



NEMO EVALUATION REPORT (NER)

VaproShield LLC

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SUBJECT: VaproShield Roof Underlayments

SCOPE: This NEMO Evaluation Report (henceforth 'NER') is issued under F.A.C. Rule 61G20-3 and the applicable rules and regulations governing Product Approval of construction materials in the State of Florida. NEMO Evaluations has evaluated the product described herein for compliance with the Code sections noted herein.

CODE: 2023 Florida Building Code, 8th Edition
2023 Florida Building Code, Residential, 8th Edition

JURISDICTION: Non-HVHZ

NEMO CATEGORY: Underlayments

FBC CATEGORY: Roofing

FBC SUB-CATEGORY: Underlayment

CSI DIVISION: 07 00 00 Thermal and Moisture Protection
07 30 05 Roofing Felt and Underlayment

METHOD: Method 2, Option A – Non-Codified Material, Evaluation by Evaluation Entity

COMPLIANCE STATEMENT: VaproShield Roof Underlayments, as produced by VaproShield LLC, have demonstrated compliance with the intent of the Code sections noted herein through testing in accordance with the referenced Standards, rational analysis and an ongoing quality assurance program. Compliance is subject to the Installation Requirements and Limitations of Use set forth herein.

QUALITY ASSURANCE: Evidence of current quality assurance shall be listing and labeling in accordance with the requirements of NEMO | cert.

CONTINUED COMPLIANCE: This NER is valid until such time the named product(s) change, the referenced Quality Assurance changes, or the evaluated Code provisions change. NEMO Evaluations requires, at minimum, a complete review of this NER with each 3-year Code Cycle.

BUILDING PERMIT REQUIREMENTS: As required by the Building Official or Authority Having Jurisdiction to evaluate the installation of this product.

ADVERTISEMENT: "NEMO Evaluated" may be displayed in advertising literature. If any portion of the NER is displayed, it shall be displayed in its entirety.

CERTIFICATION OF INDEPENDENCE:
- 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.
- NEMO ETC, LLC is not owned, operated or controlled by any company manufacturing or distributing products it evaluates.
- This is a building code evaluation. NEMO ETC, LLC is not, in any way, the Designer of Record for any project on which this NER, or previous versions thereof, is/was used for permitting or design guidance.



1. CODES, PROPERTIES AND STANDARDS:

Code	Section	Property	Standard
2023 Florida Building Code, 8 th Edition,	1504.2.1.4	Wind resistance	UL 1897
2023 Florida Building Code, Residential, 8 th Edition	1507.1.1, 1507.2.9.2, 1507.2.9.3, R905.1.1, R905.2.8.2, R905.2.8.5	Material standard (partial)	ASTM D1970
	1507.3.3, R905.3.3	Material standard (partial)	FRSA/TRI Manual
	TAS 110	Accelerated Weathering	ASTM D4798

2. PRODUCTS:

TABLE 1A: EVALUATED UNDERLAYMENTS

PRODUCT	MATERIAL STANDARD	PLANT(S)	DESCRIPTION
SlopeShield Plus	ASTM D1970 (partial) and FRSA/TRI (partial)	McHenry, IL	A highly vapor permeable roofing underlayment, air barrier material for use on steep slope roofs available in 59-inch wide or 29.5-inch wide rolls

TABLE 1B: TYPICAL NOMINAL PROPERTIES

PROPERTY	STANDARD	RESULT
Thickness, mils	ASTM D1970	18
Wind uplift	TAS 124 per TAS 103	Pass <i>(See TABLE 4A)</i>
Dimensional stability	TAS 103	No tears, shrinkage or wrinkles
Tear resistance, lbf	ASTM D4073	MD: 94, XMD: 65
Breaking strength, lbf/in.	ASTM D2523 per TAS 103	MD: 61, XMD: 41
Elongation, %		MD: 30, XMD: 31
Low temperature flexibility	ASTM D1970	No cracking at -10°F
Cyclic elongation	TAS 103 / AC48	No cracking or delamination
Water vapor transmission, g/m ² -24 hrs.	ASTM E96, Procedure B	135 <i>(See Section 3.3.3)</i>
Water vapor permeance, perms		20 <i>(See Section 3.3.3)</i>
Compound stability	ASTM D5147 per TAS 103	No drip or flow at 220°F
Peel adhesion (to plywood), plf	ASTM D903 per TAS 103	11
Sealability around nails	ASTM D1970	No leakage
Heat Aging (HA)	TAS 103, 7 days at 149°F	
Breaking strength, post-HA, lbf/in.	ASTM D2523 per TAS 103	MD: 62, XMD: 40
Elongation, post-HA, %	ASTM D2523 per TAS 103	MD: 29, XMD: 28
Ultraviolet Exposure (UVE)	TAS 103, 460 hours	
Breaking strength, post-UVE, lbf/in.	ASTM D2523 per TAS 103	MD:54, XMD: 33
Elongation, post-UVE, %	ASTM D2523 per TAS 103	MD: 30, XMD: 33
Puncture resistance, post-UVE	TAS 103	No puncture
Peel adhesion (to plywood), post-UVE, plf	ASTM D903 per TAS 103	39
Accelerated Aging (AA)	TAS 103, 25 cycles	
Breaking strength, post-AA, lbf/in.	ASTM D2523 per TAS 103	MD: 71, XMD: 52
Elongation, post-AA, %	ASTM D2523 per TAS 103	MD: 34, XMD: 32
Puncture resistance, post-AA	TAS 103	No puncture
Peel adhesion (to plywood), post-AA, plf	ASTM D903 per TAS 103	8
Accelerated Weathering (AW)	ASTM D4798 per TAS 103, 1000 hrs.	
Breaking strength, post-AW, lbf/in.	ASTM D2523 per TAS 103	MD: 60, XMD: 41
Elongation, post-AW, %	ASTM D2523 per TAS 103	MD: 28, XMD: 30
Low temperature flexibility, post-AW	ASTM D903 per TAS 103	No cracking at -10°F



3. INSTALLATION:

- 3.1 VaproShield Roof Underlayments shall be installed in accordance with VaproShield LLC published installation instructions, subject to the [Limitations of Use](#) noted herein. In case of conflict between published installation instructions and this NER, this report governs.
- 3.2 Roof decks shall be in accordance with codified requirements to the satisfaction of the Authority Having Jurisdiction. 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).

SlopeShield Plus

3.3.1 Non-Tile Applications:

Shall be installed in compliance with requirements for an approved self-adhering underlayment (ASTM D1970) in FBC 1507.1.1.1 or FBC Residential R905.1.1.1 for the type of prepared roof covering to be installed, and the manufacturer’s installation instructions.

3.3.2 Mechanically Attached or Adhesive-Set Tile Applications:

Shall be installed in compliance with requirements for a Self-Adhered Membrane in the FRSA/TRI Florida Manual, 7th Edition, and the manufacturer’s installation instructions.

Refer to [Table 2A](#) herein for allowable tile-adhesives.

Refer to [Table 4](#) herein for attachment and design pressure limitations.

Refer to [Table 6](#) herein for tile staging limitations.

3.3.3 Product-Specific Notes

SlopeShield Plus is highly vapor permeable. Care shall be taken to ensure the roof system design takes the vapor permeable nature into account.

4. LIMITATIONS OF USE:

- 4.1 This is a building code evaluation. NEMO ETC, LLC is not, in any way, the Designer of Record for any project on which this NER, or previous versions thereof, is/was used for permitting or design guidance. NERs are not to be construed as representing any attributes not specifically listed, nor are NERs to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by NEMO ETC, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.
- 4.2 This NER 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.
- 4.3 This NER does not include evaluation of fire classification. Refer to FBC 1505 for requirements and limitations regarding roof assembly fire classification. Refer to FBC 2603 for requirements and limitations concerning the use of foam plastic insulation.
- 4.4 VaproShield 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.
- 4.4.1 SlopeShield Plus is highly vapor permeable. Care shall be taken to ensure the roof system design takes the vapor permeable nature into account.
- 4.5 Allowable Roof Covers:

TABLE 2: ROOF COVER OPTIONS						
FBC SECTION ⇨	1507.2	1507.3		1507.4 AND 1507.5	1507.7	1507.8 AND 1507.9
UNDERLAYMENT	ASPHALT SHINGLES	CLAY AND CONCRETE TILE		METAL PANELS AND SHINGLES	SLATE OR SLATE-TYPE SHINGLES	WOOD SHINGLES AND SHAKES
		MECHANICAL ATTACH	ADHESIVE-SET			
SlopeShield Plus	Yes	Yes	Yes (Table 2A)	Yes	Yes	Yes ¹

¹ For wood shakes and shingles, product is used as min. 3 ¼-inch wide joint-strips per FBC 1507.1.1.1(2) / FBC R905.1.1.1(2) or installed in full-coverage atop ASTM D226, Type II felt or ASTM D4869 Type III or IV felt mechanically attached in accordance with FBC Table 1507.1.1.1 or FBC Residential Table R905.1.1.1



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

TABLE 2A: ALLOWABLE TILE ADHESIVE / UNDERLAYMENT COMBINATIONS ²		
UNDERLAYMENT	ADHESIVE	FBC FILE
SlopeShield Plus	ICP "APOC Polyset® AH-160"	FL6332

4.6 Allowable Substrates:

TABLE 3: SUBSTRATE OPTIONS FOR ADHERED UNDERLAYMENTS				
UNDERLAYMENT	APPLICATION	SUBSTRATES (DESIGNED TO MEET WIND LOADS FOR PROJECT)		
		TYPE	PRIMER	MATERIAL(S)
SlopeShield Plus	self-adhering	Deck / sheathing	None	Plywood
		Barrier board	None	G-P Gypsum "DensDeck Prime"
			None	USG "SECUROCK Gypsum-Fiber Roof Board"

4.7 Attachment Limitations:

4.7.1 For use under mechanically attached NON-TILE prepared roof coverings, attachment shall be in accordance with the manufacturer’s installation instructions, but – for mechanically attached underlayments or base sheets - not less than **FBC 1507.1.1** or **R905.1.1**.

4.7.2 For use under tile roof systems, attachment shall be in accordance with the manufacturer’s installation instructions, but not less than [Table 4A](#) or [Table 4B](#) herein.

4.7.3 Wind Resistance for Underlayment Systems in Tile Roof Applications:

The following wind uplift limitations apply to tile underlayment systems per **FBC 1504.2.1.4**. The Maximum Design Pressure ("MDP") 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 per **FBC 1504.9** has already been applied).

4.7.3.1 Direct-to-Deck:

The maximum design pressure for the selected assembly shall meet or exceed that required under FRSA/TRI Florida Manual, 7th Edition, Appendix A or the critical (highest) design pressure determined in accordance with **FBC 1609** or **FBC Residential Chapter 3**.

TABLE 4A: ALLOWABLE DESIGN PRESSURES, UNDERLAYMENT DIRECT-TO-DECK IN TILE ROOF APPLICATIONS				
SYSTEM No.	DECK	PRIMER	UNDERLAYMENT	MAX. DESIGN PRESSURE (PSF)
UDL-1.	Min. 15/32-inch, APA rated CDX plywood	None	SlopShield Plus, self-adhered and back-nailed within the seldge-edge side laps using corrosion resistant 12 ga. x 1½" ring shank nails through 32 ga., 1-5/8" diameter tin caps or corrosion resistant 1-inch diameter metal cap nails spaced max. 12-inch o.c.	-112.5

4.7.3.2 Mechanically-Attached Barrier Board:

The maximum design pressure for the selected assembly shall meet or exceed that required under FRSA/TRI Florida Manual, 7th Edition, Appendix A or the critical (highest) design pressure determined in accordance with **FBC 1609** or **FBC Residential Chapter 3**.

Alternatively, the maximum design pressure for the selected assembly shall meet or exceed at least the Zone 1 design pressure determined in accordance with **FBC 1609** or **FBC Residential Chapter 3**. Elevated pressure zones shall employ an attachment density by a qualified design professional to resist the elevated pressure criteria. Commonly used methods are [ANSI/SPRI WD1](#), [FM Loss Prevention Data Sheet](#) 1-29 and [Roofing Application Standard](#) RAS 117. Assemblies marked with an asterisk* carry the limitations set forth in Section 2.2.10.1 of [FM Loss Prevention Data Sheet](#) 1-29 for enhancements.

² Refer to Tile Manufacturer’s or Adhesive Manufacturer’s Florida Product Approval for Overturning Moment Resistance Performance.



TABLE 4B: ALLOWABLE DESIGN PRESSURES, UNDERLAYMENT TO BARRIER BOARD IN TILE ROOF APPLICATIONS						
SYSTEM NO.	DECK	BARRIER BOARD			UNDERLAYMENT	MAX. DESIGN PRESSURE (PSF)
		TYPE	FASTENERS	ATTACH		
UDL-2.	Min. 19/32-inch, APA rated CDX plywood	Min. 0.25-inch G-P Gypsum "DensDeck Prime" or USG "SECUROCK Gypsum-Fiber Roof Board"	Trufast Versa-Fast Fasteners and Plates; two (2) fasteners per plate	1 per 1.45 ft ² (22 parts per 4x8 ft board)	SlopShield Plus, self-adhered and back-nailed within the selvedge-edge side laps using corrosion resistant fasteners spaced max. 12-inch o.c.	-60.0
UDL-3.	Min. 19/32-inch, APA rated CDX plywood	Min. 0.5-inch G-P Gypsum "DensDeck Prime" or USG "SECUROCK Gypsum-Fiber Roof Board"	Trufast Versa-Fast Fasteners and Plates; two (2) fasteners per plate	1 per 1.45 ft ² (22 parts per 4x8 ft board)	SlopShield Plus, self-adhered and back-nailed within the selvedge-edge side laps using corrosion resistant fasteners spaced max. 12-inch o.c.	-75.0

4.8 Exposure Limitations:

TABLE 5: EXPOSURE LIMITATIONS		
UNDERLAYMENT	PREPARED ROOF COVER INSTALLATION	MAXIMUM EXPOSURE (DAYS)
SlopeShield Plus	Mechanically attached	180

4.9 Tile Slippage Limitations:

When loading roof tiles on the underlayment in direct-deck tile assemblies, the maximum roof slope shall be as follows. Slopes in excess of these limitations require the use of battens or loading boards during loading of the roof tiles, in which case the maximum staging method is a 10-tile stack.

TABLE 6: TILE SLIPPAGE LIMITATIONS FOR DIRECT-DECK TILE INSTALLATIONS			
UNDERLAYMENT	TILE PROFILE	STAGING METHOD	MAXIMUM SLOPE
SlopeShield Plus	Flat	10-tile stack	4:12
		10-tile stack	4:12
	Lugged	6-tile stack (4 over 2)	5:12

4.10 All components in the roof assembly shall have quality assurance audit in accordance with F.A.C. Rule 61G20-3. Refer to the Product Approval of the component manufacturer for components mentioned herein that are produced by a Product Manufacturer other than the report holder on Page 1 of this NER.

- END OF EVALUATION -