



**NEMO|etc.**

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ENGINEER

TEST

CONSULT

**P.E. EVALUATION REPORT (PEER)**

**Owens Corning Roofing and Asphalt, LLC**

One Owens Corning Parkway  
Toledo, OH 43659  
**(740) 321-6345**

**PEER-OC-001.A.R20**

**FL11602-R19 (NON-HVHZ)**

Date of Issuance: 11/03/2008

**Revision 20: 11/20/2024**

**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. The products described herein have been evaluated for compliance with the **8<sup>th</sup> Edition (2023) Florida Building Code** [sections noted herein](#).

**DESCRIPTION: Titanium® Roof Underlayments (NON-HVHZ)**

**LABELING:** Labeling shall be in accordance with the requirements of the Accredited Quality Assurance Agency noted herein and [FBC 1507.1.1](#).

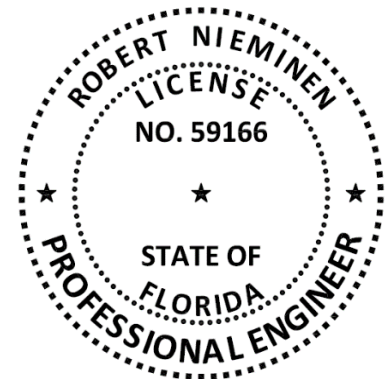
**CONTINUED COMPLIANCE:** This PEER is valid until such time as the named product(s) changes, the referenced Quality Assurance or production facility location(s) changes, or Code provisions that relate to the product(s) change. Acceptance of our PEERs by the named client constitutes agreement to notify 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 8.

**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:** Titanium® Roof Underlayments, as produced by Owens Corning Roofing and Asphalt, LLC, have demonstrated compliance with the following sections of the 8<sup>th</sup> Edition (2023) Florida Building Code through testing in accordance with applicable sections the following Standards. Compliance is subject to the [Installation Requirements](#) and [Limitations of Use](#) set forth herein.

**2. STANDARDS:**

SECTION	PROPERTY	STANDARD
1504.2.1.4	Wind resistance	UL 1897
1507.1.1, 1507.2.9.2 / R905.1.1, R905.2.8.2	Material standard	ASTM D1970
1507.1.1 / R905.1.1	Material standard	ASTM D8257
1507.3.3 / R905.3.3	Material standard	FRSA/TRI Manual
TAS 110	Accelerated Weathering	ASTM D4798
TAS 110	Material standard	TAS 103

**3. REFERENCES:**

ENTITY	EXAMINATION	REFERENCE	DATE
NEMO (TST6049)	TAS 103, tile slippage	4j-OC-19-SSUDL-01.A	06/14/2019
Owens Corning	Product equivalency	Declaration	06/18/2018
Owens Corning	Product equivalency	Declaration Form	10/18/2022
PRI (TST5878)	UL1897	INTP-001-02-01	08/04/2016
PRI (TST5878)	ASTM D1970	OCF-341-02-01	09/20/2017
PRI (TST5878)	TAS 103, partial	OCF-343-02-01	11/09/2017
PRI (TST5878)	ASTM D4798, D1970	OCF-341-02-01	11/27/2017
PRI (TST5878)	TAS 117(B); Pull-through	OCF-422-02-02	04/03/2018
PRI (TST5878)	TAS 103, partial	OCF-425-02-01	08/13/2018
PRI (TST5878)	ASTM D1623, TAS 103	OCF-507-02-01	08/13/2019
PRI (TST5878)	UL1897	1378T0117	10/20/2020
PRI (TST5878)	ASTM D8257-20	1378T0061	01/21/2021
PRI (TST5878)	ASTM D4798, TAS 103	1378T0174	04/16/2021
PRI (TST5878)	ASTM D8257-20	1378T0253	06/22/2022
PRI (TST5878)	ASTM D8257-20	1378T0257	07/19/2022
PRI (TST5878)	ASTM D1970	1378T0236 & 1378T0286	08/08/2022
PRI (TST5878)	ASTM D8257-20	1378T0315	01/30/2023
PRI (TST5878)	ASTM D4798, TAS 103	1378T0307	02/03/2023
PRI (TST5878)	ASTM D8257-20	1378T0324	02/09/2023
PRI (TST5878)	UL1897	1378T0442	06/20/2024
ITS (QUA1673)	Quality Control	Service Confirmation	12/09/2020
ITS (QUA1673)	Quality Control	Florida BCIS	Current

**4. PRODUCT DESCRIPTION:**

TABLE 1: EVALUATED UNDERLAYMENTS			
PRODUCT	MATERIAL STANDARD	PLANT(S)	DESCRIPTION
Titanium® PSU-30	ASTM D1970 <sup>1</sup> FRSA/TRI and TAS 103 (partial)	Dubai, UAE Brentwood, NH	unreinforced polymer modified bitumen material adhered to the underside of a polymer-coated, synthetic woven sheet. The underside is backed with a release film. Unit weight 24 lbs./square
Titanium® FR	ASTM D1970 <sup>1</sup>	Dubai, UAE	reinforced polymer modified self-adhering underlayment with polypropylene surfacing and integrated fire resistance properties. There is a removable release film on the back surface. The product also includes a polymer-modified self-adhesive selvage with removable release film
Titanium® UDL-25	ASTM D8257 <sup>2</sup>	Qingdao, China Silvassa, India	synthetic sheet-type underlayment comprised of a woven core coated on one side with a polymer coating. Unit weight 2.5 lbs./square
Titanium® UDL-30	ASTM D8257 <sup>2</sup>	Qingdao, China Silvassa, India	synthetic sheet-type underlayment comprised of a woven core coated on both sides with a polymer coating. Unit weight 4.0 lbs./square
Titanium® UDL-50	ASTM D8257 <sup>2</sup>	Qingdao, China Silvassa, India	synthetic sheet-type underlayment comprised of a woven core coated on both sides with a polymer coating. Unit weight 4.7 lbs./square
Titanium® X30	ASTM D8257 <sup>2</sup>	Qingdao, China Silvassa, India	synthetic sheet-type underlayment comprised of a non-woven polypropylene top scrim laminated to a central non-woven polypropylene scrim with polymeric coating on the bottom side. Unit weight 5.0 lbs./square.
TopShield® EXT-H30	ASTM D8257 <sup>2</sup>	Qingdao, China Silvassa, India	synthetic sheet-type underlayment comprised of a non-woven polypropylene top scrim laminated to a central non-woven polypropylene scrim with polymeric coating on the bottom side. Unit weight 5.0 lbs./square.

**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 not 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 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.

<sup>1</sup> Agreement between purchaser and seller, as set forth in Section 4.3, Note 1 of ASTM D1970-17, should be established as to slip resistance.

<sup>2</sup> Agreement between purchaser and seller, as set forth in Section 4.3, Note 1 of ASTM D8257-20, should be established as to slip resistance.

5.5 **Titanium® 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 PEER combined with supporting data for the prepared roof covering.

5.6 **Allowable Roof Covers:**

TABLE 2: ROOF COVER OPTIONS						
<a href="#">FBC NON-HVHZ</a>	1507.2	1507.3		1507.4 & 1507.5	1507.7	1507.8 & 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			
Titanium® PSU-30	Yes	Yes <a href="#">(Section 5.8.2)</a>	Yes <a href="#">(Table 2A)</a> <a href="#">(Section 5.8.2)</a>	Yes	Yes	Yes <sup>3</sup>
Titanium® FR	Yes	No	No	Yes	No	No
Titanium® UDL-25	Yes	Yes (Base Sheet in 2-ply system) <a href="#">(Table 4B)</a>	Yes (Base Sheet in 2-ply system) <a href="#">(Table 4B)</a>	Yes	Yes	No
Titanium® UDL-30	Yes	No	No	Yes	Yes	No
Titanium® UDL-50	Yes	No	No	Yes	Yes	No
Titanium® X30	Yes	No	No	Yes	Yes	No
TopShield® EXT-H30	Yes	No	No	Yes	Yes	No

5.6.1 In addition to the codified roof cover options noted above, allowable roof covers include synthetic or composite shingles, slate or shakes holding current [Florida Product Approval](#) (statewide or local).

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

TABLE 2A: ALLOWABLE UNDERLAYMENT / TILE-ADHESIVE COMBINATIONS <sup>4</sup>					
UNDERLAYMENT	TILE-ADHESIVE OPTIONS AND <a href="#">FLORIDA PRODUCT APPROVAL</a>				
	DAP GLOBAL		DUPONT	ICP CONSTRUCTION	
	FL14506		FL22525	FL6332	FL6276
	STORMBOND	STORMBOND 2	TILE BOND	APOC POLYSET AH-160	APOC POLYSET RTA-1
Titanium® PSU-30	No	No	Yes	Yes	No

5.7 **Allowable Substrates:**

TABLE 3: ALLOWABLE SUBSTRATE OPTIONS FOR ADHERED UNDERLAYMENTS				
UNDERLAYMENT	APPLICATION	SUBSTRATES (DESIGNED TO MEET WIND LOADS FOR PROJECT)		
		TYPE	PRIMER	MATERIAL(S)
Titanium® PSU-30	self-adhering	Deck / sheathing	None	Plywood
		Base sheet	None	ASTM D226, Type II felt
			ASTM D41	Titanium® UDL-30
			None	Titanium® UDL-30 (inverted)
Titanium® FR	self-adhering	Deck / sheathing	None	Plywood

<sup>3</sup> 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.

<sup>4</sup> Refer to Tile Manufacturer's or Adhesive Manufacturer's Florida Product Approval for Overturning Moment Resistance Performance.

5.8 **Attachment Limitations:**

5.8.1 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**.

5.8.2 **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).

5.8.2.1 **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, ADHERED, DIRECT-TO-DECK UNDERLAYMENT IN TILE ROOF APPLICATIONS				
**Nails shall be corrosion resistant and be of sufficient length to penetrate through the sheathing by min. 3/16-inch				
SYSTEM No.	DECK	BASE PLY	CAP PLY	MDP (PSF)
UDL-1.	Plywood, Grade CDX, 32/16, PS 1-19, 15/32 category	Titanium® PSU-30, self-adhered and back nailed with 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** and 32 ga. x 1-5/8-inch diameter tin caps, at 3-inch wide side laps, max 12-inch o.c.	Side laps staggered 50% relative to Base Ply: Titanium® PSU-30, self-adhered and back nailed with 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** and 32 ga. x 1-5/8-inch diameter tin caps, at 3-inch wide side laps, max 12-inch o.c.	-120.0
UDL-2.	Plywood, Grade CDX, 32/16, PS 1-09, 15/32 category	None	Titanium® PSU-30, self-adhered and back-nailed with 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** and 32 ga. x 1-5/8-inch diameter tin caps, max. 6-inch o.c.	-142.5

5.8.2.2 **Mechanically-Attached Base Sheet:**

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

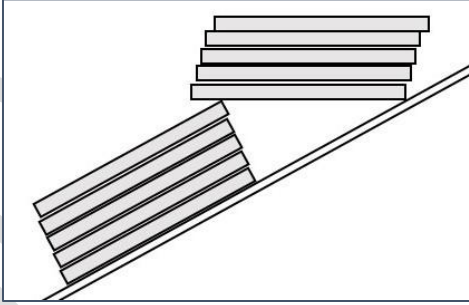
Alternatively, the maximum design pressure for the selected assembly shall meet or exceed at least the Zone 1 design pressure determined in accordance with **FBC 1609** or **FBC Residential Chapter 3**. Elevated pressure zones shall employ an attachment density by a qualified design professional to resist the elevated pressure criteria. Commonly used methods are [ANSI/SPRI](#) WD1, [FM Loss Prevention Data Sheet](#) 1-29 or [Roofing Application Standard](#) RAS 117 or RAS 137.

TABLE 4B: ALLOWABLE DESIGN PRESSURES, MECHANICALLY ATTACHED, 2-PLY UNDERLAYMENT SYSTEMS IN TILE ROOF APPLICATIONS				
**Nails shall be corrosion resistant and be of sufficient length to penetrate through the sheathing by min. 3/16-inch				
SYSTEM No.	DECK	BASE SHEET	CAP PLY	MDP (PSF)
UDL-3.	Plywood, Grade CDX, 32/16, PS 1-09, 15/32 category	Titanium® UDL-25 mechanically attached with 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** and 32 ga. x 1-5/8-inch diameter tin caps spaced 6-inch o.c. at 4-inch wide side laps and 6-inch o.c. at three (3), equally spaced center rows	One or two plies Titanium® PSU-30, self-adhered and back-nailed with 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** and 32 ga. x 1-5/8-inch diameter tin caps, max. 12-inch o.c.	-45.0

5.9 **Exposure Limitations:**

TABLE 5: EXPOSURE LIMITATIONS		
UNDERLAYMENT	PREPARED ROOF COVER INSTALLATION TYPE (PER TABLE 2)	MAXIMUM EXPOSURE (DAYS)
Titanium® UDL-25	Mechanically attached	90
Titanium® PSU-30	Mechanically attached or adhesive-set tile	180
Titanium® FR	Mechanically attached	180
Titanium® UDL-30, Titanium® UDL-50, Titanium® X30 or TopShield® EXT-H30	Mechanically attached	180

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 or loading boards during loading of the roof tiles.

TABLE 6: TILE SLIPPAGE LIMITATIONS			
UNDERLAYMENT	TILE PROFILE	STAGING METHOD	MAXIMUM STAGING PITCH
Titanium® PSU-30	Flat	Max. 10-tile stack	5:12
	Flat	Max 5-tile stack	6:12
	Lugged	Max. 10-tile stack	4:12
	Lugged	Max. 5-tile stack	5:12
	Lugged	Max. 10-tile stack (5 over 5)	

5.11 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 PEER.

**6. INSTALLATION:**

- 6.1 **Titanium® Roof Underlayments** shall be installed in accordance with **Owens Corning Roofing and Asphalt, LLC** published installation requirements subject to the [Limitations of Use](#) herein and the specifics noted below.
  - 6.1.1 Consult Owens Corning requirements for back-nailing at pitch of 2:12 or greater.
  - 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 established in accordance with **FBC 1504.2.1.4**.

6.4 Underlayment Assemblies with Prescriptive Minimum Attachment for use in NON-TILE applications:

6.4.1 **CODE REFERENCE: 1507.1.1.1 or R905.1.1.1, Option 1: Underlayment adhered to deck**

DECK DESCRIPTION: Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction

UNDERLAYMENT: BASE PLY: (Optional) **Titanium® PSU-30 or Titanium® FR** 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.

CAP PLY: **Titanium® PSU-30 or Titanium® FR** 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 2 herein](#).

6.4.2 **CODE REFERENCE: 1507.1.1.1 or R905.1.1.1, Option 2: 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

SECONDARY WATER BARRIER: Min. 3 ¼-inch wide strips of **Titanium® PSU-30 or Titanium® FR** or other FBC Approved joint-strip product 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: **Titanium® UDL-25, Titanium® UDL-30, Titanium® UDL-50, Titanium® X30 or TopShield® EXT-H30** 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

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. The nail shall be of sufficient length to penetrate through the roof sheathing, or not less than 0.75-inch into the roof sheathing. \*Metal caps are required where the ultimate design wind speed,  $V_{ult}$ , equals or exceeds 170 mph.

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)

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

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

6.4.3 **CODE REFERENCE: 1507.1.1.1 or R905.1.1.1, Option 3: Two-layer underlayment mechanically fastened to deck**

DECK DESCRIPTION: Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction

UNDERLAYMENT: Two (2) layers of **Titanium® UDL-25, Titanium® UDL-30, Titanium® UDL-50, Titanium® X30 or TopShield® EXT-H30** in accordance with FBC Section 1507.1.1.1(3) or R905.1.1.1(3).

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. The nail shall be of sufficient length to penetrate through the roof sheathing, or not less than 0.75-inch into the roof sheathing. \*Metal caps are required where the ultimate design wind speed,  $V_{ult}$ , equals or exceeds 170 mph.

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

FASTENING: Grid pattern of 12-inches between the overlaps and 6-inch spacing at the overlaps, in accordance with FBC Section 1507.1.1.1(3) or R905.1.1.1(3).

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

6.4.4	<p><b>CODE REFERENCE:</b> <b>1507.1.1.1 or R905.1.1.1, Option 1 combined with Option 2 or 3:</b> Optional self-adhering strips to deck-joints followed by base sheet mechanically fastened to deck followed by underlayment adhered to base sheet</p>								
DECK DESCRIPTION:	Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction								
SECONDARY WATER BARRIER:	(Optional) Min. 3 ¼-inch wide strips of <b>Titanium® PSU-30 or Titanium® FR</b> or other FBC Approved joint-strip product 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 <b>Titanium® UDL-25, Titanium® UDL-30, Titanium® UDL-50, Titanium® X30 or TopShield® EXT-H30</b> or FBC Approved ASTM D226, Type II felt, 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 <b>Titanium® UDL-25, Titanium® UDL-30, Titanium® UDL-50, Titanium® X30 or TopShield® EXT-H30</b> or FBC Approved ASTM D226, Type II felt 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. The nail shall be of sufficient length to penetrate through the roof sheathing, or not less than 0.75-inch into the roof sheathing. *Metal caps are required where the ultimate design wind speed, $V_{ult}$ , equals or exceeds 170 mph.								
	<table border="0"> <thead> <tr> <th style="text-align: left;"><u>Cap Type</u></th> <th style="text-align: left;"><u>Minimum thickness</u></th> </tr> </thead> <tbody> <tr> <td>Metal cap</td> <td>32 ga. sheet metal</td> </tr> <tr> <td>Power-driven metal cap</td> <td>0.010-inch</td> </tr> <tr> <td>Plastic cap</td> <td>0.035-inch (outside edge thickness)</td> </tr> </tbody> </table>	<u>Cap Type</u>	<u>Minimum thickness</u>	Metal cap	32 ga. sheet metal	Power-driven metal cap	0.010-inch	Plastic cap	0.035-inch (outside edge thickness)
<u>Cap Type</u>	<u>Minimum thickness</u>								
Metal cap	32 ga. sheet metal								
Power-driven metal cap	0.010-inch								
Plastic cap	0.035-inch (outside edge thickness)								
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).								
UNDERLAYMENT:	<p>BASE PLY: (Optional) <b>Titanium® PSU-30 or Titanium® FR</b> 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.</p> <p>CAP PLY: <b>Titanium® PSU-30 or Titanium® FR</b> 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.</p>								
SURFACING:	FBC Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles, subject to the allowable roof covers in <a href="#">Table 2 herein</a> .								

**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:**

[Intertek Testing Services NA Inc. – QUA1673](#); (312) 906-7779; [maura.norlander@intertek.com](mailto:maura.norlander@intertek.com)

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