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Product Approval

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FL #	FL6276-R1
Application Type	Revision
Code Version	2004
Application Status	Approved
Comments	
Archived	<input type="checkbox"/>
Product Manufacturer	Polyfoam Products, Inc
Address/Phone/Email	11715 Boudreaux Roar Tomball, TX 77377 (954) 579-1559 ext 205 bob@polyfoam.cc
Authorized Signature	Robert Ferrante bob@polyfoam.cc
Technical Representative	Bob Ferrante
Address/Phone/Email	10798 N.W. 53rd. Street Sunrise, FL 33351 (954) 578-1559 bob@polyfoam.cc
Quality Assurance Representative	Mr. Pat Donahue
Address/Phone/Email	11715 Boudreaux Road Tomball, TX 773757370 (281) 350-8888 patd@polyfoam.cc
Category	Roofing
Subcategory	Roof Tile Adhesives
Compliance Method	Evaluation Report from a Florida Registered / Licensed Florida Professional Engineer <input checked="" type="checkbox"/> Evaluation Report - Hardcopy Received

Florida Engineer or Architect Name Robert Nieminen
 who developed the Evaluation Report
 Florida License PE-59166
 Quality Assurance Entity Underwriters Laboratories Inc.
 Validated By John W Knezevich

Certificate of Independence [FL6276_R1_COI_ERD Cert of Independence.p](#)

Referenced Standard and Year (of Standard) **Standard**
 ASTM D1621
 ASTM D1622
 ASTM D1623
 ASTM D2126
 ASTM D2842
 ASTM D2856
 ASTM E84
 ASTM E96
 SSTD 11

Equivalence of Product Standards Certified By

Sections from the Code

Product Approval Method Method 1 Option D

Date Submitted
 Date Validated 06/22/2006
 Date Pending FBC Approval 06/30/2006
 Date Approved 07/12/2006

Summary of Products		
FL #	Model, Number or Name	Description
6276.1	Polysset One	Single component polyurethane f adhesive
Limits of Use Approved for use in HVHZ: No Approved for use outside HVHZ: Yes Impact Resistant: N/A Design Pressure: +n/a /-251.2 Other: 1.) The design pressure limitation in this application refers to hip and ridge tiles over Hip & Ridge Metal. Field tiles are designed based on overturning moment resistance. 2.) Refer to Evaluation Report, Section 5 for other Limitations of Use.		Installation Instructions FL6276_R1_II_Polysset One Inst: Verified By: Robert Nieminen PE Evaluation Reports FL6276_R1_AE_er061906FINAL One_FL6276-R1.pdf

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**Department of Community Affairs
Florida Building Code Online
Codes and Standards**

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Product Approval Accepts:





Certificate of Authorization #9503

EXTERIOR RESEARCH & DESIGN, LLC.

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WATERBURY, CT 06488
PHONE: (203) 596-7884
FAX: (203) 596-7058

EVALUATION REPORT

**Polyfoam Products, Inc.
11715 Boudreaux Road
Tomball, TX 77375**

**ERD Evaluation Report 02768.02.06-R1
FL6276-R1
Date of Issuance: 03/21/2006
Revised: 06/19/2006**

SCOPE:

This Evaluation Report is issued under Rule 9B-72 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 product described herein has been designed to comply with the Florida Building Code.

DESCRIPTION: Polyset® One

LABELING: Each unit shall bear a permanent label with the manufacturer’s name, logo, city, state and logo 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 ERD or Robert Nieminen, P.E. if the product changes or the referenced Quality Assurance documentation changes.

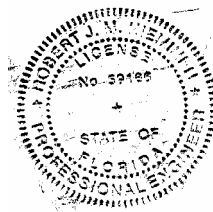
ADVERTISEMENT: The Evaluation Report number preceded by the words “ERD Evaluated” may be displayed in advertising literature. If any portion of the Evaluation Report is displayed, then it shall be done in its entirety.

INSPECTION: 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 4.

Prepared by:

Robert J.M. Nieminen, P.E.
Florida Registration No. 59166, Florida DCA ANE1983



The facimile seal appearing was authorized by Robert Nieminen, P.E. on 06/19/2006. This does not serve as an electronically signed document. Signed, sealed hardcopies have been transmitted to the Product Approval Administrator and to the named client

CERTIFICATION OF INDEPENDENCE:

1. ERD East 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. ERD East 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.



ROOFING COMPONENT EVALUATION:

1. SCOPE:

Product Category: Roofing
Sub-Category: Roof Tile Adhesive
Compliance Statement: Polyset One, as marketed by Polyfoam Products, Inc., has demonstrated compliance with the 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:

<u>Sections</u>	<u>Property</u>	<u>Standard</u>	<u>Year</u>
1715.2.1	Wind	SSTD 11	1997
2603.3	Surface Burning	ASTM E84	2001
1523.6.5.2.17	Compressive	ASTM D1621	1994
1523.6.5.2.17	Density	ASTM D1622	1993
1523.6.5.2.17	Tensile	ASTM D1623	1978
1523.6.5.2.17	Dim. Stability	ASTM D2126	1999
1523.6.5.2.17	Closed Cell	ASTM D2856	1994
1523.6.5.2.17	Water Absorption	ASTM D2842	1994
1523.6.5.2.17	Permeance	ASTM E96	2000

3. REFERENCES:

<u>Entity</u>	<u>Examination</u>	<u>Reference</u>	<u>Date</u>
PRI Asphalt Technologies	SSTD 11	PFI-006-02-01	05/09/2005
PRI Asphalt Technologies	SSTD 11	PFI-008-02-03	12/14/2005
PRI Asphalt Technologies	SSTD 11	PFI-008-02-04	12/14/2005
Miami-Dade BCCO	Physical Properties	04-1116.01	08/24/2005

4. PRODUCT DESCRIPTION:

4.1 Polyset One is a single component polyurethane foam roof tile adhesive distributed in factory, pre-mixed canisters.

4.2 Typical Physical Properties:

<u>Property</u>	<u>Test</u>	<u>Results</u>
Density	ASTM D1622	1.95 lbs/ft3
Compressive Strength	ASTM D1621	7.8 psi
Tensile Strength	ASTM D1623	19.95 psi parallel to rise
Water Absorption	ASTM D2842	4.22 lbs/ft2
Moisture Vapor Permeability	ASTM E96	3.5 perm/inch
Dimensional Stability	ASTM D2126	+0.89% volume change @ 70°C, 2 weeks
Closed Cell Content	ASTM D2856	72.14%

4.3 Components or products manufactured by others: Any rigid, discontinuous roof assembly having a current Florida Statewide Product Approval or approved on a local-level by the AHJ.



5. LIMITATIONS:

- 5.1 This Evaluation Report is not for use in the HVHZ.
- 5.2 Fire classification is not part of this evaluation.
- 5.3 Polyset One can be used with flat, low and high profile tiles or any rigid, discontinuous roof assembly having a current Florida Statewide Product Approval or approved on a local-level by the AHJ.
- 5.4 Minimum underlayment shall be per FRSA/TRI 07320.
- 5.5 Field tiles using Polyset One are limited to projects having an Aerodynamic Uplift Moment (M_a)¹ or Moment Resistance (M_r)² not greater than the following Allowable Overturning Moment values. Refer to Polyfoam Products published installation instructions for Adhesive Paddy Placement details.

Table 1: Field Tiles in Polyset One - Overturning Moment Performance Data

Tile		Underlayment / Substrate	Allowable Overturning Moment (ft-lbf)
Type	Profile		
Concrete	Flat	30/90 System	56.6
Concrete	Medium	30/90 System	43.7
Concrete	Medium	Polystick MU	53.3
Clay or Concrete	High	30/90 System	44.1
Concrete	Cap & Pan	30/90 System	39.5
Clay	Cap & Pan	30/90 System	53.2

- 5.5.1 Alternate underlayment systems to the '30/90 System' noted in Table 1 include those underlayments having met the requirements of the *FRSA Industry Recommendations for the Use of Underlayments Applied Under Pitched Roofing Components*. The data in Table 1 also applies to such underlayments.
- 5.5.2 Tile roof systems using tile types or profiles other than those listed above acquiring acceptance for use with Polyset One shall be tested in accordance with SSTD 11 or TAS 101. An additional 2-to-1 margin of safety above that specified in SSTD 11 or TAS 101 shall be applied in determining the 'allowable overturning moment' or 'attachment resistance expressed as a moment (M_f)' to account for the interdependence inherent to the Polyset One installation procedures.
- 5.6 Hip and ridge tiles using Polyset One are limited to projects having hip/ridge design pressure requirements³ not greater than the following values. Refer to Polyfoam Products published installation instructions for Adhesive Paddy Placement details.

¹ Determined in accordance with 2004 FBC Section 1609.7.3.

² Determined in accordance with RAS 127.

³ Determined in accordance with FRSA/TRI 07320 Tables 2A through 2D and 3A through 3D.



Tile		Substrate	Attachment Method	Uplift Resistance (psf)
Type	Profile			
Clay or Concrete	Hip & Ridge	2x PT ridge board	Interdependent Head: One (1) #10 x 2½” screw Tile Overlap: 1 x 6 inch (10.5 gram) Polyset® One	186.5
Concrete	Hip & Ridge	Metal frame with 2-3/8” flange and ½” dip down the center (East Coast Metals)	Independent 3 x 6 inch (30 gram) AH160 only starting 3-inches from the tile head	122.6
Clay	Hip & Ridge	Metal frame with 2-3/8” flange and ½” dip down the center (East Coast Metals)	Independent 3 x 6 inch (30 gram) AH160 only starting 4-inches from the tile head	251.2

6. INSTALLATION:

- 6.1 Polyset One and the tile roof assembly shall be installed in accordance with FRSA/TRI 07320 and Polyfoam Products, Inc. published installation instructions. For hip & ridge tile installation, contact Polyfoam Products, Inc.
- 6.2 Hip and ridge boards shall be installed in accordance with the FRSA/TRI 07320. East Coast Metals Hip & Ridge Metal shall be installed in accordance with East Coast Metals’ Product Approval documentation.
- 6.3 Installation shall be by a Factory Trained ‘Qualified Applicator’ approved and licensed by Polyfoam Products, Inc.
- 6.4 Tiles shall be adhered in freshly applied adhesive. Tile must be set within 4 minutes after Polyset One has been dispensed.

7. LABELING:

All Polyset One containers shall comply with the Standard Conditions listed herein.

8. BUILDING PERMIT REQUIREMENTS:

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

9. QUALITY ASSURANCE ENTITY:

Underwriters Laboratories, Inc. – QUA1743

- END OF EVALUATION REPORT -



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POLYFOAM PRODUCTS, INC.

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Polysset® One

Installation Instructions For One-Component Roof Tile Adhesive Applications

Flat/Low Profile Tile

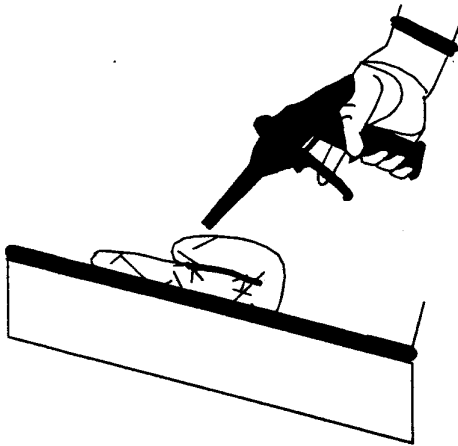
Eave Course

Option #1

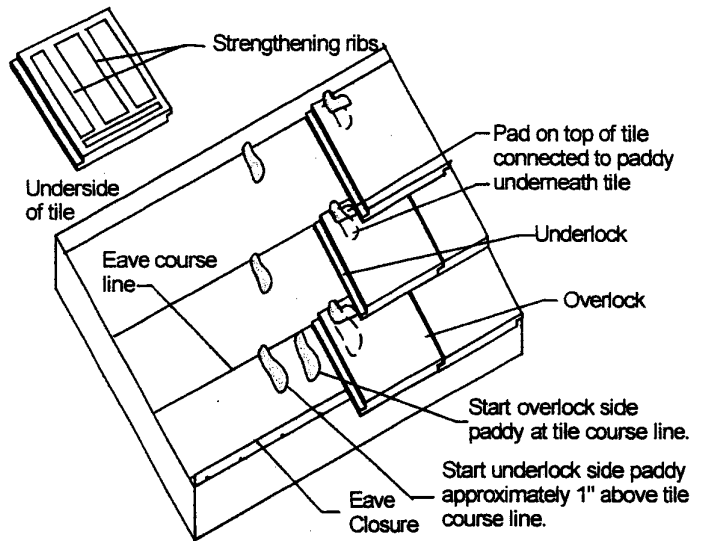
Apply onto the underlayment, a bead of adhesive where the strengthening rib closest to the overlock and underlock side of the tile will be positioned for the tile being installed.

For the underlock strengthening rib, apply a 2" wide bead starting 1" above the eave course line working down toward the eave, at least ½ the length of the tile (approximately 7"- 9" long and 18 -20 grams), continue to apply the adhesive bead back on top of the initial bead working toward the ridge, approximately ½ the length of the initial bead (**See Drawing 1**).

For the overlock strengthening rib, apply a 2" wide bead starting at the eave course line working down toward the eave, at least ½ the length of the tile (approximately 7"- 9" long and 18 -20 grams), continue to apply the adhesive bead back on top of the initial bead working toward the ridge, approximately ½ the length of the initial bead (**See Drawing 1**). Insure approximately 10 square inch adhesive contact area with the underside of the tile under each strengthening rib. Install tile and continue the adhesive bead back on top of the 1" exposed portion of the adhesive paddies and onto the lower tile course and then carry the adhesive bead horizontally across the head of the tile a minimum of 4 1/2" (approximately 6 grams) (**See Drawing 2**).



Drawing 1



Drawing 2

Option #2

Use two screws installed according to the FRSA/RTI Concrete and Clay Roof Tile Installation Manual.

Field Tile

Note: Must use cross bond tile application.

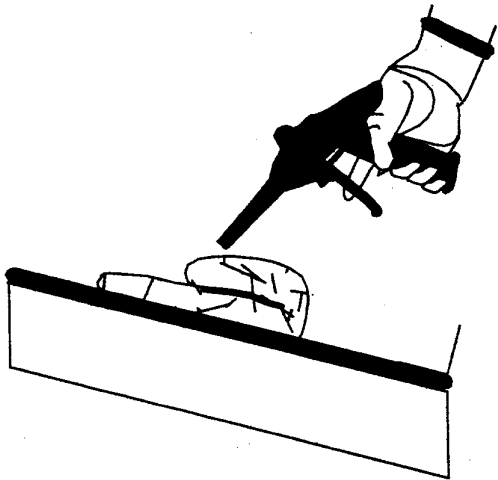
Onto the underlayment under where the strengthening rib closest to the underlock side of the tile being installed is located, apply a 5" oblong shape paddy (weighing approximately 10 grams), starting approximately 4" below the tile course line working up toward the ridge carrying the paddy 1" above the tile course line. Install tile and continue the adhesive bead back on top of the 1" exposed portion of the adhesive paddy and onto the lower tile course and then carry the adhesive bead horizontally across the head of the tile a minimum of 4 ½" (**See Drawing 2**). Periodically check to insure adhesive is making approximately 10 square inch contact area at the tile head lap area. The paddy placed on top of the tile head lap must be joined to the paddy placed beneath the head of the tile where the 1" of adhesive extends beyond the head of the tile. (**See Drawing 7 on page 5**).

Medium Profile Tile

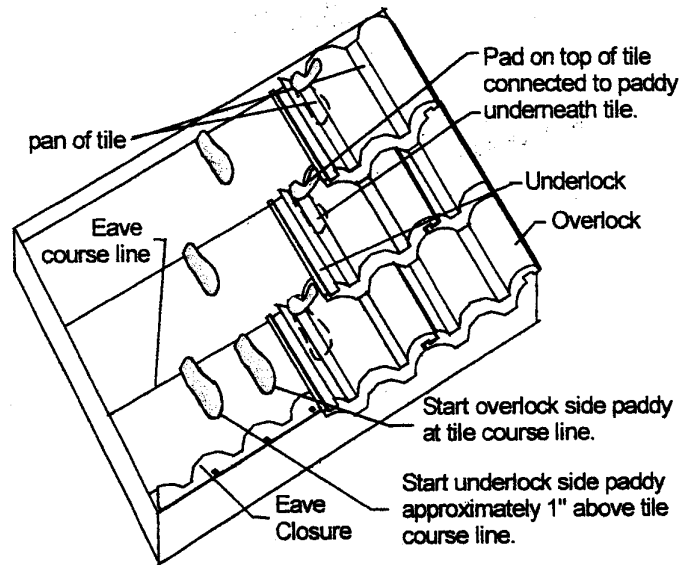
Eave Course

Option #1

Apply onto the underlayment, a bead of adhesive where the pan portion of the tile closest to the overlock and underlock side of the tile will be positioned for the tile being installed. **For the underlock pan**, apply a 2" wide bead starting 1" above the eave course line working down toward the eave, at least ½ the length of the tile (approximately 7"-9" long and 18 -20 grams), continue to apply the adhesive bead back on top of the initial bead working toward the ridge, approximately ½ the length of the initial bead (See Drawing 3). **For the overlock pan**, apply a 2" wide bead starting at the eave course line working down toward the eave, at least ½ the length of the tile (approximately 7"-9" long and 18 -20 grams), continue to apply the adhesive bead back on top of the initial bead working toward the ridge, approximately ½ the length of the initial bead (See Drawings 3). Insure at least 10 square inch adhesive contact area with the underside of the tile under each strengthening rib. Install tile and continue the adhesive bead back on top of the 1" exposed portion of the adhesive paddy and onto the lower tile course and then carry the adhesive bead horizontally across the head of the tile a minimum of 4 1/2" (approximately 6 grams) (See Drawing 4).



Drawing 3



Drawing 4

Option #2

Use two screws installed according to the FRSA/RTI Concrete and Clay Roof Tile Installation Manual.

Field Tile

Note: Must use cross bond tile application.

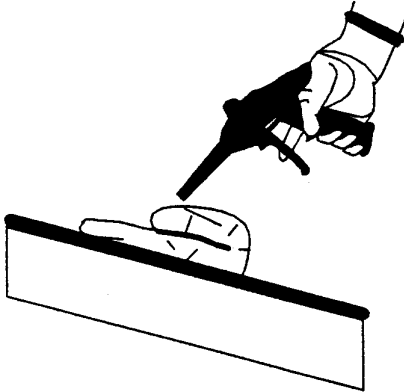
Onto the underlayment under where the pan portion of the tile closest to the underlock side of the tile being installed is located, apply a 4" oblong shape diameter paddy (weighing approximately 7 grams), starting approximately 3" below the tile course line working up toward the ridge carrying the paddy 1" above the tile course line. Install tile and continue the adhesive bead back on top of the 1" exposed portion of the adhesive paddy and onto the lower tile course and then carry the adhesive bead horizontally across the head of the tile a minimum of 4 ½" (approximately 10 square inch contact area at tile overlap) (See Drawing 4). Periodically check to insure adhesive is making approximately 10 square inch contact area at the tile head lap area. The paddy placed on top of the tile head lap must be joined to the paddy placed beneath the head of the tile where the 1" of adhesive extends beyond the head of the tile. (See drawing 7 on page 5).

High Profile Tile (single pan and single roll tile)

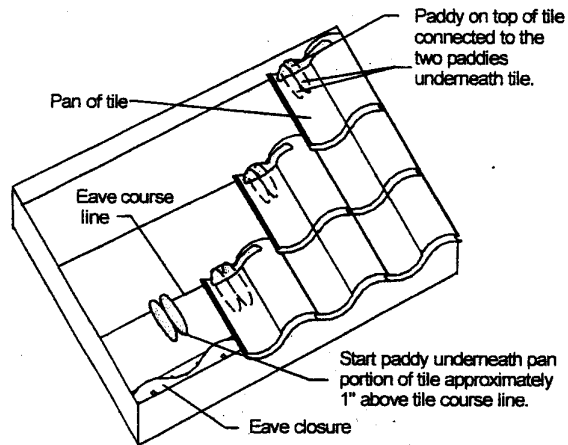
Eave Course

Option #1

Onto the underlayment under where the pan portion of the tile being installed is located, apply two (2) 2" beads (side by side) starting 1" above the eave course line working down toward the eave, at least ½ the length of the tile (approximately 7"-9" long and 18 -20 grams per paddy), continue to apply the adhesive bead back on top of the initial bead working toward the ridge, approximately ½ the length of the initial bead. Insure approximately 12-16 square inch contact with the underside of the pan of the tile (**See drawing 5**). Install tile and continue the adhesive bead back on top of the 1" exposed portion of the adhesive paddies and onto the lower tile course and then carry the adhesive bead horizontally across the head of the tile a minimum of 10" or the entire width of the tile when restricted by product design (approximately 21 grams) (**See drawing 6**).



Drawing 5



Drawing 6

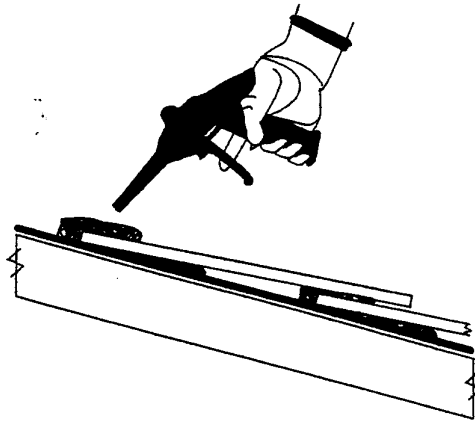
Option #2

Use two screws installed according to the FRSA/RTI Concrete and Clay Roof Tile Installation Manual.

Field Tile

Note: Must use straight bond tile application.

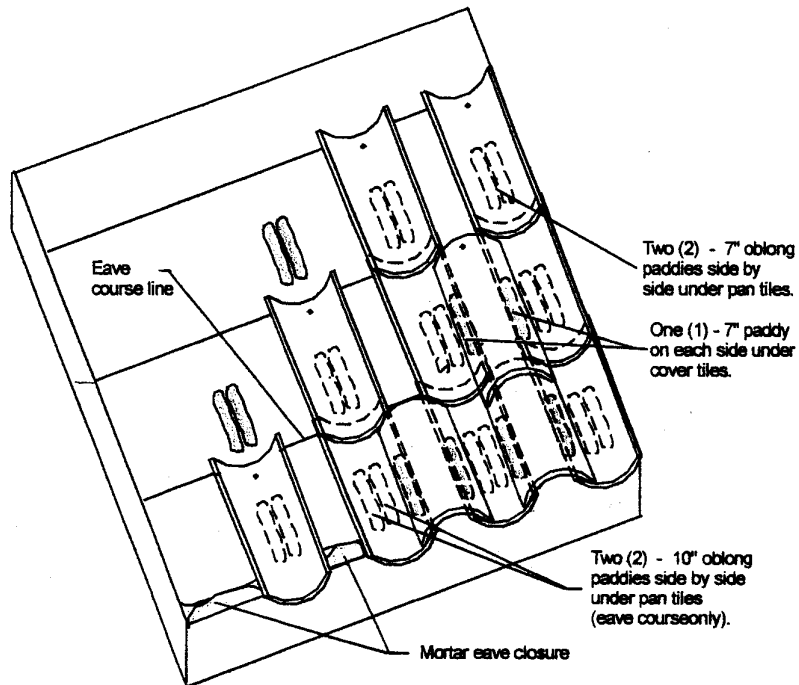
Onto the underlayment under where the pan portion of the tile being installed is located, apply two (2) 6" oblong shape diameter paddies (side by side) (weighing approximately 12 grams per paddy), starting approximately 5" below the tile course line working up toward the ridge carrying the paddies 1" above the tile course line. Install tile and continue the adhesive bead back on top of the 1" exposed portion of the adhesive paddies and onto the lower tile course and then carry the adhesive bead horizontally across the head of the tile a minimum of 10" (approximately 21 grams) (**See drawing 6**). Periodically check to insure adhesive is making approximately 18 square inch contact area at the tile head lap area. The paddy placed on top of the tile head lap must be joined to the paddy placed beneath the head of the tile where the 1" of adhesive extends beyond the head of the tile. (**See Drawing 7 on page 5**).



Drawing 7

Two-Piece Barrel

Onto the underlayment, apply two (2) beads (approximately 6 grams each) placed side by side where the centerline of the pan contacts the deck starting 2" – 3" from the eave end of the pan tile 7" long up toward the ridge. Continue installing in same manner with two columns of pans working from the eave course to the ridge course. Chocking the sides of the pan tiles may be necessary until the adhesive has a chance to cure. Turn the cover tile upside down and apply an 7" long bead (approximately 6 grams each side) approximately ¼" to 1" in from the longitudinal edge of both sides of the cover tile, starting approximately 2" – 3" from the eave end of the tile working toward the ridge. Turn cover over and install cover onto pan tile butting the second course pan tile eave end. Insure the adhesive contacts the longitudinal edges of the pan and cover tile. On the eave cover tile course only, it is necessary to cut the ridge end of the tile at length equal to the tile overlap specified for the project. See Drawing 8 below.



Drawing 8