

Product Evaluation

RC407 | 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-407

Effective Date: February 1, 2021

Re-evaluation Date: February 2025

Product Name: Half Barrel Clay Roofing Tiles Installed with Fasteners to a Wood Structural Panel Roof Deck

Manufacturer: Laminados De Barro S.A. de C.V.
Av. Rio Escondido #500
Col. El Vergel
Piedras Negras, Coahuila
Mexico 26090
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General Description:

Half Barrel Roof Tiles are machine formed tiles made from natural clay which are available in a wide variety of colors. The tile is half barrel shaped. On the backside of the tile are four raised pads. The tile has one nail hole located at the center point of the tile, 1-1/8" on center from the top edge.

Mechanical Attachment Only: The Half Barrel clay roofing tiles are to be installed mechanically with fasteners and clips. The Half Barrel clay roofing tiles may be secured to the roof deck using battens.

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

Table 1. Roofing Tile Dimensions

Tile Designation	Width (in.)	Length (in.)	Thickness (in.)
Half Barrel	7-3/4 to 6-5/8	15-3/4	1/2

Limitations:

Roof Framing: 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.

Roof Deck: The roof deck must be solidly sheathed with minimum 7/16" plywood deck. The roof deck must be fastened to the roof framing members to resist the required design pressures.

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 minimum 7/16" thickness, or
2. The spaced boards must be covered with a wood structural panel deck (plywood) with a minimum 7/16" thickness. The wood structural panel deck must be installed over the spaced boards to resist the required design pressures.

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:

3:12 Roof Slope to Under 4:12 Roof Slope: Two 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.

4:12 Roof Slope and Greater: One layer of underlayment complying with ASTM D 226, Type II (No. 30 asphalt felt) or equivalent. The underlayment must be lapped a minimum of 2" at the head laps and a minimum of 6" at the side laps. The underlayment must be installed as specified in either the IRC or the IBC and in the manufacturer's installation instructions.

Stringers: The roofing tiles are installed over stringers. The stringers are nominal 2 x 4 Southern Yellow Pine wood members. The stringers must be installed over the underlayment. The stringers are installed vertically onto the roof deck spaced 8" on center. The stringers must be fastened to the roof deck with minimum No. 8 x 2-1/2" wood screws. The fasteners must be located at each end and spaced a maximum of 18" on center. The fastener must be long enough to penetrate a minimum of 3/4" into or through the roof deck.

Roof Slope: The roofing tiles must only be installed on buildings with a roof slope greater than or equal to 5:12, but not exceeding 12:12.

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 7/16" Plywood Roof Deck
Half Barrel	478.0 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:

General: The roofing tiles and the underlayment system must be clean and dry at the time of their application. The roofing tiles must be installed in accordance with this product evaluation report and the manufacturer's installation instructions.

The concave tiles are placed between the stringers and the convex tiles are placed on top of the stringers.

Fasteners: The roofing tiles must be mechanically fastened to the roof deck. The fasteners must penetrate through the battens and into the roof deck. Fasteners must be long enough to penetrate a minimum of 3/4" into or through the roof deck. Each tile is secured to the roof deck in the following manner:

Concave Tiles: Minimum No. 8 x 2-1/2" Philips bugle head screws. The fastener penetrates through a hole at the top of the roofing tile and into the roof deck.

Convex Tiles: Secured to the stringers with clips. The clip is 2-1/4" tall and is 0.103" in diameter. They are manufactured of either galvanized steel or stainless steel. The clips are secured to the tile over the nail hole in the tiles with one No. 8 x 2-1/2" Phillips bugle head screw.

Hip, Ridge, and Rake Tiles: Refer to the tile manufacturer's instructions manual for the installation requirements.

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.