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### Product Approval

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- ▶ COMMUNITY PLANNING
- ▶ HOUSING & COMMUNITY DEVELOPMENT
- ▶ EMERGENCY MANAGEMENT
- ▶ OFFICE OF THE SECRETARY

FL #	FL6332-R2										
Application Type	Revision										
Code Version	2007										
Application Status	Approved										
Comments											
Archived	<input type="checkbox"/>										
Product Manufacturer	Polyfoam Products, Inc										
Address/Phone/Email	11715 Boudreaux Road Tomball, TX 77375 (954) 344-3566 rylipelkonen@mmm.com										
Authorized Signature	Riku Ylipelkonen rylipelkonen@mmm.com										
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 Architect or a Licensed Florida Professional Engineer <input checked="" type="checkbox"/> Evaluation Report - Hardcopy Received										
Florida Engineer or Architect Name who developed the Evaluation Report	Robert Nieminen										
Florida License	PE-59166										
Quality Assurance Entity	Underwriters Laboratories Inc.										
Quality Assurance Contract Expiration Date	05/11/2013										
Validated By	John W. Knezevich, PE <input checked="" type="checkbox"/> Validation Checklist - Hardcopy Received										
Certificate of Independence	<a href="#">FL6332_R2_COI_ERD_Cert of Independence.pdf</a>										
Referenced Standard and Year (of Standard)	<table border="0"> <thead> <tr> <th><b>Standard</b></th> <th><b>Year</b></th> </tr> </thead> <tbody> <tr> <td>ASTM D1621</td> <td>1994</td> </tr> <tr> <td>ASTM D1622</td> <td>1993</td> </tr> <tr> <td>ASTM D1623</td> <td>1978</td> </tr> <tr> <td>ASTM D2126</td> <td>1999</td> </tr> </tbody> </table>	<b>Standard</b>	<b>Year</b>	ASTM D1621	1994	ASTM D1622	1993	ASTM D1623	1978	ASTM D2126	1999
<b>Standard</b>	<b>Year</b>										
ASTM D1621	1994										
ASTM D1622	1993										
ASTM D1623	1978										
ASTM D2126	1999										

ASTM D2842	1994
ASTM D2856	1994
ASTM E84	2004
ASTM E96	2000
SSTD 11	1997
TAS 101	1995

Equivalence of Product Standards  
Certified By

Sections from the Code

Product Approval Method                      Method 1 Option D

Date Submitted                                      10/31/2008  
 Date Validated                                      11/03/2008  
 Date Pending FBC Approval                      11/06/2008  
 Date Approved                                      12/10/2008

**Summary of Products**

FL #	Model, Number or Name	Description
6332.1	Polypro AH160	Dual component expanding polyurethane roof tile adhesive
<b>Limits of Use</b> <b>Approved for use in HVHZ:</b> No <b>Approved for use outside HVHZ:</b> Yes <b>Impact Resistant:</b> N/A <b>Design Pressure:</b> +n/a/-368.0 <b>Other:</b> 1.) The design pressure limitation in this application refers to hip and ridge tiles. Field tiles are designed based on overturning moment resistance. 2.) Refer to ER Sections 5 and 6 for other Limitations of Use.		<b>Installation Instructions</b> <a href="#">FL6332 R2 II er103108FINAL PolyPro AH160 FL6332-R2.pdf</a> Verified By: Robert Nieminen PE-59166 Created by Independent Third Party: Yes <b>Evaluation Reports</b> <a href="#">FL6332 R2 AE er103108FINAL PolyPro AH160 FL6332-R2.pdf</a> Created by Independent Third Party: Yes

**Department of Community Affairs**  
**Florida Building Code Online**  
**Codes and Standards**  
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 Tallahassee, Florida 32399-2100  
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**Product Approval Accepts:**





EXTERIOR RESEARCH & DESIGN, LLC.  
*Certificate of Authorization #9503*  
 353 CHRISTIAN STREET, UNIT 13  
 OXFORD, CT 06478  
 PHONE: (203) 262-9245  
 FAX: (203) 262-9243

**EVALUATION REPORT**

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

**Evaluation Report 02768.03.06-R2**  
**FL6332-R2**  
**Date of Issuance: 08/08/2008**  
**Revision 2: 10/31/2008**

**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 2007 Florida Building Code.

**DESCRIPTION: Polypro® AH160**

**LABELING:** Each unit shall bear labeling in accordance with the requirements 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. if the product changes or the referenced Quality Assurance documentation changes. Trinity|ERD requires a complete review of this Evaluation Report relative to updated Code requirements with each Code Cycle.

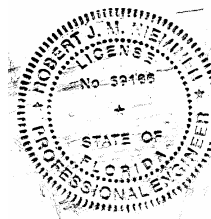
**ADVERTISEMENT:** The Evaluation Report number preceded by the words "Trinity | ERD Evaluated" may be displayed in advertising literature. If any portion of the Evaluation Report is displayed, then it shall be done in its entirety.

**INSPECTION:** 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 6.

**Prepared by:**

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



The facsimile seal appearing was authorized by Robert Nieminen, P.E. on 10/31/2008. 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. Exterior Research & Design, LLC. d/b/a Trinity | ERD 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. Exterior Research & Design, LLC. d/b/a Trinity | ERD 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 Adhesives  
**Compliance Statement:** Polypro® AH160, as produced 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	2004
1523.6.5.2.2	Wind	TAS 101	1995
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>
ICC-ES, Inc. (EVL2396)	SSTD 11	Legacy Report 9822B	© 2002
Miami-Dade BCCO (CER1592)	Physical Properties	06-0201.02	04/13/2006
PRI (TST 5878)	SSTD 11	ECM-001-02-01	09/21/2001
PRI (TST 5878)	SSTD 11	PFI-006-02-01	05/09/2005
PRI (TST 5878)	SSTD 11	PFI-006-02-02	05/09/2005
PRI (TST 5878)	TAS 101	PFI-007-02-01	10/11/2005
PRI (TST 5878)	SSTD 11	PFI-008-02-04	02/21/2006
PRI (TST 5878)	SSTD 11	PFI-009-02-03	02/21/2006
PRI (TST 5878)	SSTD 11	PFPI-010-02-01	12/07/2006
PRI (TST 5878)	SSTD 11	PFPI-011-02-01	12/07/2006
PRI (TST 5878)	SSTD 11	PFPI-012-02-01	12/07/2006
PRI (TST 5878)	SSTD 11	PFPI-013-02-01	12/07/2006
PRI (TST 5878)	SSTD 11	PFPI-014-02-01	12/07/2006
PRI (TST 5878)	TAS 101	ECM-003-02-01	06/13/2008
PRI (TST 5878)	TAS 101	ECM-004-02-01	06/13/2008
PRI (TST 5878)	TAS 101	ECM-005-02-01	06/13/2008
PRI (TST 5878)	TAS 101	ECM-006-02-01	06/13/2008
PRI (TST 5878)	TAS 101	ECM-007-02-01	06/13/2008
PRI (TST 5878)	TAS 101	ECM-008-02-01	06/13/2008

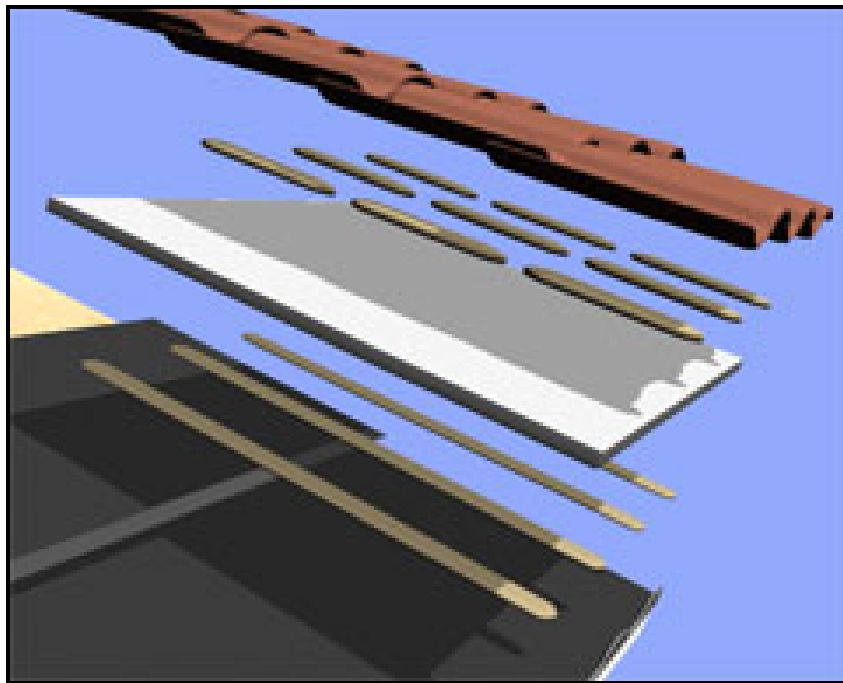
**4. PRODUCT DESCRIPTION:**

4.1 Polypro® AH160 is a dual component expanding polyurethane roof tile adhesive distributed in refillable tanks (Foampro dispensing system) or disposable packs (ProPack dispensing system).

4.2 Typical Physical Properties:

<u>Property</u>	<u>Test</u>	<u>Results</u>
Density	ASTM D1622	1.6 lbs/ft <sup>3</sup>
Compressive Strength	ASTM D1621	18 psi parallel to rise, 12 psi normal to rise
Tensile Strength	ASTM D1623	28 psi parallel to rise
Water Absorption	ASTM D2842	0.08 lbs/ft <sup>2</sup>
Moisture Vapor Permeability	ASTM E96	3.1 perm/inch
Dimensional Stability	ASTM D2126	+0.07% volume @ -40°F, 2 wks +6% volume @ 158°F & 100% RH, 2 wks

4.3 Ecaset® is a three-part roof system comprised of a waterproofing underlayment, a layer of Polypro AH160 applied insulation and Polypro® AH160 applied roof tiles.



**Figure 1: Overview of Ecaset® System**

**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 Polypro® AH160 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 07320/8-05.

5.5 Field tiles using Polypro® AH160 are limited to projects having an Aerodynamic Uplift Moment ( $M_a$ )<sup>1</sup> or Moment Resistance ( $M_r$ )<sup>2</sup> not greater than the following Allowable Overturning Moment values. Refer to Polyfoam Products published installation instructions for Adhesive Paddy Placement details.

<b>Table 1: Field Tiles in Polypro® AH160 – Overturning Moment Performance Data</b>			
<b>Tile</b>		<b>Adhesive Paddy Placement</b>	<b>Allowable Overturning Moment (ft-lbf)</b>
<b>Type</b>	<b>Profile</b>		
Clay or Concrete	Flat	Small	36
		Medium	77
		Large	120
		Two	46
		Dual Stacked	59
Clay or Concrete	Medium	Small	25
		Medium	51
		Large	90
		Two	50
		Dual Stacked	43
Clay or Concrete	High	Small	29
		Medium	54
		Large	69
		Two	37
		Dual Stacked	39
Clay	Cap & Pan (Barrel)	Large	182
Concrete	Cap & Pan (Barrel)	Large	127
Pizarras Samaca Slate (9" wide x 16" long)		3 x 3 inch, 10-gram paddy 2-inches from slate head and centered on the width	62.8

5.5.1 Data in Table 1 relates to installation over a '30/90' underlayment system, as detailed in the *FRSA/TRI 07320*. Alternate underlayment systems include those having met the requirements of the *ICC-ES AC152*. 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 Polypro® AH160 shall be tested in accordance with SSTD 11 or TAS 101. For the interdependent two-paddy method, 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 ( $M_f$ )'.

<sup>1</sup> Determined in accordance with 2007 FBC Section 1609.5.3.

<sup>2</sup> Determined in accordance with RAS 127.

- 5.6 Field tiles in an Ecoset® system are limited to projects having an Aerodynamic Uplift Moment ( $M_a$ )<sup>3</sup> or Moment Resistance ( $M_r$ )<sup>4</sup> not greater than the following Allowable Overturning Moment values. Refer to Polyfoam Products published installation instructions for Adhesive Paddy Placement details.

<b>Table 2: Field Tiles in Ecoset® System – Overturning Moment Performance Data</b>			
<b>Tile</b>		<b>Adhesive Paddy</b>	<b>Allowable Overturning Moment (ft-lbf)</b>
<b>Type</b>	<b>Profile</b>		
Clay or Concrete	Flat	Large: 6" x 5"; 45 gram	132
Clay or Concrete	Medium	Large: 6" x 5"; 55 gram	75
Clay or Concrete	High	Large: 6" x 5"; 65 gram	93
Clay	Cap & Pan (Barrel)	Large Pans: One paddy, 2" x 10"; 35 gram Caps: Two paddy, 1" x 10"; 17 gram	174
Concrete	Cap & Pan (Barrel)	Large Pans: One paddy, 2" x 10"; 35 gram Caps: Two paddy, 1" x 10"; 17 gram	171

- 5.6.1 Data in Table 2 relates to installation of max. 4 x 4 ft, 1¼" thick "Insulfoam IX" or "Ecoset Insulating Roof Panel" (ASTM C578, Type IX expanded polystyrene with vertical vent grooves) over a '30/90' underlayment system, as detailed in the *FRSA/TRI 07320*. Boards are applied with the vent grooves facing the underlayment in 3-inch wide strips of Polypro AH160 at 25 grams/lineal foot spaced 12" o.c. Alternate underlayment systems include those having met the requirements of the *ICC-ES AC152*. The data in Table 1 also applies to such underlayments.
- 5.6.2 Data in Table 2 relates to tile installation over 1¼" thick "Insulfoam IX" or "Ecoset Insulating Roof Panel".
- 5.6.3 Tile roof systems using tile types or profiles other than those listed above acquiring acceptance for use with Polypro® AH160 shall be tested in accordance with SSTD 11 or TAS 101. For the interdependent two-paddy method, 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 ( $M_f$ )'.

<sup>3</sup> Determined in accordance with 2007 FBC Section 1609.5.3.

<sup>4</sup> Determined in accordance with RAS 127.

- 5.7 Hip and ridge tiles using Polypro® AH160 are limited to projects having hip/ridge design pressure requirements<sup>5</sup> not greater than the following values. Refer to Polyfoam Products published installation instructions for Adhesive Paddy Placement details.

<b>Table 2: Hip &amp; Ridge Tiles in Polypro® AH160 – Uplift Resistance Performance Data</b>			
<b>Tile</b>	<b>Substrate</b>	<b>Attachment Method</b>	<b>MDP (psf)</b>
Clay or Concrete	2x PT ridge board	<u>Interdependent:</u> Head: One (1) #10 x 2½" screw Tile Overlap: 1 x 6 inch (10.5 gram) AH160	183
Clay or Concrete	2x PT ridge board	<u>Independent:</u> Continuous Paddy, AH160	190
Clay or Concrete	Metal frame with 4-inch flange	<u>Independent:</u> Continuous Paddy, AH160	226
Concrete	East Coast Metals Trim Lock	<u>Interdependent:</u> Tile-to-metal, 3" from tile head: 2 x 4 inch, 9.7 g Tile-to-tile at 3" headlap: 4 x 2 inch, 9.7 g	103
Clay	East Coast Metals Trim Lock	<u>Interdependent:</u> Tile-to-metal, 3" from tile head: 2 x 4 inch, 9.7 g Tile-to-tile at 3" headlap: 4 x 2 inch, 9.7 g	140
Concrete	East Coast Metals Trim Lock	<u>Independent:</u> Tile-to-metal, centered along tile: 2 x 7 inch, 38 g	197
Clay	East Coast Metals Trim Lock	<u>Independent:</u> Tile-to-metal, centered along tile: 2 x 7 inch, 38 g	368

## 6. INSTALLATION:

- 6.1 Polypro® AH160, the tile roof assembly and the EcoSet® system shall be installed in accordance with FRSA/TRI 07320/8-05 and Polyfoam Products, Inc. published installation instructions, subject to the limitations outlined in Section 5.
- 6.2 Hip and ridge boards shall be installed in accordance with the FRSA/TRI 07320/8-05. Hip and ridge metal shall be installed in accordance with the manufacturer's Florida Product Approval.
- 6.3 Installation shall be by a Factory Trained 'Qualified Applicator' approved and licensed by Polyfoam Products, Inc.

## 7. LABELING:

All Polypro AH160 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 -**

<sup>5</sup> Determined in accordance with FRSA/TRI 07320 Tables 2A through 2D and 3A through 3D.