NEMO|etc.
Certificate of Authorization #32455
353 Christian Street, Unit #13
Oxford, CT 06478
(203) 262-9245

ENGINEER | EVALUATE | TEST | CONSULT

P.E. EVALUATION REPORT (PEER)

DUPONT DE NEMOURS, INC.
1501 Larkin Center Drive
Midland, MI 48674
(813) 597-6126

PEER-DPBS-001.A.R6
FL22525-R7
Date of Issuance: 06/14/2017
Revision 6: 10/11/2023

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. The products described herein have been evaluated for compliance with the **8th Edition (2023) Florida Building Code** sections referenced herein.

DESCRIPTION: TILE BOND™ Roof Tile Adhesive

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

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.

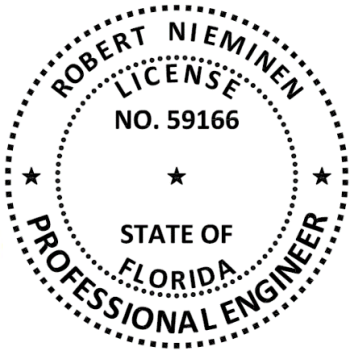
INSPECTION: Upon request, a copy of this entire PEER shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This PEER consists of pages 1 through 14.

Prepared by:

Digitally signed by Robert Nieminen
Date: 2023.10.11 '17:36:34 -04'00

This item has been digitally signed and sealed by Robert Nieminen, P.E.
Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.
Robert Nieminen, Florida P.E. 59166, FBC ANE1983
NEMO ETC, LLC, Florida CA #32455



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.

ROOFING COMPONENT EVALUATION:

1. SCOPE:

Product Category: Roofing
Sub-Category: Roof Tile Adhesive
Product Approval Method: Method 1, Option D: Codified Material, Evaluation by Engineer
Compliance Statement: TILE BOND™ Roof Tile Adhesive, as produced by **DUPONT DE NEMOURS, INC.**, has demonstrated compliance with the following sections of the **8th Edition (2023) Florida Building Code** through testing in accordance with the Standards set forth herein. Compliance is subject to the Installation Requirements and Limitations of Use set forth herein.

2. STANDARDS:

SECTIONS	PROPERTY	STANDARD
1504.2.1.1	Overturning resistance	SSTD 11
1523.6.5.2.2	Static uplift resistance	TAS 101
1523.6.5.2.17.1	Compressive strength	ASTM D1621
1523.6.5.2.17.2	Density	ASTM D1622
1523.6.5.2.17.3	Tensile strength	ASTM D1623
1523.6.5.2.17.4	Dimensional stability	ASTM D2126
1523.6.5.2.17.5	Open cell content	ASTM D2856
1523.6.5.2.17.6	Water absorption	ASTM D2842
1523.6.5.2.17.7	Moisture vapor permeance	ASTM E96

3. REFERENCES:

Entity	Examination	Reference	Date
Miami-Dade BCCO (CER1592)	FBC HVHZ Certification	22-0614.05	15/15/2022
NEMO (TST6049)	TAS 101 (concrete tile)	4c-DPBS-20-LSOTM-01.A	12/17/2020
NEMO (TST6049)	TAS 101 (clay tile)	4c-DPBS-20-LSOTM-01.B	02/16/2021
NEMO (TST6049)	Physical properties	4p-DPBS-20-SSLAP-02.A	07/06/2021
UL, LLC. (QUA9625)	Quality Assurance	Service confirmation	01/04/2019
UL, LLC. (QUA9625)	Quality Assurance	Florida BCIS	Current

4. PRODUCT DESCRIPTION:

PRODUCT	DESCRIPTION	PLANT(S)
TILE BOND™ Roof Tile Adhesive	single component polyurethane foam roof tile adhesive distributed in factory, pre-mixed canisters.	Wilmington, IL

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 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.

5.3 This PEER does not include evaluation of fire classification. Refer to **FBC 1505, 1516** or **R902** for requirements and limitations regarding roof assembly fire classification. Refer to **FBC 2603** for requirements and limitations concerning the use of foam plastic insulation.

5.4 This PEER does not include evaluation of roof edge termination.

5.5	FBC NON-HVHZ JURISDICTIONS:

5.5.1 **TILE BOND™ Roof Tile Adhesive** can be used with flat, low and high profile tiles having a current Florida Product Approval, Miami-Dade NOA or approved on a local-level by the Authority Having Jurisdiction.

5.5.1.1 Field tiles, meeting the limitations of **FBC 1609.6.3**, using **TILE BOND™ Roof Tile Adhesive**, are limited to projects having an Aerodynamic Uplift Moment (M_a), determined in accordance with Table 2HB, 2HC, 2HD, 2GB, 2GC or 2GD of the **FRSA/TRI Manual 7th Edition** or **FBC 1609.6.3**, not greater than the Allowable Overturning Moment values in Table 1.

5.5.1.2 Data in Table 1 relates to installation over a TWO-PLY underlayment system, as detailed in the **FRSA/TRI Manual 7th Edition**, using a hot-asphalt-applied, ASTM D6380, Class M cap sheet (commonly called a '30/90 system').

Alternate underlayment systems are those having a current Florida Product Approval and/or approved on a local-level by the Authority Having Jurisdiction, listed specifically for use with **TILE BOND™ Roof Tile Adhesive**.

5.5.1.3 Tile roof systems using tile types or profiles other than those listed below acquiring acceptance for use with **TILE BOND™ Roof Tile Adhesive** shall be tested in accordance with **SSTD 11** or **Testing Application Standard TAS 101**. For the interdependent multi-paddy method, an additional 2-to-1 margin above that specified shall be applied in determining the 'allowable overturning moment'.

TABLE 1: FIELD TILES IN TILE BOND™ ROOF TILE ADHESIVE
ALLOWABLE OVERTURNING MOMENT PERFORMANCE DATA FOR NON-HVHZ JURISDICTIONS
(MARGIN OF SAFETY ALREADY APPLIED)

Tile (FBC 1609.6.3)		Adhesive Pad Placement				Allowable Overturning Moment (ft-lbf)
Type	**Profile**	**Type**	**Size**	**Location**	**Contact Area**	
Concrete	Flat / Low	Interdependent	1-inch dia. x 8-inch long	One (1) to underlayment One (1) at tile headlap	Min. 16 in^2 per paddy	63

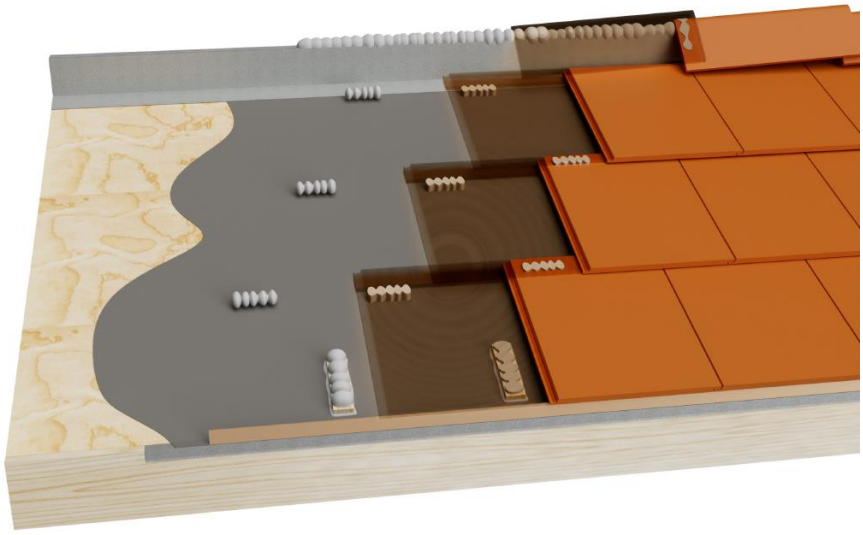


TABLE 1 (CONTINUED): FIELD TILES IN TILE BOND™ ROOF TILE ADHESIVE
ALLOWABLE OVERTURNING MOMENT PERFORMANCE DATA FOR NON-HVHZ JURISDICTIONS
(MARGIN OF SAFETY ALREADY APPLIED)

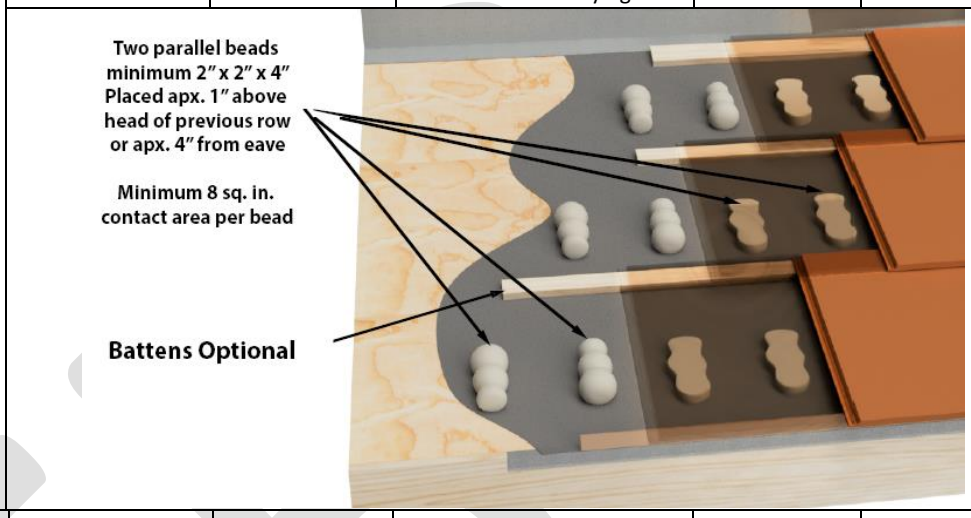
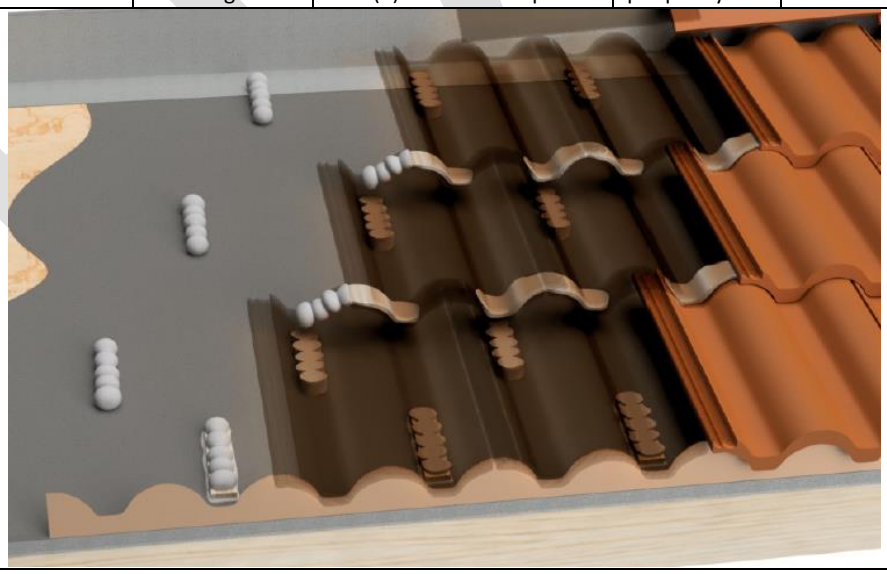
Tile (FBC 1609.6.3)		Adhesive Pad Placement				Allowable Overturning Moment (ft-lbf)
Type	**Profile**	**Type**	**Size**	**Location**	**Contact Area**	
Concrete	Flat/Low	Independent	2 x 2 x 4-inch	Two pads to underlayment, parallel to tile length, starting 1-inch back from the head of underlying tile	Min. 8 in^2 per paddy	65
						
Concrete	Medium	Interdependent	1-inch dia. x 8-inch long	One (1) to underlayment One (1) at tile headlap	Min. 16 in^2 per paddy	35
						

TABLE 1 (CONTINUED): FIELD TILES IN TILE BOND™ ROOF TILE ADHESIVE
ALLOWABLE OVERTURNING MOMENT PERFORMANCE DATA FOR NON-HVHZ JURISDICTIONS
(MARGIN OF SAFETY ALREADY APPLIED)

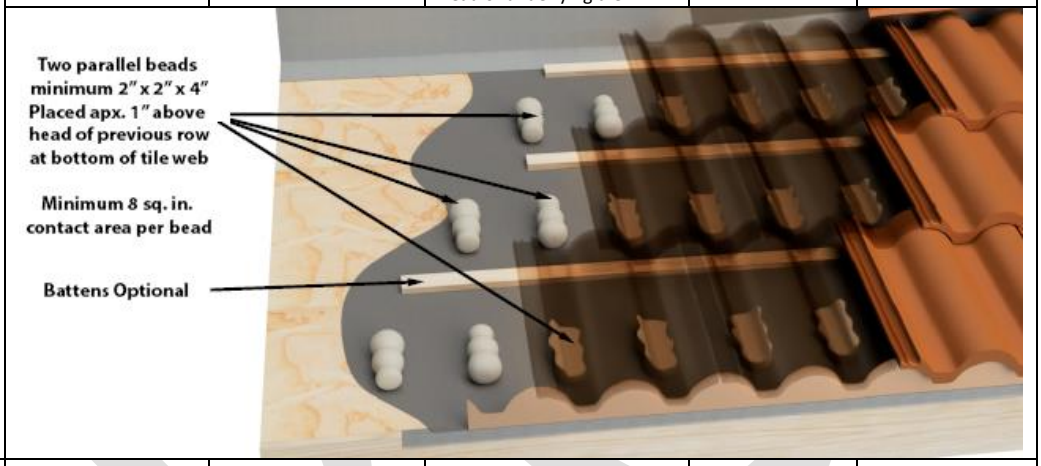
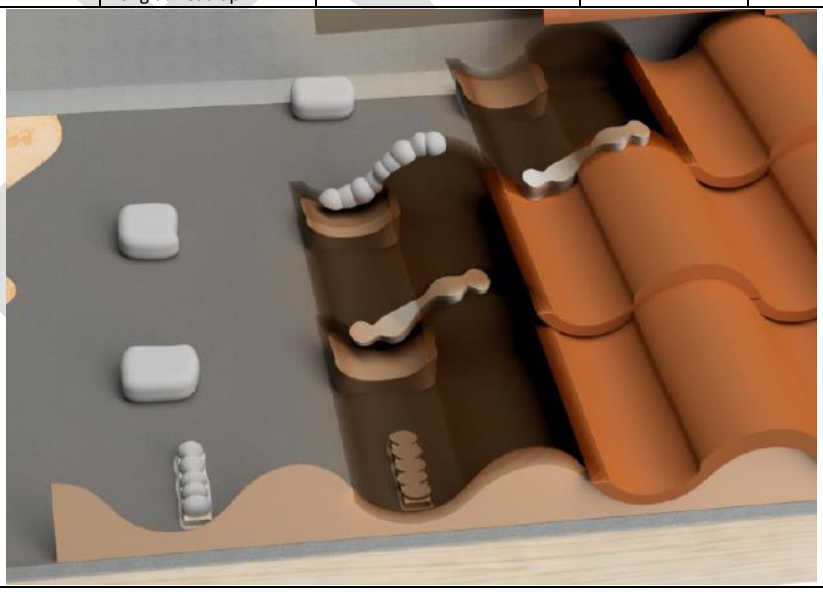
Tile (FBC 1609.6.3)		Adhesive Pad Placement				Allowable Overturning Moment (ft-lbf)
Type	**Profile**	**Type**	**Size**	**Location**	**Contact Area**	
Concrete	Medium	Independent	2 x 2 x 4-inch	Two pads to underlayment, parallel to tile length, starting 1-inch back from the head of underlying tile	Min. 8 in^2 per paddy	67
						
Concrete	High	Interdependent	4x4-inch x 1-inch high to underlayment 1-inch dia. x 8-inch long at headlap	One (1) to underlayment One (1) at tile headlap	Min. 16 in^2 per paddy	19
						

TABLE 1 (CONTINUED): FIELD TILES IN TILE BOND™ ROOF TILE ADHESIVE
ALLOWABLE OVERTURNING MOMENT PERFORMANCE DATA FOR NON-HVHZ JURISDICTIONS
(MARGIN OF SAFETY ALREADY APPLIED)

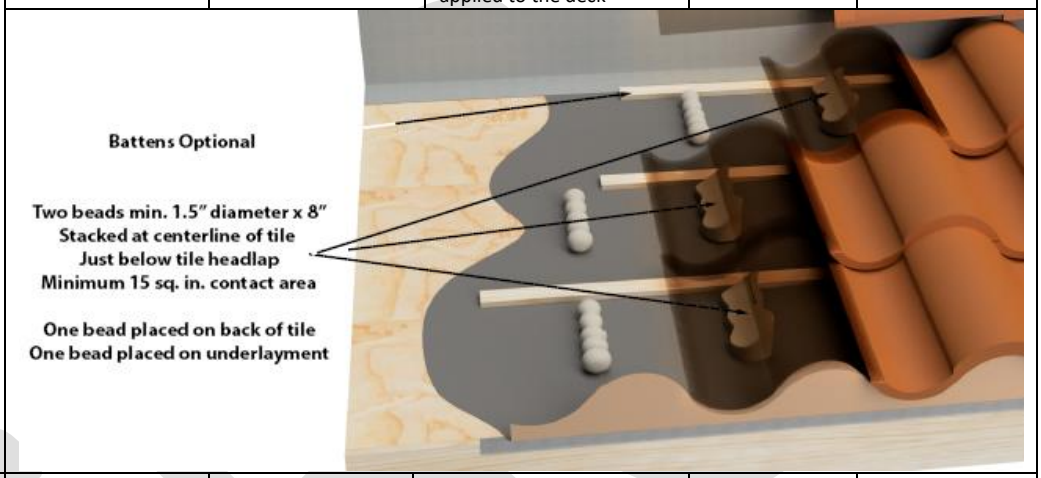
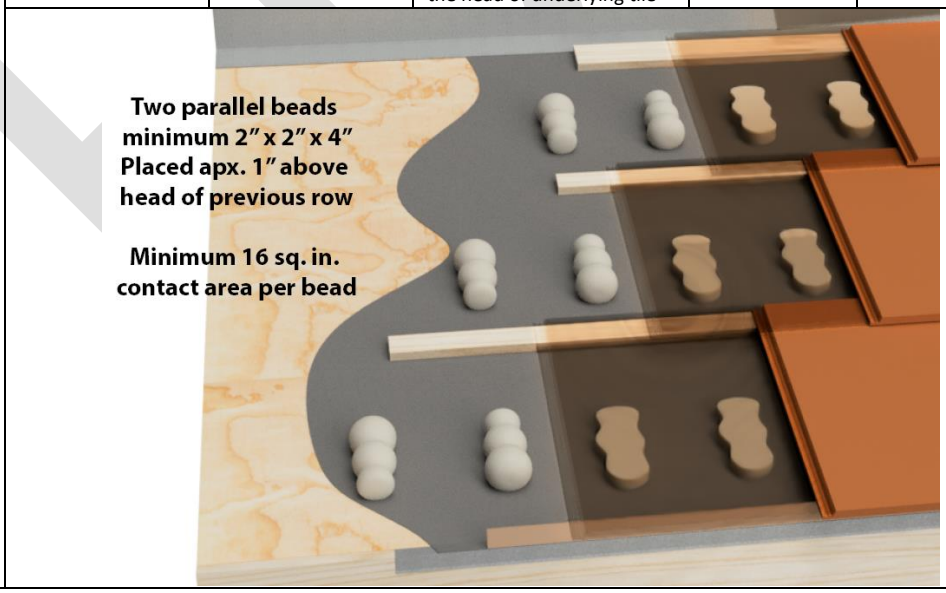
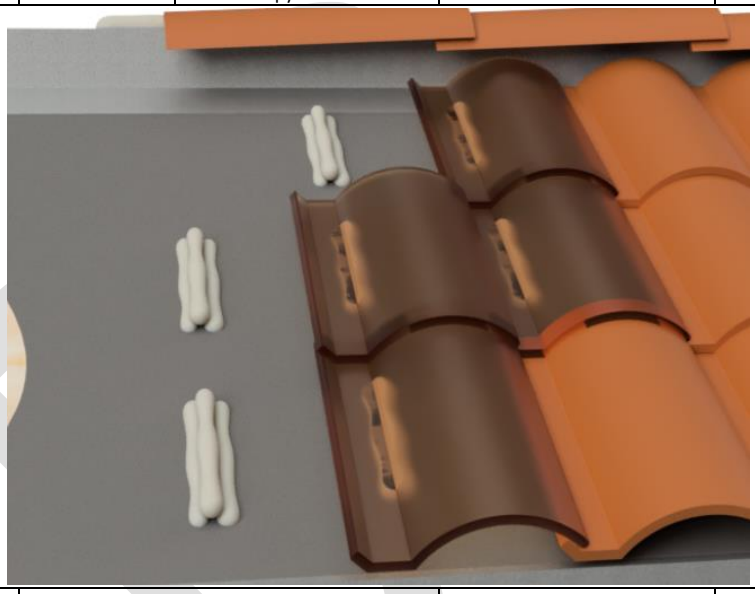
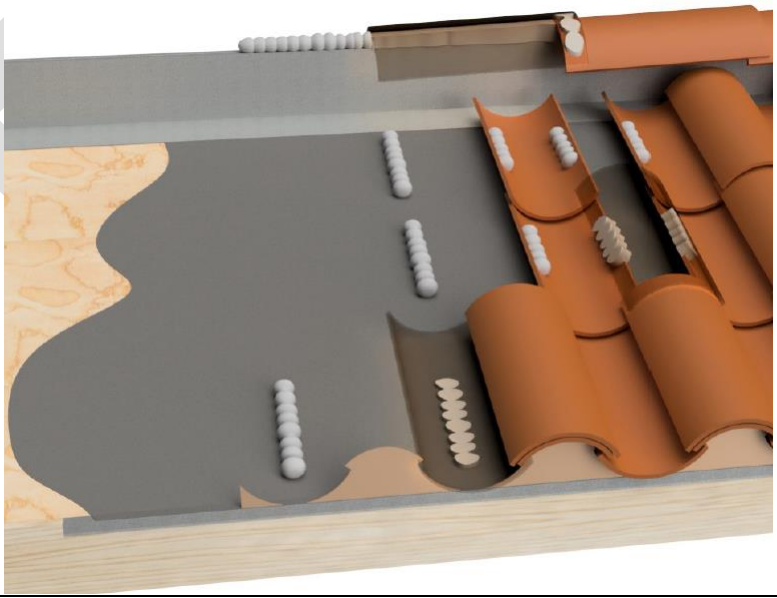
Tile (FBC 1609.6.3)		Adhesive Pad Placement				Allowable Overturning Moment (ft-lbf)
Type	**Profile**	**Type**	**Size**	**Location**	**Contact Area**	
Concrete	High	Independent (stacked)	1.5-inch diameter x 8-inch long	One (1) 1.5" dia. x 8" paddy to the center of the tile underside (3"from the head lap) mating to one (1) 1.5" dia. x 8" paddy applied to the deck	Min. 15 in^2 total	58
						
Clay	Flat / Low	Independent	2 x 2 x 4-inch	Two pads to underlayment, parallel to tile length, starting 1-inch back from the head of underlying tile	Min. 16 in^2 per paddy	74
						

TABLE 1 (CONTINUED): FIELD TILES IN TILE BOND™ ROOF TILE ADHESIVE
ALLOWABLE OVERTURNING MOMENT PERFORMANCE DATA FOR NON-HVHZ JURISDICTIONS
(MARGIN OF SAFETY ALREADY APPLIED)

Tile (FBC 1609.6.3)		Adhesive Pad Placement				Allowable Overturning Moment (ft-lbf)
Type	**Profile**	**Type**	**Size**	**Location**	**Contact Area**	
Clay	High	Independent (stacked 'pyramid')	Three (3) @ 1-inch dia. x 10-inch long	Two (2) pads, 1-inch dia. x 10-inch long, side by side on the underlayment. A third pad, 1-inch dia. x 10-inch long on top of the two beads to form a 'pyramid'	Min. 50 in^2	93
						
Clay	Cap & Pan (Barrel)	Independent	Pan Tile to Substrate: 1 x 1½ x 8-inch Cap Tile Long Edges: 1-inch dia. x 8-inch long		Pan: Min. 34 in^2 Cap to Pan: Min. 20 in^2 each	133
						

5.5.2 **TILE BOND™ Roof Tile Adhesive** may be used with hip and ridge tiles having a current Florida Product Approval, Miami-Dade NOA or approved on a local-level by the Authority Having Jurisdiction.

5.5.2.1 Hip and ridge tiles using **TILE BOND™ Roof Tile Adhesive** are limited to projects having hip/ridge design pressure requirements, determined in accordance with Table 1H or 1G of the **FRSA/TRI Manual 7th Edition, FBC 1609** or **FBC Residential Chapter 3**, not greater than the Allowable Uplift values in Table 2.

TABLE 2: HIP & RIDGE TILES IN TILE BOND™ ROOF TILE ADHESIVE
ALLOWABLE UPLIFT RESISTANCE PERFORMANCE DATA FOR NON-HVHZ JURISDICTIONS
(MARGIN OF SAFETY ALREADY APPLIED)

Tile	Substrate	Pad Size / Contact Area	Allowable Pressure (psf)
Clay or Concrete	2x PT ridge board	Tile Underside to Substrate: 1" W x 1" H x 10" L Tile Head Lap: 1" W x 1" H x 4" L / 10 in²	174
Clay or Concrete	East Coast Metals "Trim Lock™" (FBC FL5374): *Galvalume® or stainless steel*	Tile Underside to Substrate: 1" W x 1" H x 10" L Tile Head Lap: 1" W x 1" H x 4" L / 10 in²	152
Clay or Concrete	East Coast Metals "Trim Lock™" (FBC FL5374): *aluminum*	Tile Underside to Substrate: 1" W x 1" H x 10" L Tile Head Lap: 1" W x 1" H x 4" L / 10 in²	82
Clay or Concrete	East Coast Metals "Trim Lock™ Plus" (FBC FL5394): *aluminum, Galvalume® or stainless steel*	Tile Underside to Substrate: 1" W x 1" H x 10" L Tile Head Lap: 1" W x 1" H x 4" L / 10 in²	82

5.6 FBC HVHZ JURISDICTIONS:

5.6.1 Wind driven rain (TAS 100) does not form part of this evaluation. Refer to tile manufacturer's Florida Product Approval for use in HVHZ jurisdictions or Miami-Dade NOA for this compliance requirement.

5.6.2 Reference is made to **FBC 1512.4.2.4** regarding field testing of completed tile roof installations in HVHZ jurisdictions.

5.6.3 **TILE BOND™ Roof Tile Adhesive** can be used with flat, low and high profile tiles having a current Florida Product Approval for use in FBC HVHZ jurisdictions, Miami-Dade NOA or approved on a local-level by the Authority Having Jurisdiction.

5.6.3.1 Field tiles, meeting the limitations of **Section 4.1 of TAS 108**, using **TILE BOND™ Roof Tile Adhesive**, are limited to projects having an Moment Resistance (M_r), determined as a 'Moment-Based System' in accordance with **Roofing Application Standard RAS 127-20**[1], not greater than the Attachment Resistance Expressed as a Moment (M_f) values in Table 3.

5.6.3.2 Data in Table 3 relates to installation over a '30/90' underlayment system, as detailed in **Roofing Application Standard RAS 120-20**. Alternate underlayment systems include those having a current Florida Product Approval for use in HVHZ jurisdictions or Miami-Dade NOA specifically for use with **TILE BOND™ Roof Tile Adhesive**.

[1] Refer to the tile manufacturer's Florida Product Approval for use in HVHZ jurisdictions or Miami-Dade NOA for the 'Aerodynamic Multiplier (λ)' and 'Restoring Moment due to Gravity (M_g)' variables associated with the specific tile.

TABLE 3: FIELD TILES IN TILE BOND™ ROOF TILE ADHESIVE ATTACHMENT RESISTANCE EXPRESSED AS A MOMENT (M_f) FOR HVHZ JURISDICTIONS
(MARGIN OF SAFETY ALREADY APPLIED)

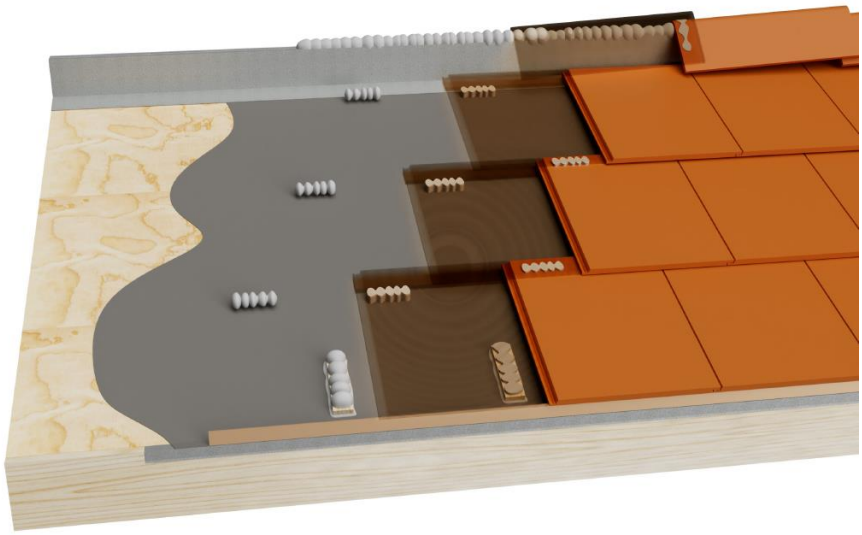
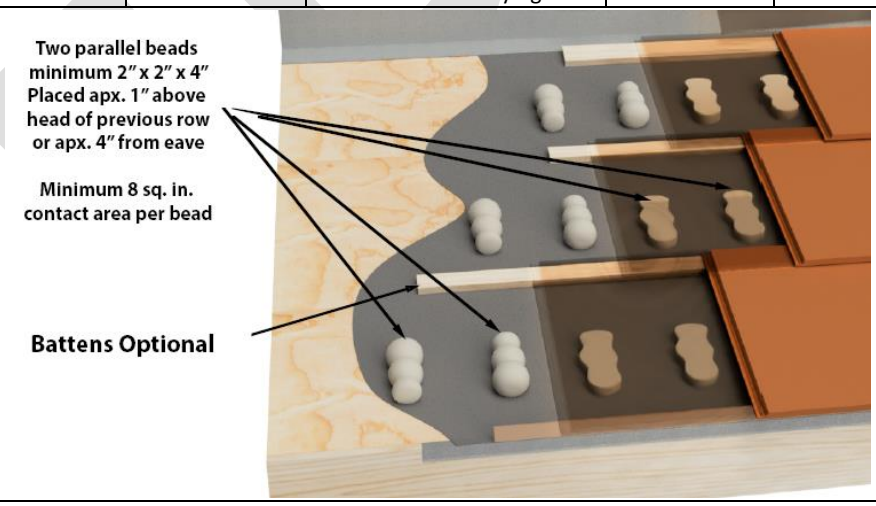
Tile (Section 4.1 of TAS 108)		Adhesive Pad Placement				Attachment Resistance Expressed as a Moment (ft-lbf)
Type	**Profile**	**Type**	**Size**	**Location**	**Contact Area**	
Concrete	Flat / Low	Interdependent	1-inch dia. x 8-inch long	One (1) to underlayment One (1) at tile headlap	Min. 16 in^2 per paddy	63
						
Concrete	Flat/Low	Independent	2 x 2 x 4-inch	Two pads to underlayment, parallel to tile length, starting 1-inch back from the head of underlying tile	Min. 8 in^2 per paddy	65
						

TABLE 3: FIELD TILES IN TILE BOND™ ROOF TILE ADHESIVE ATTACHMENT RESISTANCE EXPRESSED AS A MOMENT (M_f) FOR HVHZ JURISDICTIONS
(MARGIN OF SAFETY ALREADY APPLIED)

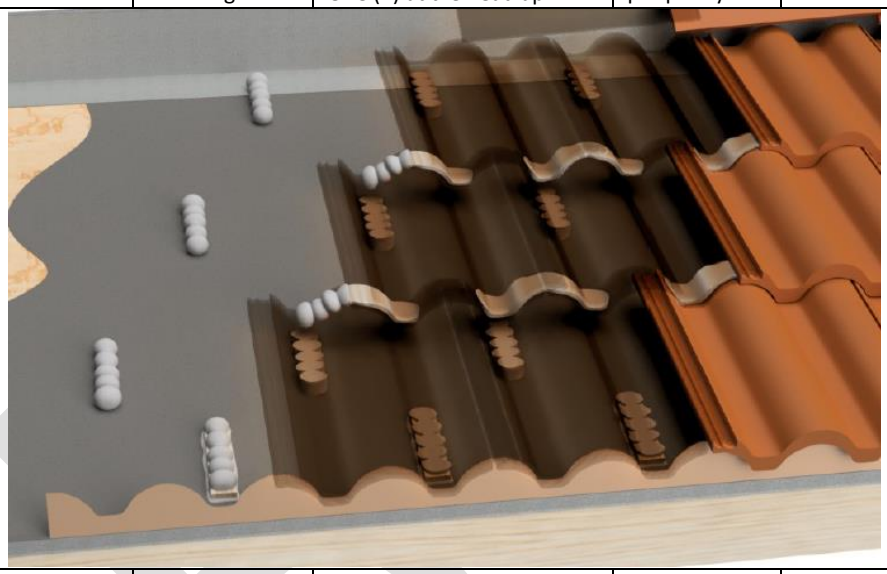
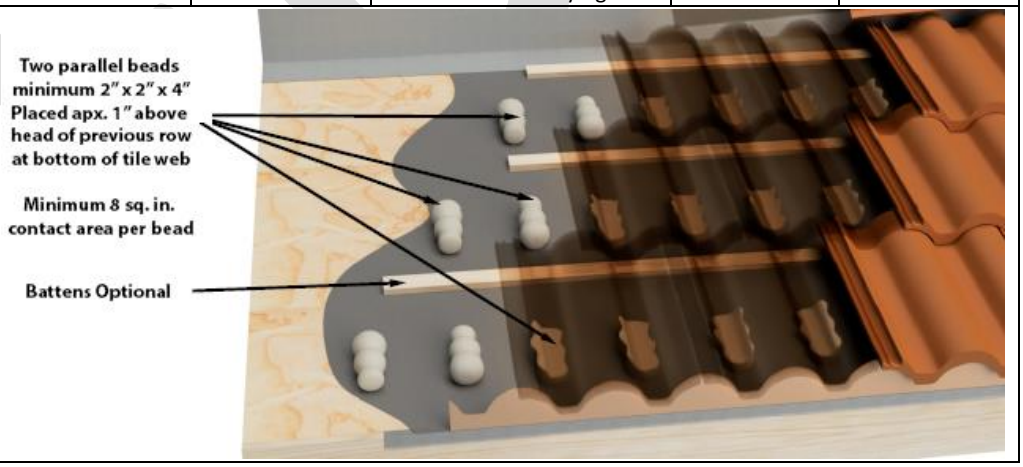
Tile (Section 4.1 of TAS 108)		Adhesive Pad Placement				Attachment Resistance Expressed as a Moment (ft-lbf)
Type	**Profile**	**Type**	**Size**	**Location**	**Contact Area**	
Concrete	Medium	Interdependent	1-inch dia. x 8-inch long	One (1) to underlayment One (1) at tile headlap	Min. 16 in^2 per paddy	35
						
Concrete	Medium	Independent	2 x 2 x 4-inch	Two pads to underlayment, parallel to tile length, starting 1-inch back from the head of underlying tile	Min. 8 in^2 per paddy	67
						

TABLE 3: FIELD TILES IN TILE BOND™ ROOF TILE ADHESIVE ATTACHMENT RESISTANCE EXPRESSED AS A MOMENT (M_f) FOR HVHZ JURISDICTIONS
(MARGIN OF SAFETY ALREADY APPLIED)

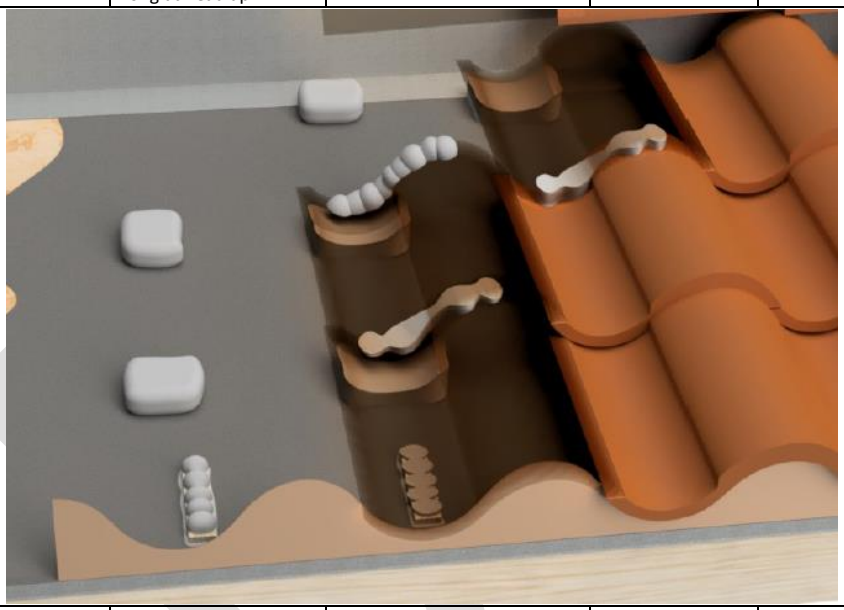
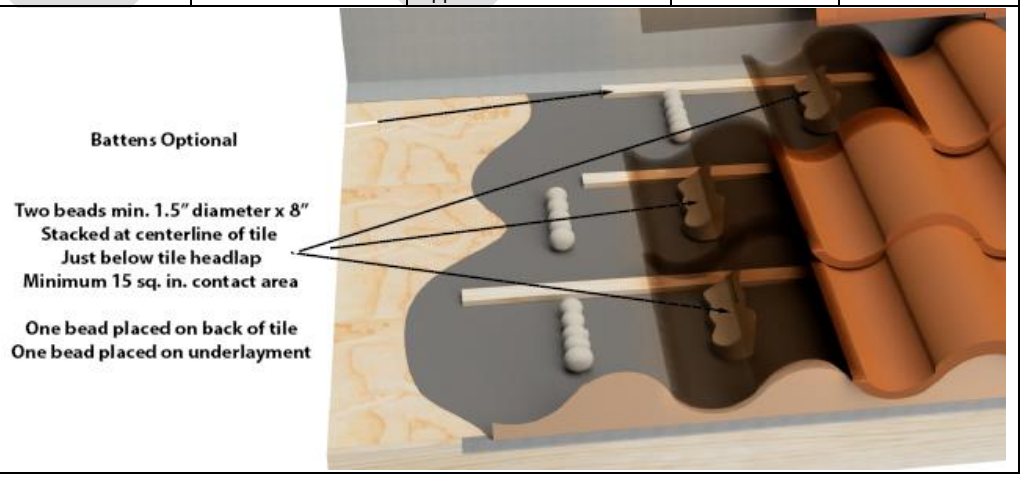
Tile (Section 4.1 of TAS 108)		Adhesive Pad Placement				Attachment Resistance Expressed as a Moment (ft-lbf)
Type	**Profile**	**Type**	**Size**	**Location**	**Contact Area**	
Concrete	High	Interdependent	4x4-inch x 1-inch high to underlayment 1-inch dia. x 8-inch long at headlap	One (1) to underlayment One (1) at tile headlap	Min. 16 in^2 per paddy	19
						
Concrete	High	Independent (stacked)	1.5-inch diameter x 8-inch long	One (1) 1.5" dia. x 8" paddy to the center of the tile underside (3"from the head lap) mating to one (1) 1.5" dia. x 8" paddy applied to the deck	Min. 15 in^2 total	58
						

TABLE 3: FIELD TILES IN TILE BOND™ ROOF TILE ADHESIVE ATTACHMENT RESISTANCE EXPRESSED AS A MOMENT (M_f) FOR HVHZ JURISDICTIONS
(MARGIN OF SAFETY ALREADY APPLIED)

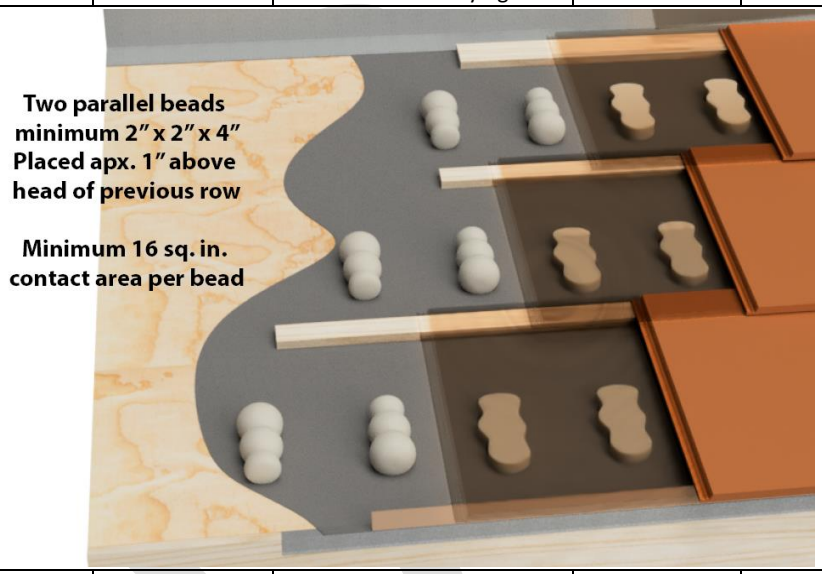
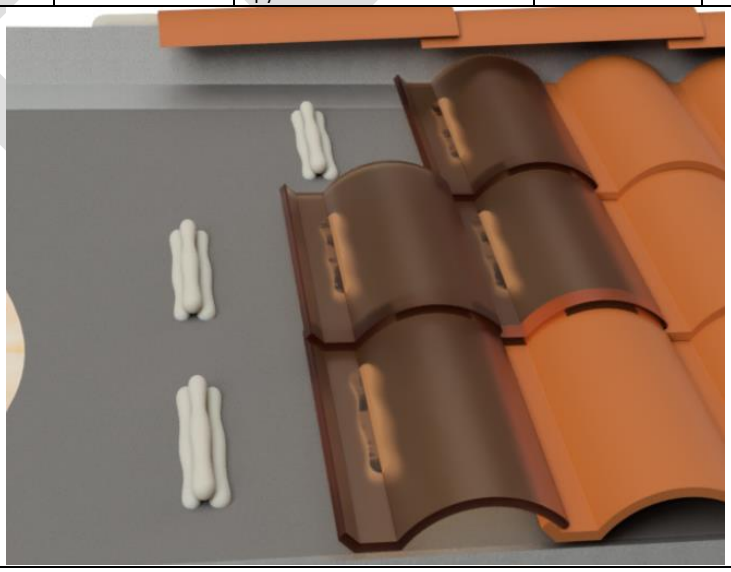
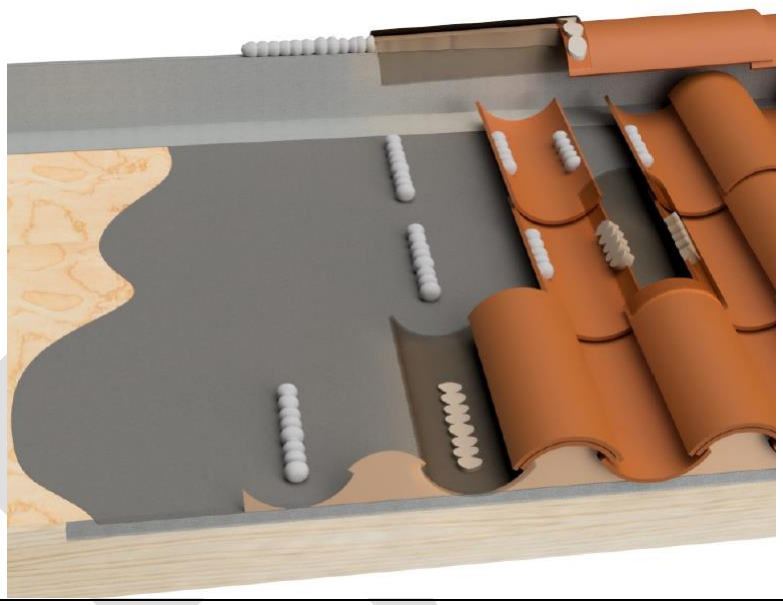
Tile (Section 4.1 of TAS 108)		Adhesive Pad Placement				Attachment Resistance Expressed as a Moment (ft-lbf)
Type	**Profile**	**Type**	**Size**	**Location**	**Contact Area**	
Clay	Flat / Low	Independent	2 x 2 x 4-inch	Two pads to underlayment, parallel to tile length, starting 1-inch back from the head of underlying tile	Min. 16 in^2 per paddy	74
						
Clay	High	Independent (stacked 'pyramid')	Three (3) @ 1-inch dia. x 10-inch long	Two (2) pads, 1-inch dia. x 10-inch long, side by side on the underlayment. A third pad, 1-inch dia. x 10-inch long on top of the two beads to form a 'pyramid'	Min. 50 in^2	93
						

TABLE 3: FIELD TILES IN TILE BOND™ ROOF TILE ADHESIVE ATTACHMENT RESISTANCE EXPRESSED AS A MOMENT (M_f) FOR HVHZ JURISDICTIONS *(MARGIN OF SAFETY ALREADY APPLIED)*						
Tile (Section 4.1 of TAS 108)		**Adhesive Pad Placement**				**Attachment Resistance Expressed as a Moment (ft-lbf)**
Type	**Profile**	**Type**	**Size**	**Location**	**Contact Area**	
Clay	Cap & Pan (Barrel)	Independent	Pan Tile to Substrate: 1 x 1½ x 8-inch Cap Tile Long Edges: 1-inch dia. x 8-inch long		Pan: Min. 34 in^2 Cap to Pan: Min. 20 in^2 each	133
						

5.6.4 **TILE BOND™ Roof Tile Adhesive** may be used with hip and ridge tiles having a current Florida Product Approval for use in HVHZ jurisdictions or Miami-Dade NOA.

5.6.4.1 Hip and ridge tiles using **TILE BOND™ Roof Tile Adhesive** shall be installed in accordance with **Roofing Application Standard RAS 120-20**.

6. INSTALLATION:

6.1 FBC NON-HVHZ JURISDICTIONS:

6.1.1 **TILE BOND™ Roof Tile Adhesive** and the tile roof assembly shall be installed in accordance with the manufacturers' current published instructions, but not less than the requirements of **FBC 1507.3** and the **FRSA/TRI Manual, 7th Edition** , subject to the Limitations of Use herein.

Installation of **TILE BOND™ Roof Tile Adhesive** shall be performed by Factory Trained 'Qualified Applicator' approved and licensed by **DUPONT DE NEMOURS, INC**.

6.1.2 Underlayment shall hold current Florida Product Approval for use with tile roofing systems. The underlayment Product Approval shall specify allowable use with **TILE BOND™ Roof Tile Adhesive**. The underlayment Product Approval shall specify attachment methods for the underlayment system to resist wind uplift design loads in accordance with Table 1H or 1G of the **FRSA/TRI Manual 7th Edition** or the critical (highest) design pressure determined in accordance with **FBC 1609** or **FBC Residential Chapter 3**.

6.1.3 Hip and ridge boards or hip/ridge metal shall be installed in accordance with the **FRSA/TRI Manual 7th Edition**. Proprietary hip and ridge metal shall be installed in accordance with the manufacturer's Florida Product Approval.

6.2	FBC HVHZ JURISDICTIONS:

6.2.1 **TILE BOND™ Roof Tile Adhesive** and the tile roof assembly shall be installed in accordance with the manufacturers' current published instructions, but not less than the requirements of **Roofing Application Standard RAS 120-20**, subject to the Limitations of Use herein.

Installation of **TILE BOND™ Roof Tile Adhesive** shall be performed by Factory Trained 'Qualified Applicator' approved and licensed by **DUPONT DE NEMOURS, INC**.

6.2.2 Minimum underlayment shall comply with **Roofing Application Standard RAS 120-20**. Underlayment products shall hold a current Florida Product Approval for use in HVHZ jurisdictions or Miami-Dade NOA.

6.2.3 Hip and ridge boards or hip/ridge metal shall be installed in accordance with the **Roofing Application Standard 120-20**. Proprietary hip and ridge metal shall be installed in accordance with the manufacturer's Florida Product Approval for use in HVHZ jurisdictions or Miami-Dade NOA.

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

- END OF PEER -