wood plank
	SYSTEM TYPE E:	Base sheet mechanically fastened to deck; underlayment adhered to base sheet
	BASE SHEET:	One or more plies of Nail Base or FBC HVHZ Approved ASTM D226, Type II felt with a minimum 4-inch side lap and 6-inch end lap, mechanically fastened to deck.
	FASTENING:	FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5), 6-inch o.c. at the lap-edges and 12-inch o.c. in a grid-pattern between the overlaps.
	BASE PLY:	(Optional) Shur-Gard MU Force HT, self-adhering and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5)
	CAP PLY:	Shur-Gard MU Force HT, Shur-Gard TU Ultra HT or Shur-Gard TU Force HT, self-adhering and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5).
	SURFACING:	Refer to Table 2 . Refer to Table 6 for tile staging limitations.
6.4.3	DECK TYPE 1:	Wood, Non-Insulated
	DECK DESCRIPTION:	Min. 19/32" plywood or wood plank
	SYSTEM TYPE E:	Base sheet mechanically fastened to deck; underlayment adhered to base sheet
	BASE SHEET:	One or more plies of Nail Base or FBC HVHZ Approved ASTM D226, Type II felt with a minimum 4-inch side lap and 6-inch end lap, mechanically fastened to deck.
	FASTENING:	FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5), 6-inch o.c. at the lap-edges and 12-inch o.c. in a grid-pattern between the overlaps.
	CAP PLY:	APP Torch G Premier or APP Torch G FR Premier torch-applied or SA-APP Cap Sheet FR, self-adhering and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5).
	SURFACING:	Refer to Table 2 . Refer to Table 6 for tile staging limitations.

6.4.4	DECK TYPE 1:	Wood, Non-Insulated
	DECK DESCRIPTION:	Min. 19/32" plywood or wood plank
	SYSTEM TYPE E:	Base sheet mechanically fastened to deck; underlayment adhered to base sheet
	BASE SHEET:	One or more plies of Nail Base with a minimum 3-inch side lap and 6-inch end lap, mechanically fastened to deck.
	FASTENING:	Simplex MAXX Cap Fastener (NOA 18-1227.05), 8-inch o.c. at the lap-edges and 8-inch o.c. in three (3) equally spaced, staggered center rows.
	PRIMER:	121 Asphalt Primer or ASTM D41 primer applied to stress plates
	BASE PLY:	(Optional) Shur-Gard MU Force HT, self-adhering and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5)
	CAP PLY:	Shur-Gard MU Force HT, Shur-Gard TU Ultra HT, Shur-Gard TU Force HT, SA-APP Cap Sheet or SA-APP Cap Sheet FR, self-adhering and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5).
	SURFACING:	Refer to Table 2 . Refer to Table 6 for tile staging limitations.
6.4.5	DECK TYPE 1:	Wood, Non-Insulated
	DECK DESCRIPTION:	Min. 19/32" plywood or wood plank
	SYSTEM TYPE E:	Base sheet mechanically fastened to deck; underlayment adhered to base sheet
	BASE SHEET:	One or more plies of Nail Base with a minimum 2-inch side lap and 6-inch end lap, mechanically fastened to deck.
	FASTENING:	Simplex MAXX Cap Fastener (NOA 18-1227.05), 9-inch o.c. at the lap-edges and 18-inch o.c. in two (2) equally spaced, staggered center rows.
	CAP PLY:	APP Torch G Premier or APP Torch G FR Premier torch-applied and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5).
	SURFACING:	Refer to Table 2 . Refer to Table 6 for tile staging limitations.
6.4.6	DECK TYPE 1:	Wood, Non-Insulated
	DECK DESCRIPTION:	Min. 19/32" plywood or wood plank
	SYSTEM TYPE E:	Base sheet mechanically fastened to deck; underlayment adhered to base sheet
	BASE SHEET:	One or more plies of Nail Base or FBC HVHZ Approved ASTM D226, Type II felt with a minimum 4-inch side lap and 6-inch end lap, mechanically fastened to deck.
	FASTENING:	FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5), 6-inch o.c. at the lap-edges and 12-inch o.c. in a grid-pattern between the overlaps.
	BASE PLY:	(Optional) Shur-Gard MU Force HT, self-adhering and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5)
	CAP PLY:	Shur-Gard TU Ultra HT, Shur-Gard TU Force HT or SA-APP Cap Sheet, self-adhering and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5).
	SURFACING:	FBC HVHZ Approved adhesive-set tile roof system. Refer to Table 2A for allowable tile adhesives. Refer to Table 6 for tile staging limitations.

6.4.7	DECK TYPE 1:	Wood, Non-Insulated
	DECK DESCRIPTION:	Min. 19/32" plywood or wood plank
	SYSTEM TYPE E:	Base sheet mechanically fastened to deck; underlayment adhered to base sheet
	BASE SHEET:	One or more plies of Nail Base with a minimum 4-inch side lap and 6-inch end lap, mechanically fastened to deck.
	FASTENING:	Simplex MAXX Cap Fastener (NOA 18-1227.05), 8-inch o.c. at the lap-edges and 8-inch o.c. in three (3) equally spaced, staggered center rows.
	PRIMER:	121 Asphalt Primer or ASTM D41 primer applied to stress plates
	BASE PLY:	(Optional) Shur-Gard MU Force HT, self-adhering and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5)
	CAP PLY:	Shur-Gard TU Ultra HT, Shur-Gard TU Force HT or SA-APP Cap Sheet, self-adhering and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ 1517.5).
	SURFACING:	FBC HVHZ Approved adhesive-set tile roof system. Refer to Table 2A for allowable tile adhesives. Refer to Table 6 for tile staging limitations.

6.4.8	DECK TYPE 3:	Structural concrete, non-insulated
	DECK DESCRIPTION:	Min. 2,500 psi structural concrete
	SYSTEM TYPE F:	Underlayment adhered
	PRIMER:	ASTM D41
	BASE PLY:	(Optional) Shur-Gard MU Force HT, self-adhering back-nailed max. 12-inch o.c. using FBC HVHZ Approved concrete deck fasteners and stress plates in accordance with Mule-Hide' installation instructions.
	CAP PLY:	Shur-Gard TU Ultra HT, Shur-Gard TU Force HT or SA-APP Cap Sheet, self-adhering and back-nailed max. 12-inch o.c. using FBC HVHZ Approved concrete deck fasteners and stress plates in accordance with Mule-Hide' installation instructions.
	SURFACING:	FBC HVHZ Approved adhesive-set tile roof system. Refer to Table 2A for allowable tile adhesives. Refer to Table 6 for tile staging limitations.

7. BUILDING PERMIT REQUIREMENTS:

As required by the Building Official or Authority Having Jurisdiction to properly evaluate the installation of this product.

8. MANUFACTURING PLANTS:

Contact the named QA entity for manufacturing facilities covered by **F.A.C. Rule 61G20-3** QA requirements. Refer to [Section 4](#) herein for products and production locations having met codified material standards.

9. QUALITY ASSURANCE ENTITY:

[UL, LLC – QUA9625](#); (360) 817-5512; bsai.inspections@ul.com

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