

Product Evaluation

RC498 | 0221

Engineering Services Program

The following product has been evaluated for compliance with the wind loads specified in the International Residential Code (IRC) and the International Building Code (IBC).

This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.

This product evaluation is intended for use by those individuals who are following the design wind load criteria in Chapter 3 of the IRC and Section 1609 of the IBC. The design loads determined for the building or structure shall not exceed the design load rating specified for the products shown in the limitations section of this product evaluation. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Insurance Code, the Texas Administrative Code, and the Texas Engineering Practice Act.

For more information, contact TDI Engineering Services Program at (800) 248-6032.

Evaluation ID: RC-498

Effective Date: February 1, 2021

Re-evaluation Date: February 2025

Product Name: S-Tile Clay Roof Tiles Installed with Roof Tile Adhesive

Manufacturer: Innova Tile
S. Anselmo Group Company
7620 Washington Avenue
Houston, TX 77007
(800) 358-7963

General Description:

This evaluation report covers the S-Tile clay tile. The S-Tiles have interlocking ribs on the longitudinal edges of the tiles. The interlocking ribs restrict lateral movement and provide a water stop. The tiles are available in a variety of colors.

Adhesive Attachment: The S-Tile clay roof tiles must be installed in accordance with this product evaluation report and in accordance with the ICP Adhesives Polyset® AH-160 Installation Instructions published by ICP Adhesives and Sealants, © 2016. General installation requirements for the roof tiles must be as specified in the roof tile manufacturer's installation instructions.

Licensed applicators: Installation must be performed by applicators who hold a current and valid Qualified Applicator Card presented by ICP Adhesives and Sealants.

Tile Weight: This evaluation report covers standard weight tiles. Lightweight tiles are outside of the scope of this evaluation report.

Roof Tile Designations, Profile Classifications, and Dimensions: Table 1 specifies the roof tile designations, profile classifications, and dimensions for the S-Tile roof tiles that apply to this product evaluation report. A picture of the S-Tile roof tile is shown in Figure 1.

Table 1: Roof Tile Designations, Profile Classifications, and Dimensions

Tile Designation	Profile Classification	Tile		
		Length	Width	Exposed Width
S-Tile	High	17-3/4"	11-5/8"	11"

Installation Instructions and Limitations:

Roof Framing and Roof Deck: Roof framing members must comply with either the IRC or the IBC. Do not space the roof-framing members greater than 24" on center. Minimum 15/32" plywood must solidly sheath the roof deck. Fasten the roof deck to the roof-framing members in compliance with either the IRC or the IBC to resist the required wind loads.

If the existing roof deck is a spaced board roof deck, then either remove the spaced boards or cover with minimum 15/32" plywood. Install the plywood sheathing over the spaced boards in compliance with either the IRC or the IBC to resist the required wind loads.

Metal Drip Edge: Install a metal drip edge as specified in the manufacturer's installation instructions.

Underlayment (Use One of the Following Options):

Option 1: Hot mop 30/90 underlayment: The underlayment must consist of a two-ply 30/90 hot mop underlayment system.

- The base ply (anchor sheet) of the underlayment system must be an ASTM D 226 Type II (No. 30) asphalt-saturated organic felt. The base ply must be fastened to the wood roof deck with minimum 12-gauge (minimum 0.120" shank diameter) corrosion resistant roofing nails (smooth, ring, or screw shank) with minimum 1-5/8" diameter tin caps. The fasteners are located in a 12" grid pattern, staggered in two rows in the field and 6" on center at the laps. The fasteners must be long enough to penetrate a minimum of 1/4" through the bottom (underside) of the wood deck.
- The top ply of the underlayment system must consist of one layer of No. 90 ASTM D249 mineral surfaced roll roofing. The top ply must be applied over the base ply by adhering the top ply to the base ply with a full mopping of ASTM D 312 Type IV asphalt.

Option 2: Self-Adhering Underlayment: Self-adhering underlayment may be used in accordance with one of the following requirements:

- The self-adhering underlayment must be listed in a current ICC-ES Evaluation Report as approved for use with ICP Adhesives Polyset® AH-160, or

- Document through testing at a TDI accepted test laboratory as having met the requirements set forth in ICC-ES AC152 Section 3.4. For testing in accordance with ICC-ES AC152, Section 3.4.5, the tensile adhesion/long term aging tests must have been completed using ICP Adhesives Polyset® AH-160 with the subject self-adhering underlayment.
- The self-adhering underlayment must be installed in accordance with the self-adhering underlayment manufacturer's published installation instructions. The allowable uplift resistance of the self-adhering underlayment must be in accordance with the underlayment manufacturer's test and/or evaluation documentation. The underlayment must be backnailed to the roof deck with minimum 11-gauge (minimum 0.120" shank diameter) corrosion resistant nails (smooth, ring, or screw shank) with minimum 1-5/8" diameter tin caps spaced 12" on center. The fasteners must be long enough to penetrate a minimum of 1/4" through the bottom of the wood deck.

Battens: The S-Tiles may be installed over wood battens. Solidly sheath the roof deck with minimum 15/32" plywood. As a minimum, use nominal 1x2 wood members for the battens. Space the battens to allow for a minimum 3" headlap. Fasten the battens to the roof deck with minimum 8d corrosion resistant common wire or box nails or equivalent size nail. Space the nails a maximum of 24" on center. As an alternative, fasten battens to the roof deck with No. 16-gauge by 7/16" crown by 1.5" long staples. Space the staples a maximum of 12" on center. Separate batten ends a minimum of 1/2" every 4' to allow for drainage. Use fasteners long enough to penetrate through the roof deck.

Roof Tile Installation:

General: The S-Tiles and the underlayment system must be clean and dry at the time of their application.

Install the S-Tiles in compliance with this product evaluation report and the manufacturer's installation instructions.

Roof Slope Limitations: Only install the S-Tiles on buildings with a roof slope of 3:12 or greater. Table 5 specifies roof slope limitations. Note: Battens are required when the roof slope exceeds 7:12.

Moment of Resistance: The overturning resistance (moment of resistance) due to wind of the roof tiles based on the installation method for the roof tiles is shown in Table 2.

Table 2: Moment of Resistance Based on Roof Tile Installation Method

Tile Designation	Moment of Resistance
S-Tile	55.1 ft-lbs.

Aerodynamic Uplift Moment: The aerodynamic uplift moment for the roof tile is calculated using Equation 16-34 from the 2018 IBC. The aerodynamic uplift moment is calculated based on

the mean roof height for the installation and the required wind speed and Exposure condition for the installation location using ASCE 7-16.

Permissible Tile Installation: The roof tiles may be installed if the Moment of Resistance for the roof tile specified in this evaluation report is greater than the Aerodynamic Uplift Moment for the roof tile calculated for the structure location.

Lay out the S-Tiles from the right to the left, starting at the right rake. Install the S-Tiles with a minimum 3" headlap.

ICP Adhesives Polyset® AH-160: The ICP Adhesives Polyset® AH-160 is dispensed using an ICP RTF1000EZ dispensing system. The dispensing system must be operated in accordance with the ICP *RTF1000 Installation and Operating Manual*. Calibration of the ICP RTF1000EZ dispensing system equipment is required before the application of the ICP Adhesives Polyset® AH-160. The mix ratio between chemical "A" and chemical "B" must be within the range of 1.0 A:B to 1.15 A:B. The calibrated adhesive is dispensed in the form of paddies. The quantity of adhesive dispensed will depend on the paddy placement selected.

Roof tile installation: The roof tiles and the underlayment system must be clean and dry at the time of application.

The roof tiles must be adhered to the underlayment using ICP Adhesives Polyset® AH-160 in accordance with ICP Adhesives and Sealants published installation instructions and the paddy application methods provided in this product evaluation report.

The roof tiles must be adhered directly to the underlayment system. Battens are permitted but are not required. If battens are used, then the roof tiles must not be adhered to the battens. Roof tiles must be adhered directly to freshly applied adhesive. The roof tile must be set within 1 to 2 minutes after the adhesive has been dispensed depending on the ambient temperature.

Paddy Application: The adhesive is dispensed in the form of paddies. Each tile is installed with one paddy. The paddy is located under the flange of the tile, 4" from the head of the tile. The contact area is approximately 10" long and 3-1/2" wide. The paddy depth is approximately 1". The weight of the paddy is approximately 45 grams.

Additional Attachment Requirements for Roof Tiles:

- For roof slopes above 6:12, the eave course must be fastened with a single corrosion resistant fastener in addition to the adhesive. The fasteners must be as specified in the IRC or the IBC. Flashing cement must be applied to seal all fastener penetrations when required by underlayment manufacturer.
- For roof slopes above 6:12 up to and including 7:12, every third tile in every fifth course must be fastened with a single corrosion resistant fastener in addition to the adhesive. The fasteners must be as specified in the IRC or the IBC. Flashing cement must be applied to seal all fastener penetrations when required by underlayment manufacturer.

- For roof slopes greater than 7:12, every tile must be fastened with a single corrosion resistant fastener in addition to the adhesive. The fasteners must be as specified in the IRC or the IBC. Flashing cement must be applied to seal all fastener penetrations when required by underlayment manufacturer.
- For roof slopes > 24:12, the nose end of all tiles must be fastened to the roof deck with a nose clip in addition to the paddy adhesive. The fasteners used to secure the nose clip to the roof deck must be as specified in the IRC or the IBC. Flashing cement must be applied to seal all fastener penetrations.

Rake Tiles: Secure rake tiles to Southern Yellow Pine, Douglas Fir-Larch or Spruce-Pine-Fir dimension lumber framing with either two minimum No. 8 screws or two minimum 10d ring shank nails. Use corrosion resistant fasteners long enough to penetrate the wood framing a minimum of 3/4".

Hip and Ridge Tiles: Fasten the hip and ridge tiles to hip and ridge boards (Dimension lumber of sufficient height to support the hip and ridge tiles) in accordance with one of the following options:

1. Drill a 3/16" hole in the lower 1/3 of the starter tile. Use a fastener as specified in Table 3 and secure the starter tile at both the drilled hole in the lower 1/3 and at the head of the tile. Seal the head of the fastener with a UV resistant sealant.
2. Prior to installing the starter tile, apply a roof tile adhesive along the entire length of the starter tile. Secure the head of the starter tile with a fastener as specified in Table 3.

Install the remaining hip and ridge tiles with a minimum 3" headlap. Place the nose of the tile into a 4" to 5" bead of roof tile adhesive along the head of the lower tile to insure proper contact with the two tiles. Secure the head of the hip or ridge tile using a fastener as specified in Table 3.

Table 3: Hip and Ridge Tile Fastener Requirements

Dimension lumber	Fasteners per Tile
Spruce-Pine-Fir	One No. 8 wood screw
Southern Yellow Pine	One No. 8 wood screw or one No. 10d box nail

Note: Keep the manufacturer's installation instructions and the ICP Adhesives Polyset® AH-160 Installation Instructions published by ICP Adhesives and Sealants, © 2016 at the job site. Use corrosion resistant fasteners as specified in the IRC and the IBC.

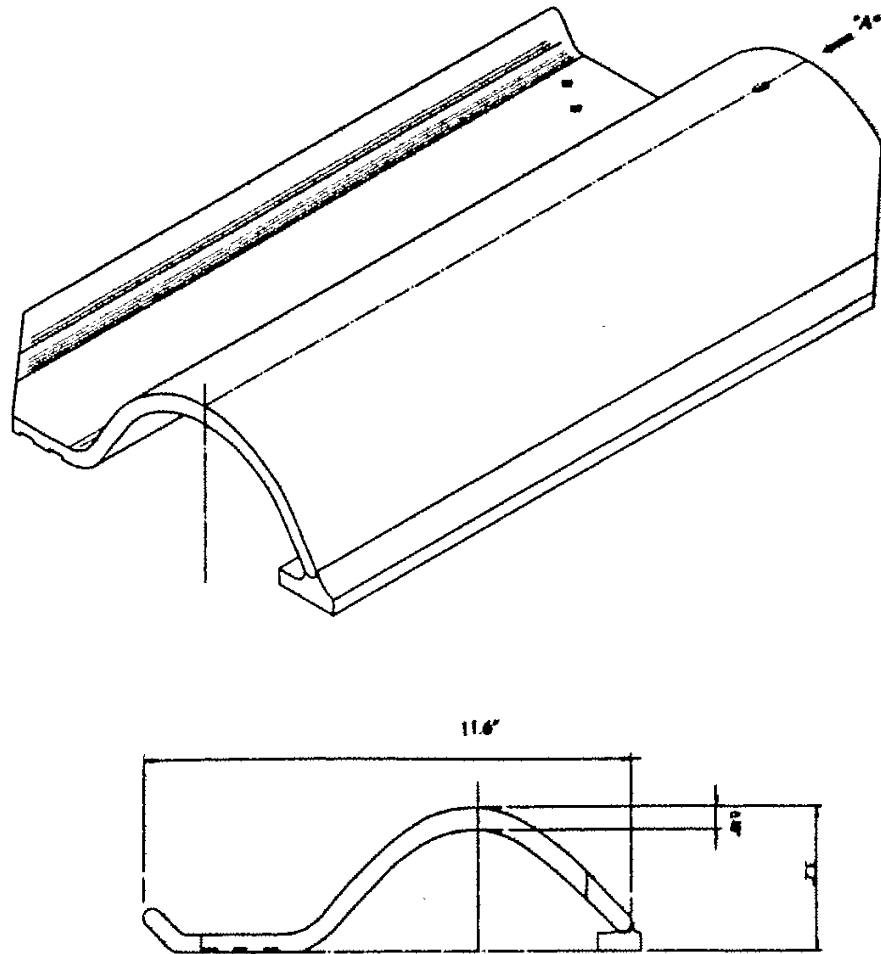


Figure 1
S-Tile Roof tile