



**NEMO|etc.**

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**EVALUATION REPORT**

**Dow Chemical**  
200 Larkin Center  
1605 Joseph Drive  
Midland, MI 48674  
(989) 638-9936

**Evaluation Report 15755.06.17-R2**  
**FL22525-R3**  
**Date of Issuance: 06/14/2017**  
**Revision 2: 02/13/2018**

**SCOPE:**

This Evaluation Report is issued under **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 **6<sup>th</sup> Edition (2017) Florida Building Code** sections noted 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 Evaluation Report is valid until such time as the named product(s) changes, the referenced Quality Assurance documentation changes, or provisions of the Code that relate to the product change. Acceptance of this Evaluation Report by the named client constitutes agreement to notify Robert Nieminen, P.E. of any changes to the product(s), the Quality Assurance or the production facility location(s). NEMO|etc. requires a complete review of this Evaluation Report relative to updated Code requirements with each Code Cycle.

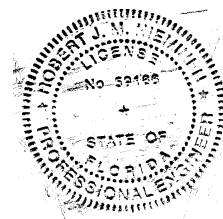
**ADVERTISEMENT:** The Evaluation Report number preceded by the words "NEMO|etc. Evaluated" may be displayed in advertising literature. If any portion of the Evaluation Report is displayed, then it shall be done in its entirety.

**INSPECTION:** Upon request, a copy of this entire Evaluation Report 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 Evaluation Report consists of pages 1 through 10.

**Prepared by:**

**Robert**



The facsimile seal appearing was authorized by Robert Nieminen, P.E. on 02/13/2018. This does not serve as an electronically signed document.

**J.M. Nieminen, P.E.**

Florida Registration No. 59166, Florida DCA ANE1983

**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 evaluation reports 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. nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this Evaluation Report, 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

**Compliance Statement:** **TILE BOND™ Roof Tile Adhesive**, as produced by **Dow Chemical**, has demonstrated compliance with the **6<sup>th</sup> Edition (2017) Florida Building Code** through testing in accordance with the Standards set forth herein. Compliance is subject to the Installation Requirements and Limitations / Conditions of Use set forth herein.

**2. STANDARDS:**

Sections	Property	Standard	Year
1504.2.1.1	Overturning resistance	SSTD 11	1997
1523.6.5.2.2	Static uplift resistance	TAS 101	1995
1523.6.5.2.17.1	Compressive strength	ASTM D1621	2016
1523.6.5.2.17.2	Density	ASTM D1622	2014
1523.6.5.2.17.3	Tensile strength	ASTM D1623	2017
1523.6.5.2.17.4	Dimensional stability	ASTM D2126	2015
1523.6.5.2.17.5	Open cell content	ASTM D2856	1998
1523.6.5.2.17.6	Water absorption	ASTM D2842	2012
1523.6.5.2.17.7	Moisture vapor permeance	ASTM E96	2013

**3. REFERENCES:**

Entity	Examination	Reference	Date
ERD (TST6049)	Physical properties & TAS 101	D9840.09.09-R1	06/07/2011
ERD (TST6049)	Tensile Adhesion	6535.06.14-1A	06/25/2014
ERD (TST6049)	Tensile Adhesion	6535.06.14-1B	06/25/2014
ERD (TST6049)	Tensile Adhesion	6535.06.14-1C	06/25/2014
ERD (TST6049)	Tensile Adhesion	6535.07.14	07/07/2014
ERD (TST6049)	Static Uplift – SSTD 11	D9840.08.09-1-R1	07/10/2017
Miami-Dade BCCO (CER1592)	FBC HVHZ Certification	16-0222.01	04/14/2016
UL, LLC. (EVL11342)	2012 IBC/IRC Compliance	UL ER18231-01	11/24/2014
UL, LLC. (QUA9625)	Quality Assurance	Inspection Report	04/19/2017

**4. PRODUCT DESCRIPTION:**

**4.1 TILE BOND™ Roof Tile Adhesive** is a single component polyurethane foam roof tile adhesive distributed in factory, pre-mixed canisters.

**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 Evaluation Report, or previous versions thereof, is/was used for permitting or design guidance unless retained specifically for that purpose.

**5.2 FBC NON-HVHZ JURISDICTIONS:**

5.2.1 Fire classification is not part of this evaluation. Refer to a current Roofing Materials Directory for fire ratings of this product and **FBC 1505.2**.

5.2.2 **TILE BOND™ Roof Tile Adhesive** can be used with flat, low and high profile tiles or any rigid, discontinuous roof assembly having a current Florida Product Approval or approved on a local-level by the Authority Having Jurisdiction.

5.2.3 Minimum underlayment shall be per **FRSA/TRI April 2012 (04-12)** or having a current Florida Product Approval or approved on a local-level by the Authority Having Jurisdiction specifically for use with **TILE BOND™ Roof Tile Adhesive**.

5.2.4 Field tiles, meeting the limitations of **FBC 1609.5.3**, using **TILE BOND™ Roof Tile Adhesive** are limited to projects having an Aerodynamic Uplift Moment (Ma), determined in accordance with **FBC 1609.5.3** or Tables 2A and 2B of **FRSA/TRI April 2012 (04-12)**, not greater than the following Allowable Overturning Moment values. Refer to Section 10 and **Dow Chemical** published installation instructions for Adhesive Pad Placement details.

TABLE 1A: FIELD TILES IN TILE BOND™ ROOF TILE ADHESIVE				
ALLOWABLE OVERTURNING MOMENT PERFORMANCE DATA FOR NON-HVHZ JURISDICTIONS				
4 TO 1 MARGIN OF SAFETY ALREADY APPLIED				
Tile (FBC 1609.5.3)		Adhesive Pad Placement (Section 10)		Allowable Overturning Moment (ft-lbf)
Type	Profile	Placement	Pad Size / Contact Area	
Clay or Concrete	Flat / Low	Figures 1 & 2	Tile Underside to Substrate & Head Lap: 1" W x 1" H x 8" L / 19.5 in <sup>2</sup>	57.7
Clay or Concrete	Medium	Figures 3 & 4	Tile Underside to Substrate & Head Lap: 1" W x 1" H x 8" L / 19.5 in <sup>2</sup>	88.3
Clay or Concrete	High	Figures 5 & 6	Tile Underside to Substrate: 4" W x 2" H x 4" L / 39 in <sup>2</sup> Tile Head Lap: 1" W x 1" H x 8" L / 19.5 in <sup>2</sup>	27.8
Clay	Cap & Pan (Barrel)	Figure 7	Pan Tile to Substrate: 1½" W x 1½" H x 8" L / 20 in <sup>2</sup> Cap Tile Long Edges: 1" W x 1" H x 8" L / 20 in <sup>2</sup> each	61.9

5.2.5 Data in Table 1A relates to installation over a '30/90' underlayment system, as detailed in the **FRSA/TRI April 2012 (04-12)**, or the following underlayment systems, as detailed in the underlayment manufacturer's Florida Product Approval:

TABLE 1B: ACCEPTABLE ALTERNATES TO '30/90' SYSTEM WITH TILE BOND™ ROOF TILE ADHESIVE	
FOR NON-HVHZ JURISDICTIONS	
Underlayment System	Product Approval Reference
Boral Roofing "Boral TileSeal <sup>HT</sup> "	FL14317
CertainTeed Corporation "Flintlastic SA Cap Sheet" or "Flintlastic GMS"	FL11288
GAF "Ruberoïd Mop Granule" or "Ruberoïd Mop Granule FR"	FL10626
Polyglass USA, Inc. "Polystick TU P", "Polystick TU Plus", "Polyflex SAP" or "Polystick Tile Pro"	FL5259
Sealoflex, Inc. "Sealoflex Tile Underlayment System"	NOA 16-1216.03

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

5.2.6 Tile roof systems using tile types or profiles other than those listed above 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-pad method, an additional 2-to-1 margin of safety above that specified in **SSTD 11** or **Testing Application Standard TAS 101** shall be applied in determining the 'allowable overturning moment'.

5.2.7 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 1A of **FRSA/TRI April 2012 (04-12)**, not greater than the following values. Refer to **Dow Chemical** published installation instructions for Adhesive Pad Placement details.

<b>TABLE 2: HIP &amp; RIDGE TILES IN TILE BOND™ ROOF TILE ADHESIVE</b> <b>ALLOWABLE UPLIFT RESISTANCE PERFORMANCE DATA FOR NON-HVHZ JURISDICTIONS</b> <b>4 TO 1 MARGIN OF SAFETY ALREADY APPLIED FOR INTERDEPENDENT PLACEMENT</b>			
Substrate	Tile	Pad Size / Contact Area (Section 10, Figures 1 through 7)	Allowable Design Pressure (psf)
2x PT ridge board	Clay or Concrete	Tile Underside to Substrate: 1" W x 1" H x 10" L Tile Head Lap: 1" W x 1" H x 4" L / 10 in <sup>2</sup>	174
<b>East Coast Metals "Trim Lock™" (FBC FL5374):</b> <i>galvanized, Galvalume® or stainless steel</i>	Clay or Concrete	Tile Underside to Substrate: 1" W x 1" H x 10" L Tile Head Lap: 1" W x 1" H x 4" L / 10 in <sup>2</sup>	152
<b>East Coast Metals "Trim Lock™" (FBC FL5374):</b> <i>aluminum</i>	Clay or Concrete	Tile Underside to Substrate: 1" W x 1" H x 10" L Tile Head Lap: 1" W x 1" H x 4" L / 10 in <sup>2</sup>	82
<b>East Coast Metals "Trim Lock™ Plus" (FBC FL5394):</b> <i>aluminum, galvanized, Galvalume® or stainless steel</i>	Clay or Concrete	Tile Underside to Substrate: 1" W x 1" H x 10" L Tile Head Lap: 1" W x 1" H x 4" L / 10 in <sup>2</sup>	82

### 5.3 FBC HVHZ JURISDICTIONS:

- 5.3.1 Fire classification is not part of this evaluation. Refer to a current Roofing Materials Directory for fire ratings of this product and **FBC 1516**.
- 5.3.2 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.
- 5.3.3 Reference is made to **FBC 1512.4.2.4** regarding field testing of completed tile roof installations in HVHZ jurisdictions.
- 5.3.4 **TILE BOND™ Roof Tile Adhesive** can be used with flat, low, medium and high profile tiles having a current Florida Product Approval for use in HVHZ jurisdictions or approved on a local-level by the Authority Having Jurisdiction.
- 5.3.5 Minimum underlayment shall be in compliance with **Roofing Application Standard RAS 120**.
- 5.3.6 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<sup>1</sup>**, not greater than the following Attachment Resistance Expressed as a Moment ( $M_r$ ) values. Refer to Section 10 and **Dow Chemical** published installation instructions for Adhesive Pad Placement details.

<sup>1</sup> Refer to the tile manufacturer's Florida Product Approval for use in HVHZ jurisdictions or Miami-Dade NOA for the 'Aerodynamic Multiplier ( $\lambda$ )' and 'Restoring Moment due to Gravity ( $M_g$ )' variables associated with the specific tile.

TABLE 2A: FIELD TILES IN TILE BOND™ ROOF TILE ADHESIVE ATTACHMENT RESISTANCE EXPRESSED AS A MOMENT (M <sub>t</sub> ) FOR HVHZ JURISDICTIONS 4 TO 1 MARGIN OF SAFETY ALREADY APPLIED				
Tile (Section 4.1 of TAS 108)		Adhesive Pad Placement (Section 10)		Attachment Resistance Expressed as a Moment (ft-lbf)
Type	Profile	Placement	Pad Size / Contact Area	
Clay or Concrete	Flat / Low	Figures 1 & 2	Tile Underside to Substrate & Head Lap: 1" W x 1" H x 8" L / ~11.1 grams / 19.5 in <sup>2</sup>	57.7
Clay or Concrete	Medium	Figures 3 & 4	Tile Underside to Substrate & Head Lap: 1" W x 1" H x 8" L / ~11.0 grams / 19.5 in <sup>2</sup>	88.3
Clay or Concrete	High	Figures 5 & 6	Tile Underside to Substrate: 4" W x 2" H x 4" L / ~22.0 grams / 39 in <sup>2</sup> Tile Head Lap: 1" W x 1" H x 8" L / ~11.0 grams / 19.5 in <sup>2</sup>	27.8
Clay	Cap & Pan (Barrel)	Figure 7	Pan Tile to Substrate: 1½" W x 1½" H x 8" L / ~11.6 grams / 20 in <sup>2</sup> Cap Tile Long Edges: 1" W x 1" H x 8" L / ~11.6 grams / 20 in <sup>2</sup> each	61.9

- 5.3.7 Data in Table 2A relates to installation over a '30/90' underlayment system, as detailed in **Roofing Application Standard RAS 120**, or the following underlayment systems, as detailed in the underlayment manufacturer's Florida Product Approval for use in HVHZ jurisdictions or Miami-Dade NOA:

TABLE 2B: ACCEPTABLE ALTERNATES TO '30/90' SYSTEM WITH TILE BOND™ ROOF TILE ADHESIVE FOR HVHZ JURISDICTIONS	
Underlayment System	FBC HVHZ Approval Reference
Boral Roofing "Boral TileSeal <sup>HT</sup> "	NOA 17-0530.10
CertainTeed Corporation "Flintlastic SA Cap Sheet" or "Flintlastic GMS"	NOA 14-1028.02
Polyglass USA, Inc. "Polystick TU Plus" or "Polystick Tile Pro"	NOA 17-0614.22
Sealoflex, Inc. "Sealoflex Tile Underlayment System"	NOA 16-1216.03

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**.

- 5.3.8 Tile roof systems using tile types or profiles other than those listed above acquiring acceptance for use with **TILE BOND™ Roof Tile Adhesive** shall be tested in accordance with **Testing Application Standard TAS 101**. For the interdependent multi-pad method, an additional 2-to-1 margin of safety above that specified in **Testing Application Standard TAS 101** shall be applied in determining the 'Minimum Characteristic Resistance Load (F)' for use in determining 'Attachment Resistance Expressed as a Moment (M<sub>t</sub>)'.

$$F' = \frac{\left(\frac{F}{2}\right) - W}{MS}$$

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

## 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 **FRSA/TRI April 2012 (04-12)** and **Dow Chemical** published installation instructions using the pad placement detailed noted in Section 10. Installation shall be performed by a Factory Trained ‘Qualified Applicator’ approved and licensed by **Dow Chemical**.
- 6.1.2 Field tile adhesive attachment using **TILE BOND™ Roof Tile Adhesive** shall provide sufficient ‘Allowable Overturning Moment’, as set forth in Table 1A, to meet or exceed the Aerodynamic Uplift Moment ( $M_a$ ), determined in accordance with **FBC 1609.5.3** or Tables 2A and 2B of **FRSA/TRI April 2012 (04-12)**.
- 6.1.3 Hip and ridge tile adhesive attachment using **TILE BOND™ Roof Tile Adhesive** shall provide sufficient ‘Allowable Design Pressure, as set forth in Table 2, to meet or exceed the design pressure requirements, determined in accordance with Table 1A of **FRSA/TRI April 2012 (04-12)**.
- 6.1.4 Hip and ridge boards or hip/ridge metal shall be installed in accordance with the **FRSA/TRI April 2012 (04-12)**. 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 **Roofing Application Standard RAS 120** and **Dow Chemical** published installation instructions using the pad placement detailed noted in Section 10. Installation shall be performed by a Factory Trained ‘Qualified Applicator’ approved and licensed by **Dow Chemical**.
- 6.2.2 The roof tile assembly’s adhesive attachment using **TILE BOND™ Roof Tile Adhesive** shall provide sufficient ‘Attachment Resistance Expressed as a Moment ( $M_f$ )’, as set forth in Table 2A, to meet or exceed the resistance value determined in accordance with **Roofing Application Standard RAS 127**. Refer to the tile manufacturer’s Florida Product Approval for use in HVHZ jurisdictions or Miami-Dade NOA for the ‘Aerodynamic Multiplier ( $\lambda$ )’ and ‘Restoring Moment due to Gravity ( $M_g$ )’ variables associated with the specific tile.
- 6.2.3 Hip and ridge tiles using **TILE BOND™ Roof Tile Adhesive** shall be installed in accordance with **Roofing Application Standard RAS 120**.

## 7. BUILDING PERMIT REQUIREMENTS:

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

## 8. MANUFACTURING PLANTS:

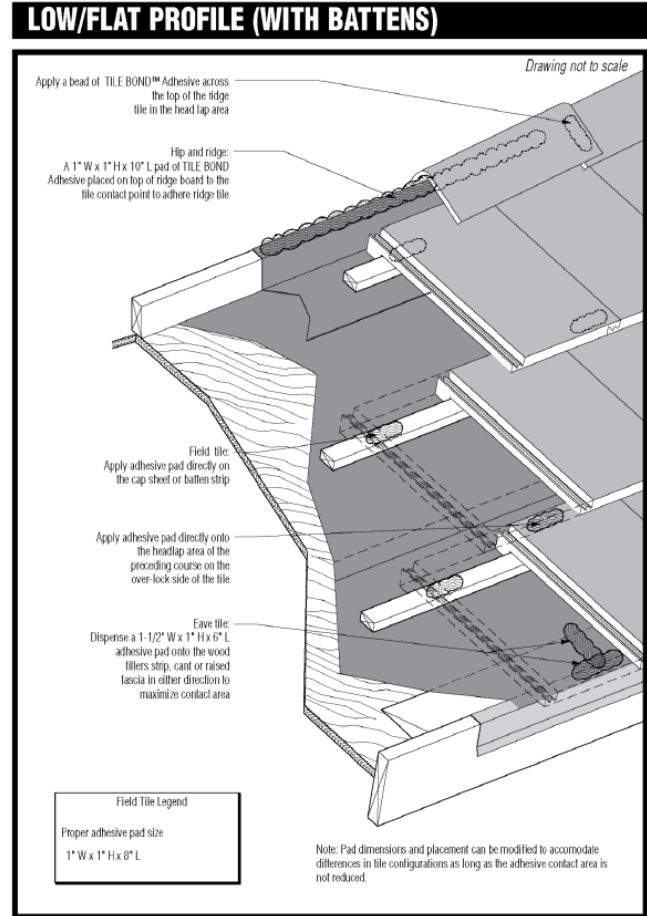
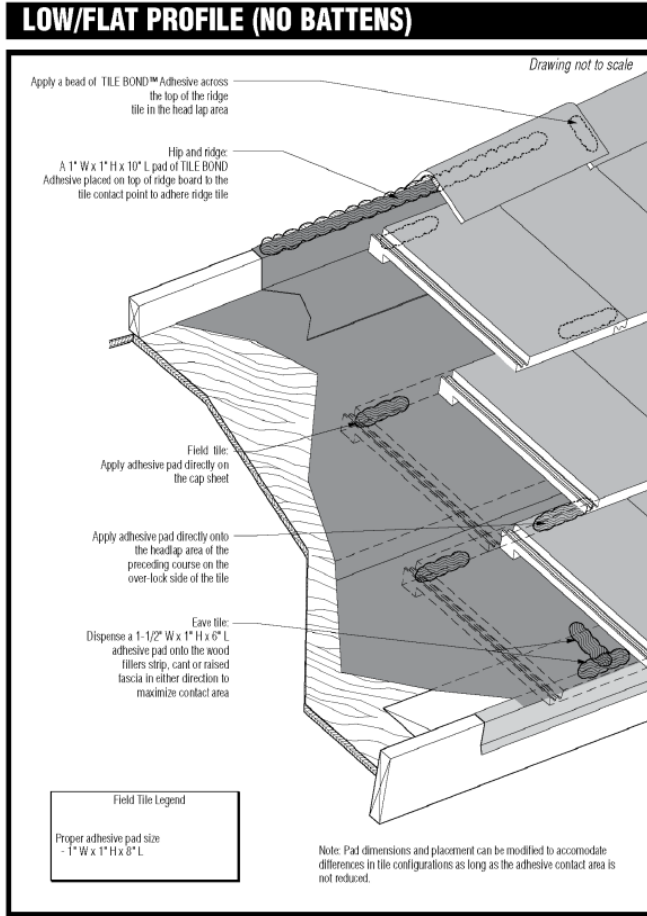
Wilmington, IL

## 9. QUALITY ASSURANCE ENTITY:

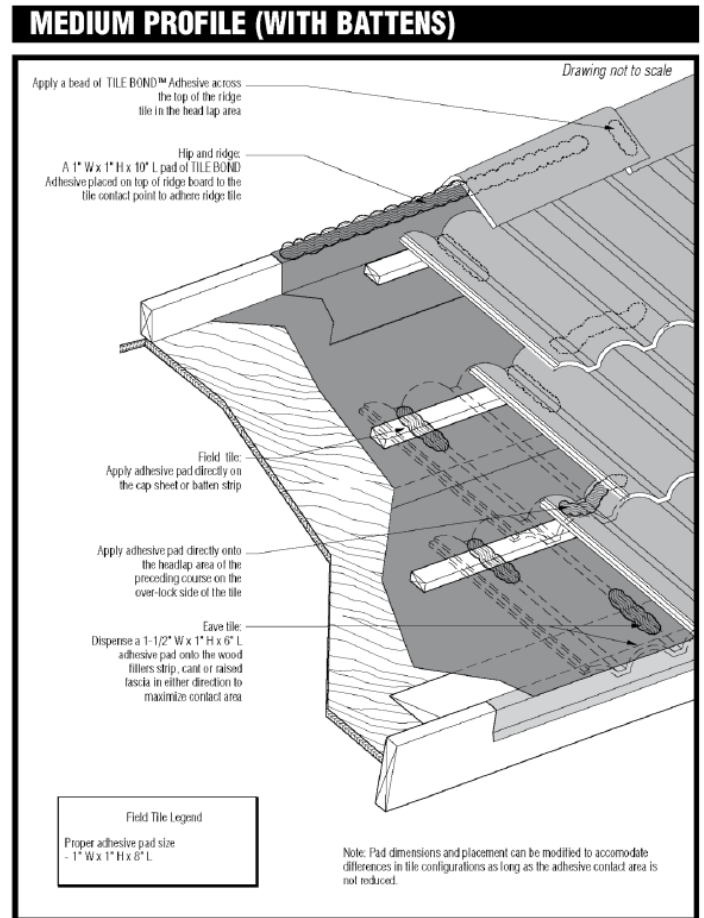
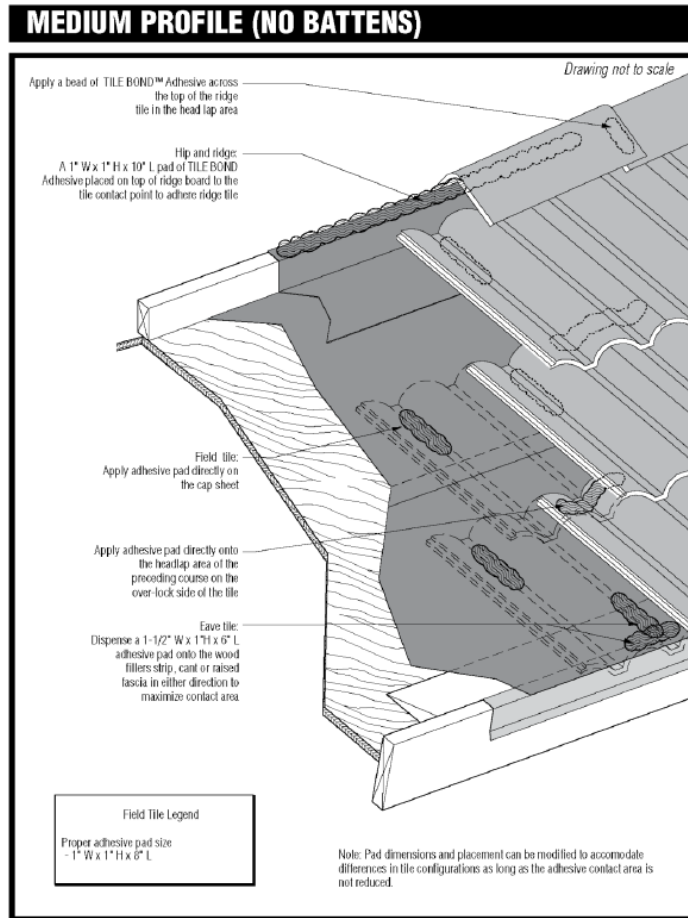
UL, LLC. – QUA9625; (630) 551-5376; [paul.pastell@ul.com](mailto:paul.pastell@ul.com)

10. PAD PLACEMENT DETAILS (FROM DOW CHEMICAL PUBLISHED LITERATURE):

10.1 Figures 1 & 2: Flat/Low Profile Tile:



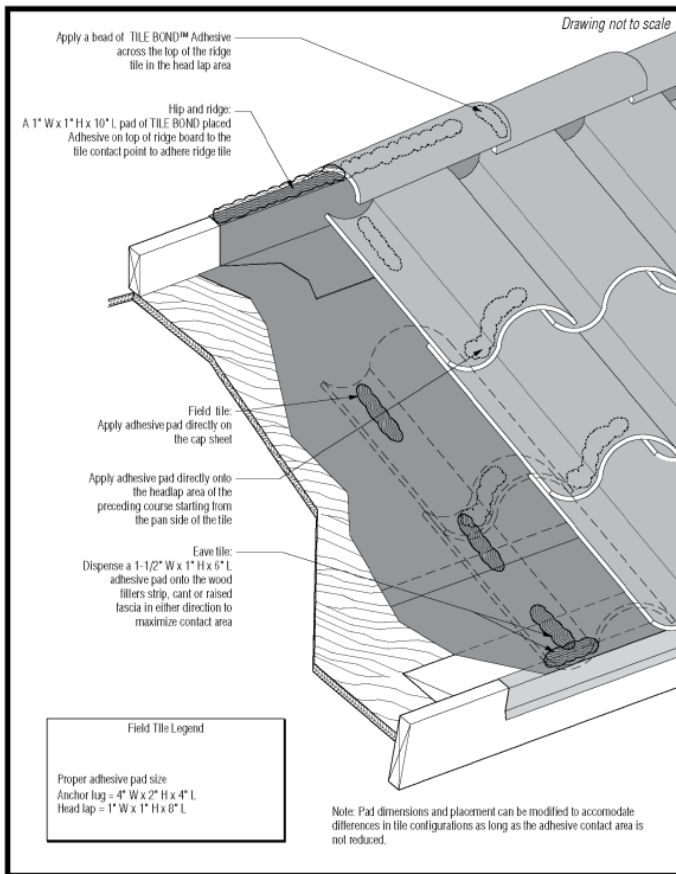
10.2 Figures 3 & 4: Medium Profile Tile:



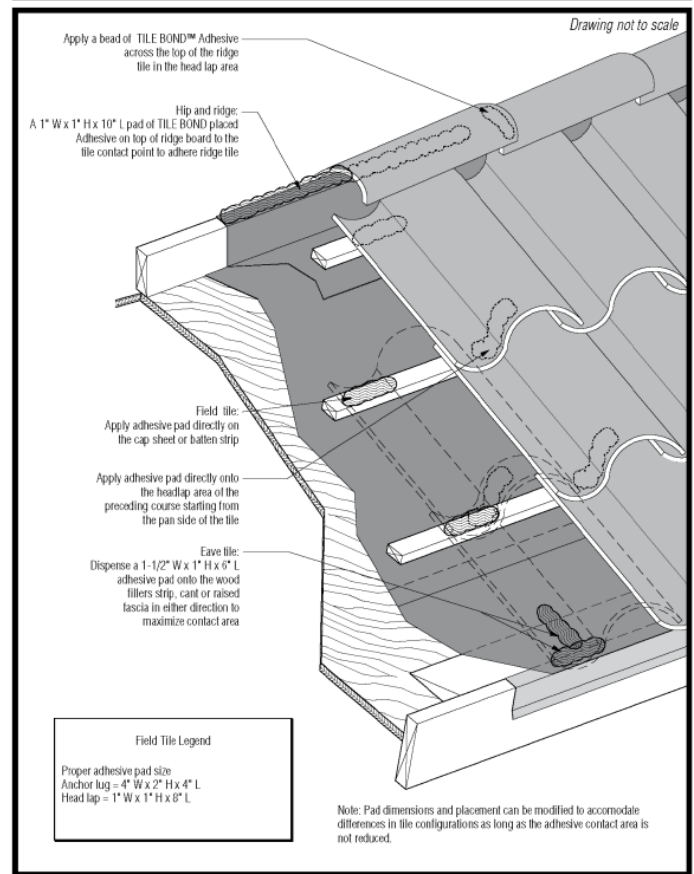


10.3 Figures 5 & 6: High Profile Tile:

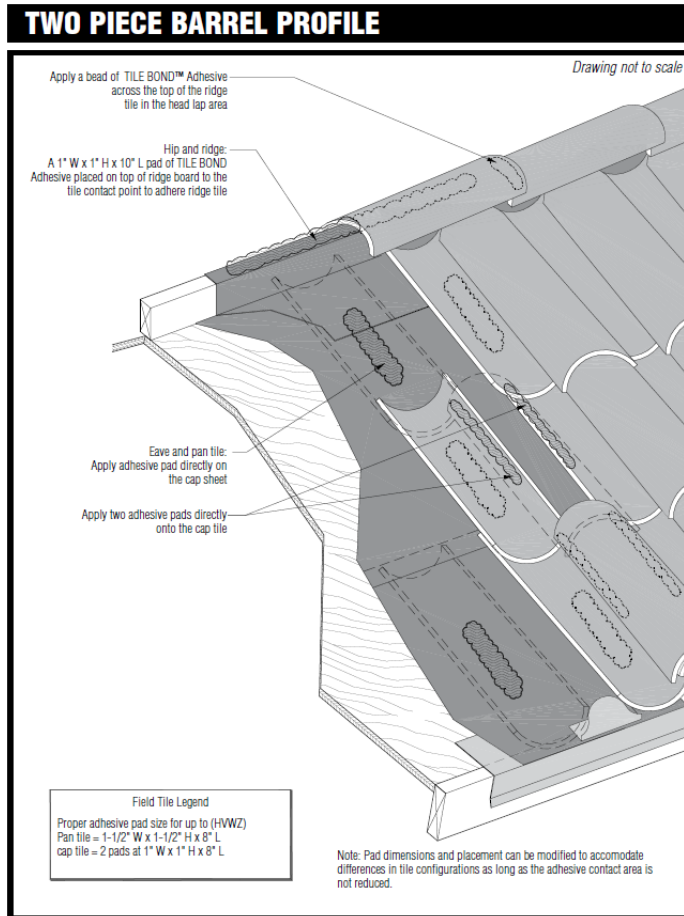
**HIGH PROFILE (NO BATTENS)**



**HIGH PROFILE (WITH BATTENS)**



10.4 Figure 7: Two Piece Barrel (Cap & Pan) Tile:



- END OF EVALUATION REPORT -