



NEMO EVALUATIONS REPORT

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BITEC, Inc.
FL5215-R10

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INSPECT

CERTIFY

EVALUATE

VALIDATE

QUALIFY

NEMO EVALUATION REPORT (NER)



BITEC, INC.
#2 Industrial Park Drive
Morrilton, AR 72110
(800) 535-8597

SUBJECT: BITEC 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 and ISO/IEC 17065 via [NEMO|cert.](#) 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 and HVHZ

NEMO CATEGORY: Steep Slope

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 1, Option C – Codified Material, Evaluation by Evaluation Entity

COMPLIANCE STATEMENT: **BITEC Roof Underlayments**, as produced by **BITEC, INC.**, have demonstrated compliance with 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/or 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 CERT, LLC has not, nor does it intend to acquire or will they acquire, a financial interest in any company manufacturing or distributing products it evaluates.
- ✓ NEMO CERT, LLC is not owned, operated or controlled by any company manufacturing or distributing products it evaluates.
- ✓ This is a building code evaluation. NEMO CERT, 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.





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1. CODES, PROPERTIES AND STANDARDS:

CODE	SECTION	PROPERTY	STANDARD
2023 Florida Building Code, 8 th Edition	1504.2.1.4	Wind resistance	UL 1897
	1507.1.1, 1507.2.9.2, 1507.2.9.3, 1518.2, TAS 110	Material standard	ASTM D1970
	1507.3.3	Material standard	FRSA/TRI Manual
	1523.6.5.2.1, TAS 110	Material standard	TAS 103
	TAS 110	Accelerated Weathering	ASTM D4798
2023 Florida Building Code, Residential, 8 th Edition	R905.1.1, R905.2.8.2, R905.2.8.5	Material standard	ASTM D1970
	R905.3.3	Material standard	FRSA/TRI Manual

2. PRODUCTS:

TABLE 1: EVALUATED UNDERLAYMENTS

PRODUCT	MATERIAL STANDARD	DESCRIPTION
Defend™	ASTM D1970 and FRSA/TRI	Self-adhering, fiberglass reinforced, SBR modified bitumen, slag surfaced roof underlayment available in 39-3/8-inch wide x 65.5-ft long rolls
Imperflex® USA	ASTM D1970 and FRSA/TRI	Self-adhering, fiberglass reinforced, SBS modified bitumen, film-surfaced roof underlayment available in 39-3/8-inch wide x 45.75-ft long rolls
MAT-40™	ASTM D1970, FRSA/TRI and TAS 103	Self-adhering, fiberglass reinforced, SBR modified bitumen, polyester-surfaced roof underlayment available in 39-3/8-inch wide x 64.5-ft long rolls

3. INSTALLATION:

3.1 **BITEC Roof Underlayments** shall be installed in accordance with **BITEC, INC.** published installation instructions, subject to the [Limitations of Use](#) noted herein. In case of conflict between published installation instructions and this NER, this NER governs.

3.1.1 The report holder's installation instructions shall be made available at the jobsite at all times during installation.

3.2 Substrates 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).

3.3 FBC (non-HVHZ) and FBC Residential:

3.3.1 Refer to Section 3.3.2 below for underlayments having prescriptive codified minimum attachment requirements or [Section 4.7.2](#) herein for underlayment systems having maximum design pressures established in accordance with FBC [1504.2.1.4](#).

3.3.2 Prescriptive Underlayment Systems for use in NON-TILE applications:

3.3.2.1 **CODE REFERENCE:** 1507.1.1.1 or R905.1.1.1, Option 1:

APPLICATION: Underlayment adhered to deck

DECK DESCRIPTION: Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction (refer to [Table 3](#) herein for specific underlayment/substrate combinations)

PRIMER: (Optional for MAT-40™ to plywood) IM Prime™ applied in accordance with the manufacturer's requirements.

UNDERLAYMENT: **Defend™, Imperflex® USA or MAT-40™** self-adhered in accordance with FBC Section 1507.1.1.1(1) or R905.1.1.1(1) and back-nailed in accordance with the manufacturer's requirements.

SURFACING: FBC Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles, subject to the allowable roof covers in [Table 2A](#) herein.



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3.3.2.2 **CODE REFERENCE:** 1507.1.1.1 or R905.1.1.1, Option 2:
APPLICATION: Self-adhering strips to deck-joints followed by underlayment mechanically attached to deck

DECK DESCRIPTION: Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction
PRIMER: IM Prime™ applied to Secondary Water Barrier placement locations in accordance with the manufacturer’s requirements.
SECONDARY WATER BARRIER: Min. 3 ¾-inch wide strips of **Defend™, Imperflex® USA or MAT-40™** self-adhered over joints of the roof deck prior to installation of subsequent layer(s) in accordance with FBC Section 1507.1.1.1(2) or R905.1.1.1(2). Do not overlap end-joints or T-joints. All end-joints and T-joints shall be butted firmly side by side, flush with each other but not overlapped.
UNDERLAYMENT: FBC Approved, ASTM D226 Type II, ASTM D4869 Type III or IV, ASTM D6757 or ASTM D8257 underlayment in accordance with FBC Table 1507.1.1.1 or Table R905.1.1.1, with a minimum 4-inch side lap and 6-inch end lap, mechanically fastened to deck in accordance with FBC Table 1507.1.1.1 or Table R905.1.1.1
SURFACING: FBC Approved prepared roof cover, subject to the limitations in FBC Table [1507.1.1.1](#) or Table [R905.1.1.1](#).

3.3.2.3 **CODE REFERENCE:** 1507.1.1.1 or R905.1.1.1, Option 1 combined with Option 2 or 3:
APPLICATION: Optional self-adhering strips to deck-joints followed by base sheet mechanically fastened to deck followed by underlayment adhered to base sheet

DECK DESCRIPTION: Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction
PRIMER: (Use only if installing Secondary Water Barrier) IM Prime™ applied to joint-strip placement locations in accordance with the manufacturer’s requirements.
SECONDARY WATER BARRIER: (Optional) Min. 3 ¾-inch wide strips of **Defend™, Imperflex® USA or MAT-40™** self-adhered over joints of the roof deck prior to installation of subsequent layer(s) in accordance with FBC Section 1507.1.1.1(2) or R905.1.1.1(2). Do not overlap end-joints or T-joints. All end-joints and T-joints shall be butted firmly side by side, flush with each other but not overlapped.
BASE SHEET: One (1) layer of FBC Approved, ASTM D226 Type II or ASTM D4869 Type III or IV, in accordance with FBC Table 1507.1.1.1 or Table R905.1.1.1, with a minimum 4-inch side lap and 6-inch end lap or two (2) layers of FBC Approved, ASTM D226 Type II or ASTM D4869 Type III or IV in accordance with FBC Section 1507.1.1.1(3) or R905.1.1.1(3), mechanically fastened to deck
FASTENERS: Min. 0.083-inch diameter annular ring or deformed shank nails with metal or plastic caps* with a nominal cap diameter of not less than 1-inch and minimum thickness as follows.

Cap Type	Minimum thickness
Metal cap	32 ga. sheet metal
Power-driven metal cap	0.010-inch
Plastic cap	0.035-inch (outside edge thickness)

The nail shall be of sufficient length to penetrate through the roof sheathing, or not less than 0.75-inch into the roof sheathing.

*NOTE: Metal caps are required where the ultimate design wind speed, V_{ult} , equals or exceeds 170 mph.

FASTENING: Grid pattern of 12-inches between the overlaps and 6-inch spacing at the overlaps, in accordance with FBC Table 1507.1.1.1 or Table R905.1.1.1 or FBC Section 1507.1.1.1(3) or R905.1.1.1(3).
PRIMER: (Optional when using Defend™) IM Prime™ applied in accordance with the manufacturer’s requirements.
UNDERLAYMENT: **Defend™, Imperflex® USA or MAT-40™** self-adhered in accordance with FBC Section 1507.1.1.1(1) or R905.1.1.1(1) and back-nailed in accordance with the manufacturer’s requirements.
SURFACING: FBC Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles, subject to the allowable roof covers in [Table 2A](#) herein.



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3.4 FBC HVHZ (Broward and Miami-Dade Counties):

3.4.1 Refer to Section 3.4.2 below for underlayments having prescriptive codified minimum attachment requirements or [Section 4.7.2](#) herein for underlayment systems having maximum design pressures established in accordance with Section 7 of [TAS 103](#).

3.4.2 Prescriptive Underlayment Systems for use in NON-TILE applications:

3.4.2.1 **CODE REFERENCE: 1518.2.1, Option 1:** **APPLICATION:** Underlayment adhered to deck

DECK DESCRIPTION: Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction (refer to [Table 3](#) herein for specific underlayment/substrate combinations)
PRIMER: (Optional for MAT-40™ to plywood) IM Prime™ applied in accordance with the manufacturer’s requirements.
UNDERLAYMENT: **Defend™, Imperflex® USA or MAT-40™** self-adhered in accordance with FBC Section 1518.2.1(1) and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ [1517.5](#)) or FBC HVHZ Approved concrete fasteners and plates.
SURFACING: FBC HVHZ Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles, subject to the allowable roof covers in [Table 2B](#) herein.

3.4.2.2 **CODE REFERENCE: 1518.2.1, Option 2:** **APPLICATION:** Self-adhering strips to deck-joints followed by underlayment mechanically attached to deck

DECK DESCRIPTION: Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction
PRIMER: (Optional for MAT-40™ to plywood) IM Prime™ applied to Secondary Water Barrier placement locations in accordance with the manufacturer’s requirements.
SECONDARY WATER BARRIER: Min. 3 ¾-inch wide strips of **Defend™, Imperflex® USA or MAT-40™** self-adhered over joints of the roof deck prior to installation of subsequent layer(s) in accordance with FBC Section 1518.2.1(2). Do not overlap end-joints or T-joints. All end-joints and T-joints shall be butted firmly side by side, flush with each other but not overlapped.
UNDERLAYMENT: FBC HVHZ Approved, ASTM D226 Type II, ASTM D4869 Type III or IV or ASTM D8257 underlayment in accordance with FBC Table 1518.2.1, 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](#)), grid pattern of 12-inches between the overlaps and 6-inch spacing at the overlaps, in accordance with FBC Table 1518.2.1.
SURFACING: FBC HVHZ Approved prepared roof cover, subject to the limitations in FBC Table [1518.2.1](#).

3.4.2.3 **CODE REFERENCE: 1518.2.1, Option 1 combined with Option 2 or 3:** **APPLICATION:** Optional self-adhering strips to deck-joints followed by base sheet mechanically fastened to deck followed by underlayment adhered to base sheet

DECK DESCRIPTION: Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction
PRIMER: (Use only if installing Secondary Water Barrier; Optional for MAT-40™ to plywood) IM Prime™ applied to joint-strip placement locations in accordance with the manufacturer’s requirements.
SECONDARY WATER BARRIER: (Optional) Min. 3 ¾-inch wide strips of **Defend™, Imperflex® USA or MAT-40™** self-adhered over joints of the roof deck prior to installation of subsequent layer(s) in accordance with FBC Section 1518.2.1(2). Do not overlap end-joints or T-joints. All end-joints and T-joints shall be butted firmly side by side, flush with each other but not overlapped.
BASE SHEET: One (1) layer of FBC HVHZ Approved, ASTM D226 Type II or ASTM D4869 Type III or IV, in accordance with FBC Table 1518.2.1, with a minimum 4-inch side lap and 6-inch end lap or two (2) layers of FBC HVHZ Approved, ASTM D226 Type II or ASTM D4869 Type III or IV in accordance with FBC Section 1518.2.1(3), mechanically fastened to deck
FASTENING: FBC HVHZ Approved nails and tin caps (FBC HVHZ [1517.5](#)), grid pattern of 12-inches between the overlaps and 6-inch spacing at the overlaps, in accordance with FBC Table 1518.2.1 or FBC Section 1518.2.1(3).
PRIMER: (Optional when using Defend™) IM Prime™ applied in accordance with the manufacturer’s requirements.
UNDERLAYMENT: **Defend™, Imperflex® USA or MAT-40™** self-adhered in accordance with FBC Section 1518.2.1(1) and back-nailed max. 12-inch o.c. using FBC HVHZ Approved nails and tin caps (FBC HVHZ [1517.5](#)).
SURFACING: FBC HVHZ Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles, subject to the allowable roof covers in [Table 2B](#) herein.



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4. LIMITATIONS OF USE:

- 4.1 This is a building code evaluation. NEMO CERT, 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, 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 **BITEC 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 **Fire Classification:**
BITEC Roof Underlayments may be used in non-classified roof coverings or as a component of a classified roofing assembly when specifically recognized as such in a listing approved by the Authority Having Jurisdiction. Refer to **UL File TGDY.R18135** for the applicant's baseline fire classification listings.
- 4.5 **Allowable Roof Covers:**
 Table 2 lists allowable roof cover types, subject to fire classification documentation set forth in [Section 4.4](#) herein (if applicable).

TABLE 2A: ROOF COVER OPTIONS, FBC AND FBC-R						
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
		MECH. ATTACH	ADHESIVE-SET			
Defend™	Yes	Yes	No	No	No	No
Imperflex® USA	Yes	Yes	No	Yes	No	No
MAT-40™	Yes	Yes	Yes (Table 2c)	Yes	No	No

TABLE 2B: ROOF COVER OPTIONS, FBC HVHZ						
FBC HVHZ SECTION ⇒	1518.2.1, RAS 115	RAS 118, 119 OR 120		1518.2.1, RAS 133	1518.2.1	1518.2.1, RAS 130
UNDERLAYMENT	ASPHALT SHINGLES	CLAY AND CONCRETE TILE		METAL PANELS AND SHINGLES	SLATE OR SLATE-TYPE SHINGLES	WOOD SHINGLES AND SHAKES
		MECH. ATTACH	ADHESIVE-SET			
Defend™	Yes	No	No	No	No	No
Imperflex® USA	Yes	No	No	Yes	No	No
MAT-40™	Yes	Yes	Yes (Table 2c)	Yes	No	No

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

TABLE 2C: ALLOWABLE TILE ADHESIVE / UNDERLAYMENT COMBINATIONS ¹			
UNDERLAYMENT	ADHESIVE	CODE COMPLIANCE REPORT	
		FBC FPA	FBC HVHZ
MAT-40™	DuPont "TILE BOND™ Roof Tile Adhesive"	FL22525	NOA 22-0614.05
	ICP "APOC Polyset® AH-160"	FL6332	NOA 23-0614.01

¹ Refer to Tile Manufacturer's or Adhesive Manufacturer's compliance documentation for Overturning Moment Resistance Performance.



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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)
Defend™	self-adhering	Deck / sheathing	IM Prime™	Plywood or OSB
		Base sheet	(Optional) IM Prime™	ASTM D226, Type II felt
Imperflex® USA	self-adhering	Deck / sheathing	IM Prime™	Plywood or OSB
		Base sheet	IM Prime™	ASTM D226, Type II felt
MAT-40™	self-adhering	Deck / sheathing	(Optional) IM Prime™	Plywood
			IM Prime™	OSB
		Base sheet	IM Prime™	ASTM D226, Type II felt

4.7 Attachment Limitations:

4.7.1 Refer to [Section 3](#) for codified prescriptive systems.

4.7.2 Refer to [Table 4](#) for underlayment systems which have documented compliance with FBC 1504.2.1.4 and Section 7 of TAS 103. 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 has already been applied).

TABLE 4: ALLOWABLE DESIGN PRESSURES, ADHERED, DIRECT-TO-DECK UNDERLAYMENT SYSTEMS							
*Nails shall be corrosion resistant and be of sufficient length to penetrate through the sheathing by min. 3/16-inch							
SYSTEM No.	DECK	PRIMER	UNDERLAYMENT	BACK NAILING			MDP (PSF)
				FASTENERS		SPACING	
				NON-HVHZ	HVHZ		
UDL-1.	Plywood, 15/32-inch thick, span rating 32/16, Grade CDX, 4-ply	IM Prime	Defend™, Imperflex® USA or MAT-40™, self-adhered and back-nailed	1-inch diameter metal cap nails* or 12 ga. annular ring shank nails* through 32 ga., 1-5/8" diameter tin caps	12 ga. annular ring shank nails* through 32 ga., 1-5/8" diameter tin caps	max. 12-inch o.c.	-97.5

4.8 Exposure Limitations:

TABLE 5: EXPOSURE LIMITATIONS		
UNDERLAYMENT	PREPARED ROOF COVER TYPE (OVERTOP OF UNDERLAYMENT)	MAXIMUM EXPOSURE (DAYS)
Defend™	Mechanically attached	90
Imperflex® USA	Mechanically attached	90
MAT-40™	Mechanically attached or adhesive-set	120

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
Defend™	Flat or Lugged	Battens or loading boards required	N/A
Imperflex® USA	Flat or Lugged	Battens or loading boards required	N/A
MAT-40™	Flat or Lugged	10-tile stack	6:12



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- 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.

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