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Product Evaluation

RC641 | 0421

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-641

Effective Date: April 1, 2021
Re-evaluation Date: April 2025

Product Name: Perennial Porcelain Roof Tiles Installed with Fasteners to a Wood Structural Panel Roof Deck

Manufacturer: Dal-Tile/Mohawk Industries
7834 C.F. Hawn Freeway
Dallas, TX 75217
(214) 398-1411

General Description:
Daltile porcelain roof tiles replicate the look of natural slate, clay, and wood shake, but offer the durability and strength of porcelain. This evaluation report includes the following Perennial porcelain roof tiles:

Tile Type	Variation	SKU
Standard	Onyx Slate	PR451122RTA1PF
	Impressionist Grey Slate	PR421122RTA1PF
	Antique Slate	PR431122RTA1PF
	Adobe Clay	PR441122RTA1PF
	Mystic Timber	PR411122RTA1PF
	Nordic Timber	PR401122RTA1PF

Tile Type	Variation	SKU
HD	Onyx Slate	PR451122RTB1PF
	Impressionist Grey Slate	PR421122RTB1PF
	Antique Slate	PR431122RTB1PF
	Adobe Clay	PR441122RTB1PF
	Mystic Timber	PR411122RTB1PF
	Nordic Timber	PR401122RTB1PF

Tile Type	Variation	SKU
Hip/Ridge	Onyx Slate	PR4588HIP1PF
	Impressionist Grey Slate	PR4288HIP1PF
	Antique Slate	PR4388HIP1PF
	Adobe Clay	PR4488HIP1PF
	Mystic Timber	PR4188HIP1PF
	Nordic Timber	PR4088HIP1PF

Mechanical Attachment Only: The porcelain roof tiles are to be installed mechanically with fasteners. Holes are provided in the roofing tile for fastening as specified in this evaluation report.

Roofing Tile Dimensions: The dimensions of the roof tiles that apply to this product evaluation report are specified in Table 1.

Table 1. Roof Tile Dimensions

Tile Designation	Width (in.)	Length (in.)	Thickness (mm)
HD Roof Tile; Flat	11-1/4	22-1/2	12.5
Standard Roof Tile; Flat	11-1/4	22-1/2	9.5
Hip/Ridge; Trapezoidal	15-1/2 at base, 13-3/4 at top		12

Limitations:

Roof Slope Limitations: The roof tiles must only be installed on buildings with a minimum roof slope of 4:12.

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	Minimum 1/2" Plywood Roof Deck
Standard Roof Tile	60.4 ft-lbs
HD Roof Tile	78.2 ft-lbs
Hip/Ridge Roof Tile	117.4 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.

Installation:

Roof Framing and Roof Deck: Roof framing members must be in accordance with either the IRC or the IBC. The roof framing members must not be spaced greater than 24" on center.

The roof deck must be solidly sheathed with minimum 1/2" plywood. The roof deck must be fastened to the roof framing members in accordance with either the IRC or the IBC.

If the existing roof deck is a spaced board deck, then a solid deck must be created using one of the following two options:

1. The spaced boards must be removed and replaced with a wood structural panel deck (plywood) with a minimum 1/2" thickness, or
2. The spaced boards must be covered with a wood structural panel deck (plywood) with a minimum 1/2" thickness. The wood structural panel deck must be installed over the spaced boards in accordance with either the IRC or the IBC.

Metal Drip Edge: A metal drip edge must be fastened to the roof deck with either 11-gauge or 12-gauge roofing nails spaced a maximum of 10" on center. Note: The underlayment and the drip edge may be fastened with the same fastener as long as the more stringent fastener pattern is used.

At the eaves, the drip edge must be fastened directly to the deck and the underlayment applied over the drip edge. At the gable ends, the drip edge must be applied over the underlayment.

Roof Underlayment:

5:12 Roof Slope and greater: One layers of underlayment complying with ASTM D 226, Type II (No. 30 asphalt felt) or equivalent. The underlayment must be installed as specified in either the IRC or the IBC and in the manufacturer's installation instructions. As an alternative, a synthetic underlayment be used. The synthetic underlayment must comply with the requirements of the IRC and the IBC and the manufacturer's installation instructions.

4:12 Roof Slope and less than 5:12: A fully adhered underlayment must be used. The fully adhered underlayment must comply with the requirements of the IRC and the IBC (ASTM D 1970) and the manufacturer's installation instructions.

Battens: Not permitted.

General: The roof tiles and the underlayment system must be clean and dry at the time of their application.

The roof tiles must be installed in accordance with this product evaluation report and the manufacturer's installation instructions.

Fasteners: The roof tiles must be mechanically fastened to the roof deck. Fasteners must be long enough to penetrate completely through the roof deck. Each roof tile is secured to the roof deck using the following type fasteners:

Screws: Minimum No. 8 x 2-1/2" Phillips bugle head screws. Fasteners must be corrosion resistant or stainless steel.

Tile Installation: The roof tiles are installed in the following manner:

Standard and HD Roof Tile: Four (4) fasteners are required for each roof tile. One fastener in each of the holes in the tile.

Hip/Ridge Roof Tile: Two (2) fasteners are required in each side of the roof tile. One fastener in each hole (there is a third hole on each side that does not require a fastener.

Note: Keep the manufacturer's installation instructions available on the job site during the installation. Use corrosion resistant fasteners as specified in the IRC and the IBC.