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## ICP APOC POLYSET® RTA-1 ROOF TILE ADHESIVE

**CSI Section:**  
**07 32 03 Roof Tile Adhesive**

### 1.0 RECOGNITION

ICP Apoc Polyset® RTA-1 recognized in this report has been evaluated for use as a roof tile adhesive. The wind uplift resistance and fire resistance properties of the Apoc Polyset® RTA-1 complies with the intent of the provisions of the following codes and regulations:

- 2021, 2018, 2015, 2012, and 2009 International Building Code® (IBC)
- 2021, 2018, 2015, 2012, and 2009 International Residential Code® (IRC)
- 2022 California Building Code (CBC) – attached Supplement
- 2022 California Residential Code (CRC) – attached Supplement

### 2.0 LIMITATIONS

Use of the Apoc Polyset® RTA-1 recognized in this report is subject to the following limitations:

**2.1** The roof tile adhesive shall be installed in accordance with IBC Section 1609.5.3 and this report. Where there is a conflict, the more restrictive requirements shall govern.

**2.2** Adhesive application of tiles is limited to conventional concrete and clay roofing tiles described in this report. The tiles shall be recognized in a current evaluation report permitting adhesive application.

**2.3** Adhesive application is in accordance with the details in this report and the manufacturer’s installation instructions. The quantity and placement of adhesive application must be as determined from Table 1, Table 2, and Details 1 through 10, as applicable.

**2.4** Installation shall be performed by applicators who hold a current and valid Qualified Applicator Card presented by ICP Building Solutions Group.

**2.5** The Apoc Polyset® RTA-1 recognized in this report is produced by ICP in Norton, OH.

### 3.0 PRODUCT USE

#### 3.1 Design:

**3.1.1 Wind Resistance:** Clay and Concrete roof tiles shall be installed under the IBC or IRC, as applicable. Maximum allowable stress design wind speeds shall be taken from Table 1507.3.7 of the IBC. The maximum ultimate design wind speeds shall comply with Section R905.307 of the IRC. For hip and ridge tiles, the allowable design wind pressures are provided in Table 2 of this report.

**3.1.2 Underlayment:** The required design pressure for the building is the component and cladding wind load determined in accordance with IBC Section 1609. The maximum basic design wind speeds shall comply with IBC Section 1507.1.1. The maximum ultimate design wind speeds shall comply with IRC Section R905.1.1.

**3.1.3 Tile:** The required aerodynamic uplift moment,  $M_a$ , for the tiles shall be determined from [Equation 16-18 (2021), 16-34 (2018, 2015, and 2012), and 16-33 (2009)] in IBC Section 1609.5.3. The allowable aerodynamic overturning moment for each type of adhesive paddy is indicated in Table 1 of this report. The allowable overturning moment determined from Table 1 shall be equal to or greater than the required aerodynamic uplift moment.

#### 3.2 Installation:

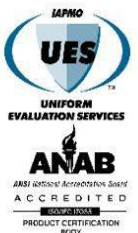
**3.2.1 Roof Deck:** Roof framing members shall be in accordance with either the IRC or the IBC. The roof framing members shall not be spaced greater than 24 inches on center. If the existing roof deck is a spaced sheathing board roof deck, then the spaced sheathing boards shall either be removed and replaced with or covered with minimum 15/32-inch-thick wood structural panels. The wood structural panels shall be installed over the spaced sheathing boards in accordance with either the IRC or the IBC to resist the required wind loads.

**3.2.2 Underlayment:** Underlayment installation shall be as described in Sections 3.3.2.1 and 3.3.2.2 of this report or an underlayment manufacturer’s current evaluation report. The evaluation report shall identify the Apoc Polyset® RTA-1 and shall note the limitations of the underlayment for use with adhesive application.

**3.2.2.1 Underlayment Materials:** Underlayment materials shall comply with the type classification indicated in IBC Section 1507.1.1, Table 1507.1.1(1).

*The product described in this Uniform Evaluation Service (UES) Report has been evaluated as an alternative material, design or method of construction in order to satisfy and comply with the intent of the provision of the code, as noted in this report, and for at least equivalence to that prescribed in the code in quality, strength, effectiveness, fire resistance, durability and safety, as applicable, in accordance with IBC Section 104.11. This document shall only be reproduced in its entirety.*

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### 3.2.2.2 Underlayment Application and Attachment:

Underlayment shall be applied in accordance with IBC and IRC. For IBC, refer to Section 1507.1.1, Table 1507.1.1(2) and attachment in accordance with Table 1507.1.1(3). For IRC, refer to Section R905.1.1, Table R905.1.1(2) and attachment in accordance with Table R905.1.1(3).

**3.2.3 Flashing:** Flashing shall be installed in accordance with IBC Sections 1503.2 and 1507.3.9, or IRC Sections R903.2 and R905.3.8, as applicable.

**3.2.4 Eave Treatment:** Eave treatment shall be in accordance with IBC Table 1507.1.1(2) and IRC Table R905.1.1(2).

**3.2.5 Battens:** When used, battens shall be in accordance with IBC Table 1507.3.7 and IRC Table R905.3.7.

**3.2.6 Tile Applications:** Tiles shall be installed in accordance with IBC Table 1507.3.7 or IRC Section R905.3.7, Tables 1 and 2 of this report, Details 1 to 8 of this report, and ICP installation instructions. Where there is a conflict, the more restrictive requirements shall govern. Nailing of roof tiles is required as follows:

1. For roof slopes above 6:12 (50-percent slope), the eave course shall be fastened with one code-complying nail per tile, in addition to the adhesive.
2. For roof slopes above 6:12 (50-percent slope), up to and including 7:12 (58.3-percent slope), every third tile in every fifth course shall be fastened with one code-complying nail, in addition to the adhesive.
3. For roof slopes above 7:12 (58.3-percent slope), every tile shall be nailed or screwed in addition to having the adhesive, except for tiles with batten lugs installed over battens. When using battens, tile headlap shall be 3 inches (76 mm) unless the roof tile is recognized for the other headlaps in the evaluation report for the tile, and preformed flashing with metal edge returns shall be used.
4. Nails or screws shall be as specified in the applicable code for roof tile attachment. Plastic cement shall be applied to seal all fastener penetrations of the underlayment, except when use is made of battens and preformed flashing with metal edge returns.

Installation of tiles at wall abutments, valleys, chimney and penetrations of the roof sheathing shall be in accordance with the IBC or IRC, as applicable.

**3.2.7 Hips and Ridges:** Hip and ridge tiles shall be installed per manufacturer's installation instructions.

**3.2.8 Rake Tile:** Rake Tile shall be installed in accordance with IBC Section 1507.3.7.

**3.3 Roof Classification:** Apoc Polyset® RTA-1 shall be installed over combustible decks for adhering concrete and clay roofing tiles to roof underlayment systems. Fire classification complies with ASTM E108, as Class A in accordance with IBC Sections 1501.1 and 1505.2 and IRC Section R902.1.

## 4.0 PRODUCT DESCRIPTION

**4.1 Apoc Polyset® RTA-1:** Apoc Polyset® RTA-1 roof tile adhesive, provided by ICP, is a single-component polyurethane foam adhesive that is distributed in pre-mixed factory canisters and is applicable to flat, low/medium, high tile profiles. Apoc Polyset® RTA-1 is available in 24 oz. cans and 23 lb. disposable cylinders. The materials have a shelf life of 12 months when stored in unopened containers. After the cylinder has been opened the contents shall be used within a period of 30 days. The adhesive shall be maintained at a temperature range of 65°F to 95°F (18 to 35°C). The work area surface temperature shall be 50°F (10°C) or higher.

The roof tile adhesive, when applied in such a fashion as to be representative of actual installation conditions, has a flame-spread rating of 5 or less when tested in accordance with ASTM E 84.

**4.1.1 Roof Deck:** Roof decks shall be plywood bonded with exterior glue or OSB having a 32/16 span rating and shall comply with U.S. DOC PS-1 or PS-2, respectively. Minimum sheathing thickness is 15/32 inch or other decking material recognized in a code evaluation report.

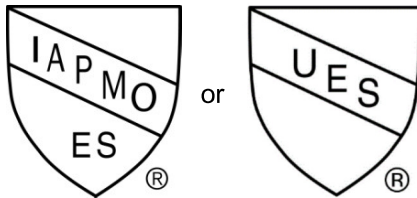
**4.1.2 Underlayment:** Underlayment shall conform with IBC Section 1507.1.1 or IRC Section R905.1.1.

**4.1.3 Roof Tile:** Roof tiles shall be regular-weight or lightweight clay or concrete tiles complying with IBC Sections 1507.3.4 or 1507.3.5, or IRC Sections R905.3.4 or R905.3.5. In addition, the tiles shall be recognized in a current evaluation report that specifically recognizes use of roof tile adhesive. Regardless of shape, tiles shall conform to the requirements specified in items 1 through 8 of IBC Section 1609.5.3. Tiles may also be conventional barrel-shaped tiles having a minimum rise-to-width ratio of 1:4. The tiles shall have a maximum tile factor of 1.407 ft<sup>3</sup>. The tile factor is defined as  $TF = 0.76 L2b$ , where L is the tile length in feet and b is the tile width in feet (for SI:  $TF = 12,454 L2b$ , where L and b are in mm). For purposes of this report, flat- and low-profile tiles have a rise equal to or less than ½ inch (12.7 mm), and a rise-to-width ratio of less than or equal to 1:5; medium-profile tiles have a rise greater than ½ inch (12.7 mm) and a rise-to-width ratio less than or equal to 1:5; high-profile tiles have a rise-to-width ratio greater than 1:5.



## 5.0 IDENTIFICATION

Apoc Polyset® RTA-1 is identified by the ICP name and trademark, product name and evaluation report number (ER-629). Either IAPMO UES Mark of Conformity may also be used as shown below:



### IAPMO UES ER-629

## 6.0 SUBSTANTIATING DATA

**6.1** Data in accordance with ICC-ES AC152, the Acceptance Criteria for Adhesive Attachment of Concrete or Clay Roofing Tiles, approved February 2016, editorially revised June 2021.

**6.2** Manufacturer's descriptive literature and installation instructions.

**6.3** Quality Documentation.

## 7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research completed by IAPMO Uniform Evaluation Service on ICP Apoc Polyset® RTA-1 to assess conformance to the codes shown in Section 1.0 of this report and serves as documentation of the product certification. Products are manufactured at locations noted in Section 2.5 of this report under a quality control program with periodic inspection under the supervision of IAPMO UES.

For additional information about this evaluation report please visit [www.uniform-es.org](http://www.uniform-es.org) or email us at [info@uniform-es.org](mailto:info@uniform-es.org)



TABLE 1: Apoc Polyset® RTA-1 Overturning Moment Values – Field Tile			
Tile <sup>1</sup>		Paddy Design	Allowable Overturning Moment (foot-pounds) <sup>2</sup>
Type	Profile <sup>3</sup>		
Clay or Concrete	Flat	2-Paddy	50
Concrete	Flat	Hybrid	73
Concrete	Medium	2-Paddy	79
Concrete	Medium	Hybrid	65
Clay	High	2-Paddy	40
Clay	High	2-Paddy	44
Concrete	High	2-Paddy	60
Concrete	High	Hybrid	63
Clay or Concrete	Cap & Pan (Barrel)	2-Paddy	93

Note 1: Section 4.1.3 of this report provides definitions of tile profiles.

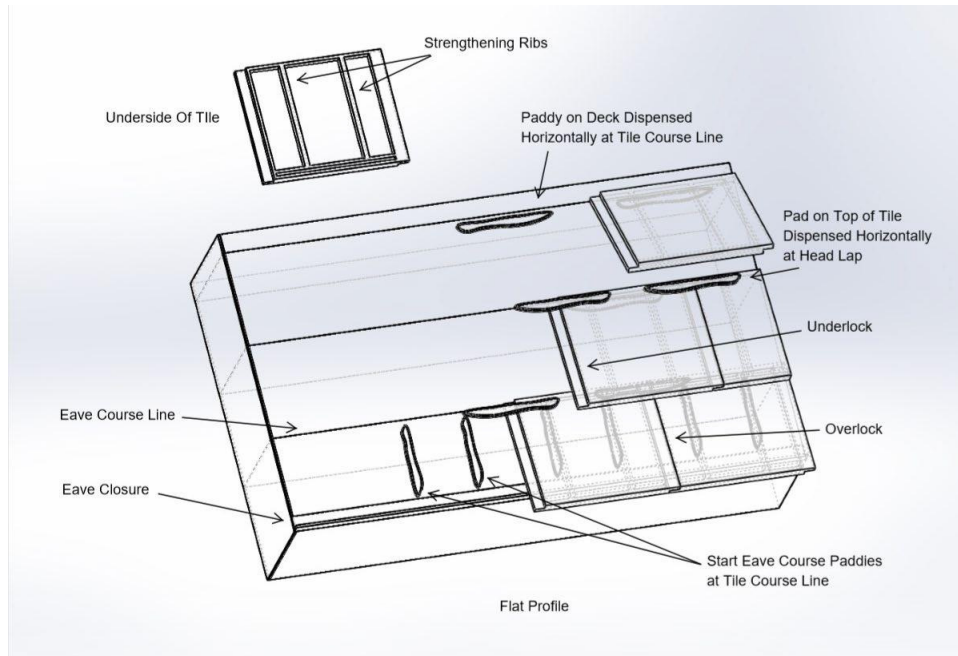
Note 2: Field tiles using Apoc Polyset® RTA-1 are limited to projects having an aerodynamic uplift moment less than the Allowable Overturning Moment values.

Note 3: Paddy placements for specified profiles are shown in Placement Details 1 to 10 of this report.

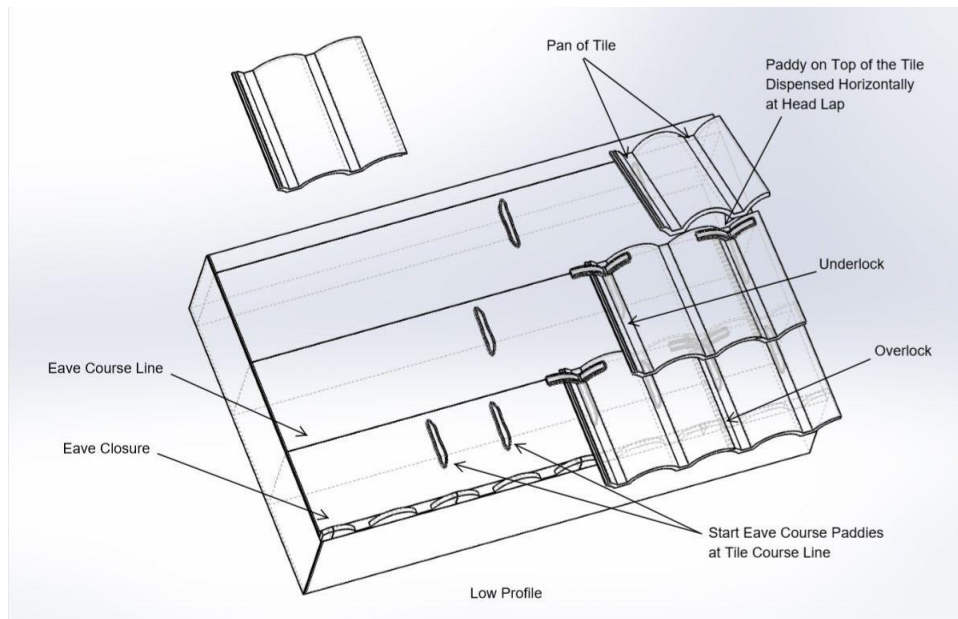
TABLE 2: Hip and Ridge Tiles in ICP Apoc Polyset® RTA-1 Allowable Uplift Resistance Performance Data 2:1 Safety Margin Applied for Independent Placement 4:1 Safety Margin Applied for Interdependent Placement			
Tile	Substrate	Attachment Method	Allowable Design Pressure (psf)
Clay or Concrete	2x PT Ridge Board	Interdependent: Head: One (1) #10x2-1/2" Screw; Overlap: 1x6 inch x ~10.5 gram	187
Concrete	Galvanized Hip & Ridge Metal Channel	Independent: Tile-to-metal, centered along tile, 3x6-inch x ~30 gram, starting 3-inch from tile head	123
Clay	Galvanized Hip & Ridge Metal Channel	Independent: Tile-to-metal, centered along tile, 3x6-inch x ~30 gram, starting 4-inch from tile head	251
Clay or Concrete	Trim Lock™: <i>aluminum</i> or Trim Lock™ Plus: <i>aluminum, galvanized, galvalume® or stainless steel</i>	Interdependent: On Trim-Lock™ metal: One (1) ~7-inch long x ~10 gram oblong shaped paddy centered on metal. At Tile Headlap: One (1) ~7-inch long x ~10 gram oblong shaped bead at tile headlap,	93
Clay or Concrete	Trim Lock™: <i>aluminum</i> or Trim Lock™ Plus: <i>aluminum, galvanized, galvalume® or stainless steel</i>		110



## DETAIL 1: Flat Profile Tile

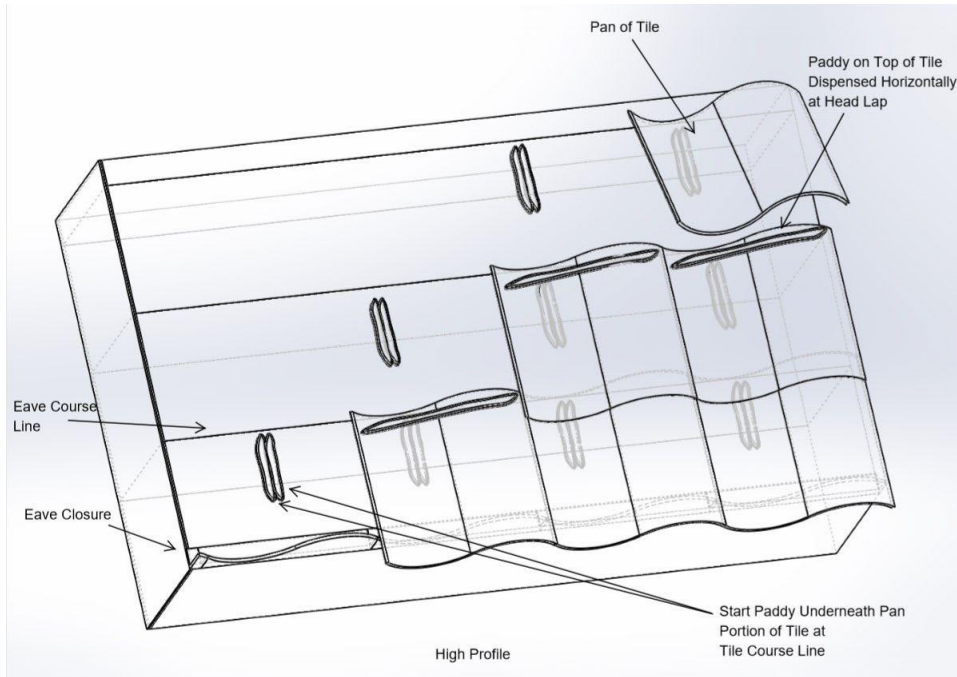


## DETAIL 2: Low/Medium Profile Tile

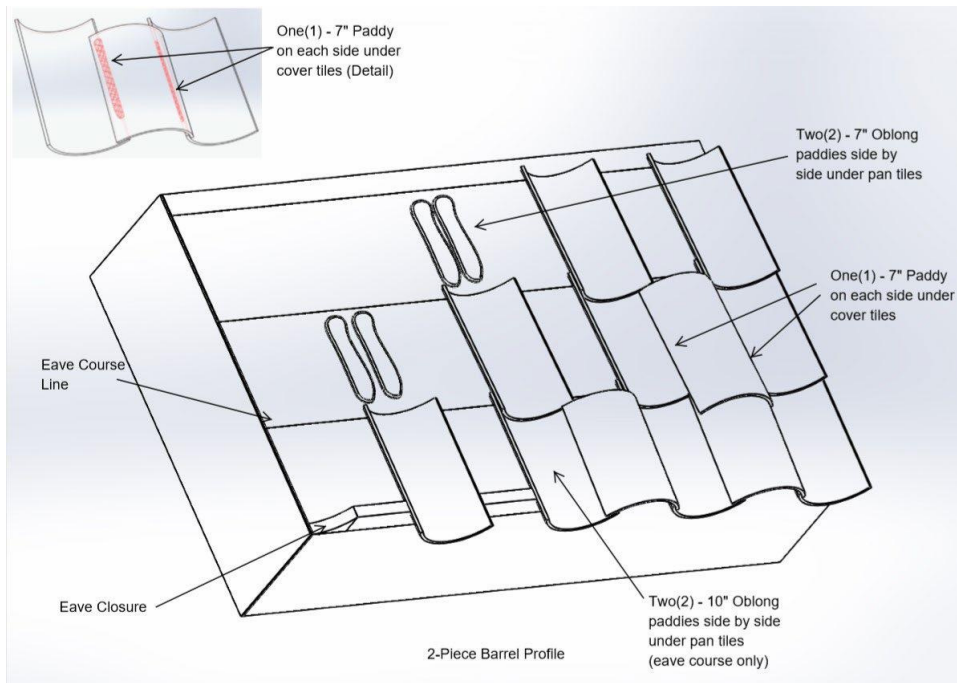




### DETAIL 3: High Profile Tile

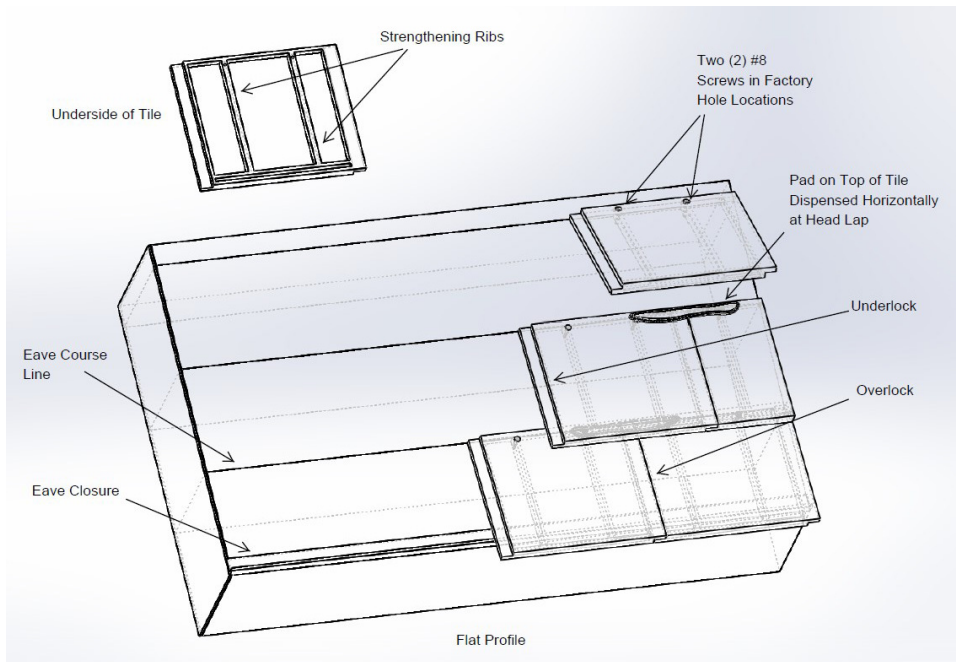


### DETAIL 4: 2-Piece Barrel (Cap & Pan) Tile

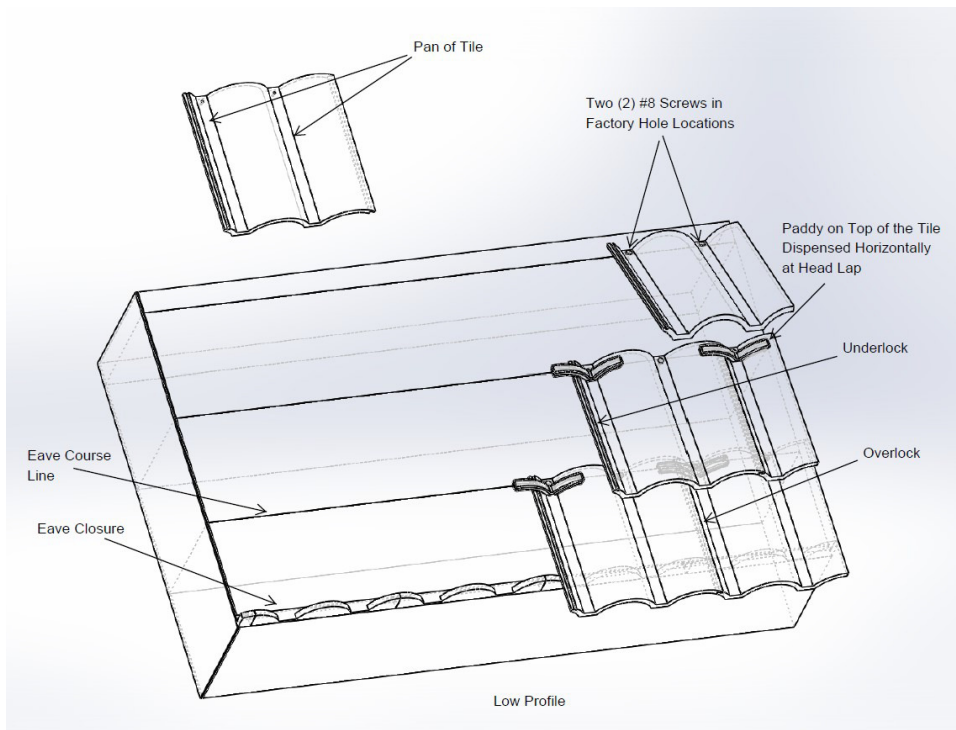




## DETAIL 5: Flat Profile Hybrid

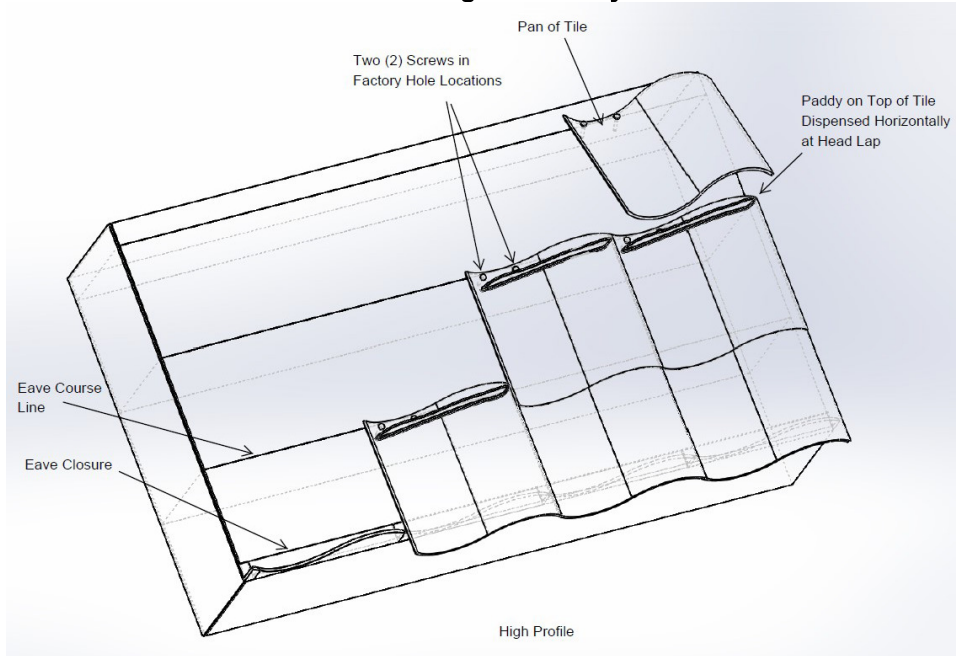


## DETAIL 6: Low/Medium Profile Hybrid

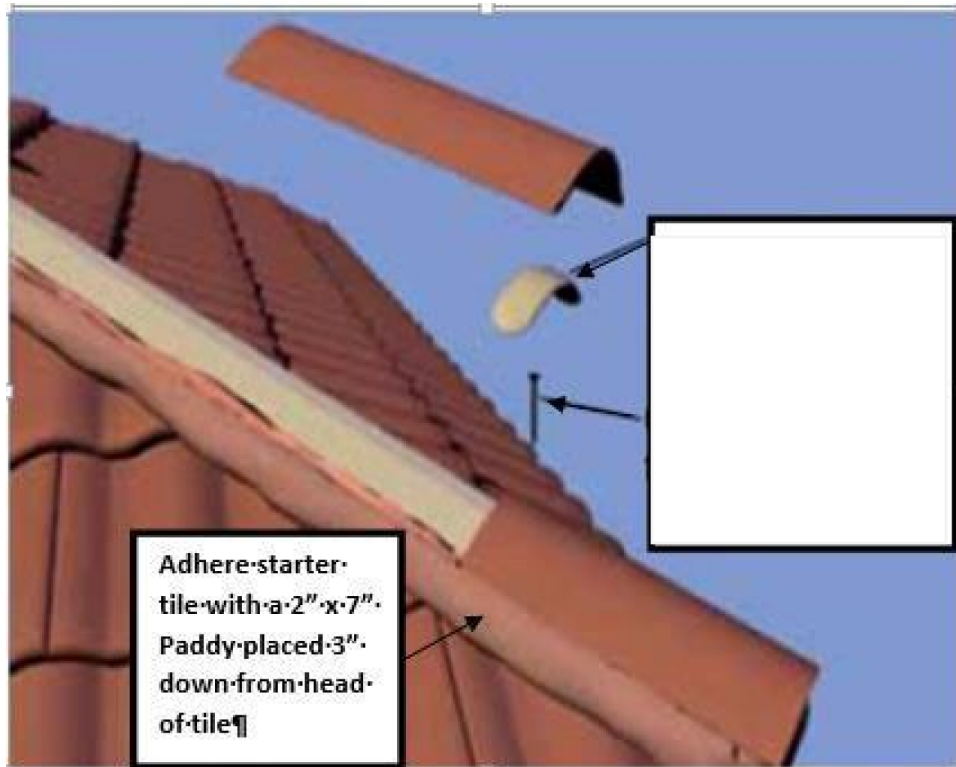




## DETAIL 7: High Profile Hybrid



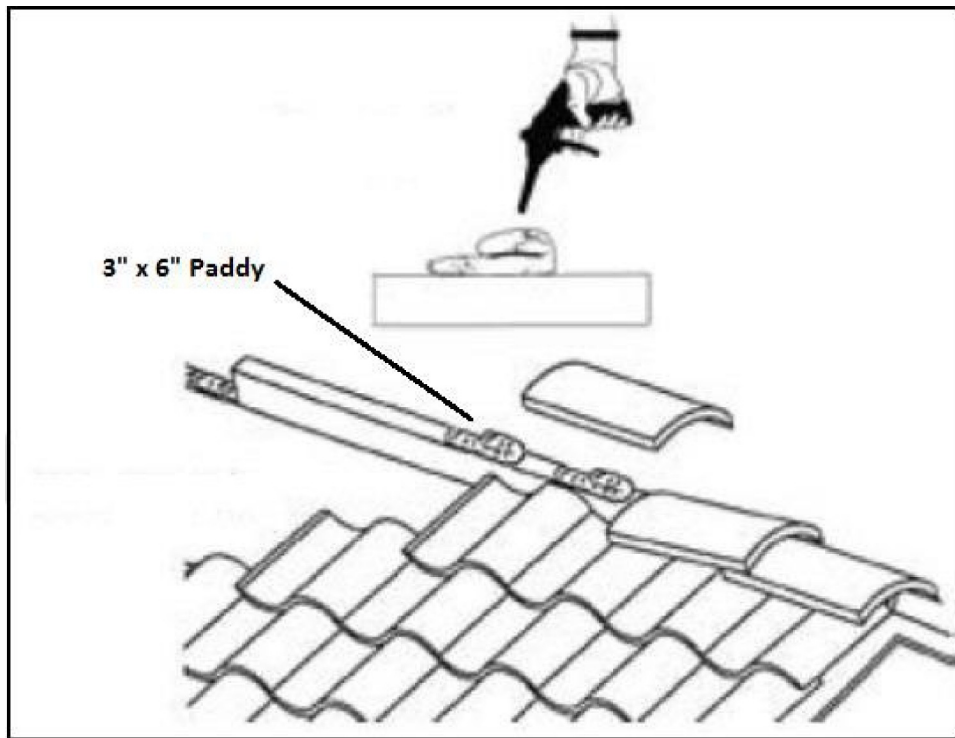
## DETAIL 8: Hip & Ridge (interdependent with screw)



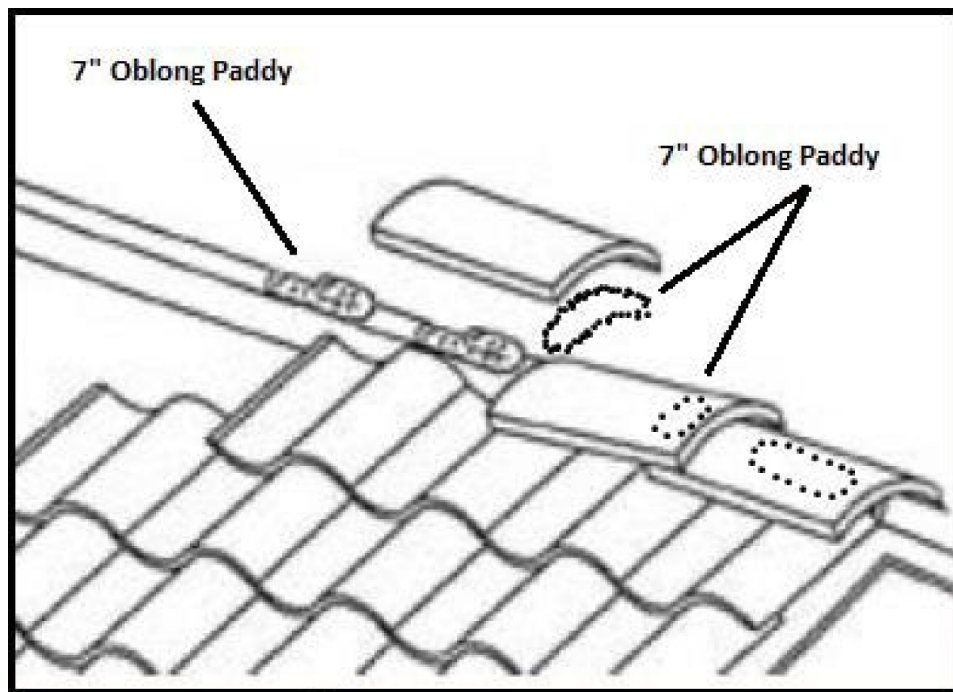




DETAIL 9: Hip & Ridge (independent placement)



DETAIL 10: Hip & Ridge (interdependent placement)





## CALIFORNIA SUPPLEMENT

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### ICP APOC POLYSET RTA-1 ROOF TILE ADHESIVE

**CSI Section:**  
**07 32 03 Roof Tile Adhesive**

#### 1.0 RECOGNITION

The ICP Building Solutions Group Apoc Polyset® RTA-1 as evaluated and represented in IAPMO UES Evaluation Report ER-629 and with changes as noted in this supplement is a satisfactory alternative for use in buildings built under the following codes (and regulations):

- 2022 California Building Code (CBC)
- 2022 California Residential Code (CRC)

#### 2.0 LIMITATIONS

Use of the ICP Building Solutions Group Apoc Polyset® RTA-1 recognized in ER-629 and this report supplement is subject to the following limitations:

**2.1** The ICP Building Solutions Group Apoc Polyset® RTA-1, described in UES ER-0629, complies with the 2022 CBC and the 2022 CRC. The design and installation of the ICP Apoc Polyset® RTA-1 shall be in accordance with Sections 1507.3.10 and 1513 of the 2022 CBC or Section R905.3 of the 2022 CRC, as applicable, and ER-629.

**2.2** This supplement expires concurrently with ER-629.

For additional information about this evaluation report please visit [www.uniform-es.org](http://www.uniform-es.org) or email us at [info@uniform-es.org](mailto:info@uniform-es.org)