



- Compliance with International Codes
- Compliance with State Codes

# ICC-ES Evaluation Report

## ESR-3838

Reissued November 2021

This report is subject to renewal November 2022.

**DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION**

**Section: 07 31 53—Plastic Shakes**

**Section: 07 32 26—Plastic Roof Tiles**

**REPORT HOLDER:**

**COLORADO ROOFING PRODUCTS dba CeDUR**

**EVALUATION SUBJECT:**

**CeDUR® SHAKES**

**1.0 EVALUATION SCOPE**

**Compliance with the following codes:**

- 2015 and 2012 *International Building Code*® (IBC)
- 2015 and 2012 *International Residential Code*® (IRC)

**Properties evaluated:**

- Weather protection
- Wind resistance
- Fire classification
- Durability

**2.0 USES**

CeDUR® Shakes are used as roof covering materials and are recognized as Class A roof coverings when installed in accordance with Section 4.5 of this report.

**3.0 DESCRIPTION**

**3.1 Roof Tiles:**

CeDUR® Shakes are manufactured from a proprietary blend of polymeric-based materials to simulate wood shakes. CeDUR® Shakes are available in Live Oak (Caramel Brown), Shiloh (Gray), and Walden (Chocolate Brown). CeDUR® Shakes are produced in a length of 23½ inches (597 mm) and widths of 5¼ inches (133 mm), 7¼ inches (184 mm) and 12¼ inches (311 mm). (See Figure 2) The maximum exposure is 10 inches (254 mm), resulting in an installed weight of 1.7 pounds per square foot (8.30 kg/m²). See Figure 1 for installation assembly.

**3.1.1 CeDUR® Starter:** CeDUR® Starters are made the same way as CeDUR® Shakes. The starter has a 15-inch-wide (380 mm) exposure, are 15 inches (380 mm) in length and taper from ⅜ inch (9.53 mm) to ¼ inch (6.4 mm). (See Figure 2)

**3.1.2 CeDUR® Preformed Hip and Ridge:** CeDUR® Preformed Hip and Ridge units are made the same way as CeDUR® Shakes. Hip and ridge units are 13 inches long (330 mm) with a 10-inch (254 mm) exposure. CeDUR® Hip and Ridge Shakes can also be fabricated on-site from 5¼-inch (133 mm), 7¼-inch (184 mm) or 12¼-inch (311 mm) wide shakes (See Figure 2).

**3.2 Sheathing:**

CeDUR® Shakes must be installed on solid sheathing consisting of minimum 15/32-inch (11.9 mm) exterior-grade plywood sheathing 7/16-inch-thick (11.1 mm) oriented strand board (OSB) or nominally 1-inch-thick (25.4 mm) lumber complying with the applicable code.

**3.3 Underlayment and Interlayerment:**

Underlayment must be a minimum of one layer of Type II (No. 30) asphalt-saturated felt complying with ASTM D226. Interlayerment, when required, must be one layer of minimum 18-inch-wide (457 mm) Type II (No. 30) asphalt-saturated felt complying with ASTM D226.

**3.4 Flashing:**

Flashing must be a minimum No. 26 gage [0.019 inch (0.483 mm)] corrosive-resistant sheet metal.

**3.5 Fasteners:**

To secure the shakes to the sheathing, corrosion-resistant nails, staples or screws may be used. Nails must be minimum No. 11 gage [0.120 inch (3 mm)], with 5/16-inch- diameter (8 mm) heads, corrosion-resistant ring shank roofing nails. Staples must be corrosion-resistant, minimum No. 16 gage staples with minimum 15/16-inch-wide (24 mm) crowns and 17/8-inch-long (48 mm) legs. Screws must be corrosion-resistant, No. 8 or No. 10 screws with minimum 5/16-inch-head-diameter (8 mm). Fasteners must be of sufficient length to penetrate into the roof sheathing a minimum of ¾-inch (19 mm), or through the sheathing, whichever is less.

**4.0 INSTALLATION**

**4.1 General:**

CeDUR® shakes must be installed in accordance with this report, the applicable code and the manufacturer's published installation instructions. The manufacturer's published installation instructions must be available at the jobsite at the time of installation.

The shakes must be installed on roofs with solid sheathing and a minimum slope of 4:12 (33 percent slope) and a maximum slope of 21:12 (175 percent slope). Solid sheathing must be minimum  $1\frac{5}{32}$ -inch (11.9 mm) exterior-grade plywood,  $\frac{7}{16}$ -inch-thick (11.1 mm) oriented strand board (OSB) or nominally 1-inch-thick (24.5 mm) lumber complying with the applicable code. The sheathing must be structurally adequate and fastened to resist the wind loads as specified by IBC Section 1609 or IRC R301.2, for components and cladding.

Flashing must be in accordance with IBC Sections 1503.2 and 1507.9.9 or IRC Sections R903.2 and R905.8.8, as applicable.

#### 4.2 Underlayment and Interlayment:

Underlayment, as described in Section 3.3, must be installed over the entire surface of the solid sheathing. Interlayment, as described in Section 3.3, must be installed in accordance with the report holder's published installation instructions and Figure 1 when the roof slope is less than 6:12. In areas subject to high winds, the underlayment must be installed in accordance with IBC Section 1507.9.3.1 or IRC Section R905.8.3.2, as applicable.

In areas where the average daily temperature in January is 25°F (-4°C) or less, or where there is a possibility of ice forming along the eaves and causing a backup of water, an ice barrier that consists of at least two layers of ASTM D226 Type I complying underlayment cemented together, or of a self-adhering polymer-modified bitumen sheet, must extend from the eave's edge to a point 24 inches (610 mm) inside the exterior wall line of the building.

#### 4.3 Roof Shakes:

The CeDUR® Starter described in Section 3.1.1 must be installed at the eave line and attached with a minimum of four fasteners. Subsequent rows of shakes are installed with a minimum exposure of 8 inches (203 mm) and a maximum exposure of 10 inches (254 mm). Two fasteners must be used for  $5\frac{1}{4}$ -inch-wide (133 mm) and  $7\frac{1}{4}$ -inch-wide (184 mm) shakes and three fasteners must be used for  $12\frac{1}{4}$ -inch-wide (311 mm) shakes. Fasteners must be as described in Section 3.5. (See Figure 1)

#### 4.4 Hips and Ridges:

**4.4.1 CeDUR® Preformed Hip and Ridge:** The CeDUR® preformed hip and ridge units described in Section 3.1.2 must be installed with a minimum of two fasteners on each side of hip and ridge units as described in Section 3.5. Underlayment, as described in Section 3.3, must be installed with a minimum 4-inch lap (102 mm) on each side of the hip or ridge.

**4.4.2 CeDUR® Site-Made Hip and Ridge Shakes:** Site-made hip and ridge shakes must be made from  $5\frac{1}{4}$ -inch (133 mm),  $7\frac{1}{4}$ -inch (184 mm) or  $12\frac{1}{4}$ -inch (311 mm) shakes. Pieces must be alternately lapped. Two fasteners on each side of hip and ridge shakes, as described in Section 3.5, must be used per side.

#### 4.5 Fire Classification:

The roof assembly is recognized as a Class A roof assembly under IBC Section 1505.1 or IRC Section R902.1, when installed in accordance with Section 4.5.1.

**4.5.1 Class A Roof Covering:** CeDUR® Shakes, underlayment and interlayment, when required, installed as follows:

- Deck: Closely fitted, minimum  $1\frac{5}{32}$ -inch (11.9 mm) thick exterior grade plywood, minimum  $1\frac{5}{32}$ -inch-thick (11.9 mm) oriented strand board (OSB) or nominally

1-inch-thick (25.4 mm) lumber complying with the applicable code.

- Maximum roof slope: 21:12 (175 percent slope).
- Underlayment: One layer of ASTM D226, Type II (No. 30) asphalt-saturated felt installed over the entire surface of the deck.
- Interlayment: One layer of ASTM D226, Type II (No. 30) asphalt-saturated felt. Interlayment is required when the roof slope is less than 6:12.
- Minimum and Maximum shake exposure: 8 inches (203 mm) and 10 inches (254 mm), respectively.

#### 4.6 Wind Resistance:

Under the 2015 and 2012 IBC and 2015 IRC, when installed in accordance with this report, CeDUR® Shakes are limited to areas subject to a maximum ultimate design wind speed ( $V_{ult}$ ) of 130 mph (209 km/h) in accordance with 2015 and 2012 IBC Figure 1609 (2015 IRC Figure R301.2), on structures having a maximum mean roof height of 40 feet (12.2 m) or less in Exposure B areas. Under the 2012 IRC, when installed in accordance with this report, the roof coverings are limited to installation in areas subject to a maximum basic wind speed of 100 mph (161 km/h) in accordance with 2012 IRC Figure R301.2(4)A, on structures with a maximum mean roof height of 40 feet (12.2 m) in Exposure B areas.

#### 4.7 Reroofing:

Prior to application of the CeDUR® Shakes, the existing roof covering and underlayment must be completely removed. Any damaged sheathing must be replaced. The installation of the underlayment and shakes must then proceed as described in Sections 4.1 through 4.4.

### 5.0 CONDITIONS OF USE

The CeDUR® Shakes described in this report comply with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation must comply with this report, the manufacturer's published installation instructions and the applicable code. In the event of a conflict between the manufacturer's published instructions and this report, this report governs.
- 5.2 CeDUR® Shakes are manufactured in Aurora, Colorado, under a quality-control program with inspections by ICC-ES.

### 6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Special Roofing Systems (AC07), dated February 2014 (editorially revised May 2016).

### 7.0 IDENTIFICATION

- 7.1 Each CeDUR® Shake is identified with the CeDUR name, production date, and manufacturing location. Each bundle of shakes is labeled with the report holder's name (CeDUR), the evaluation report number (ESR-3838), manufacturing location, contact number, color (Live Oak, Shiloh, or Walden) and quantity.
- 7.2 The report holder's contact information is the following:

**COLORADO ROOFING PRODUCTS dba CeDUR**  
**3590 HIMALAYA ROAD**  
**AURORA, COLORADO 80011**  
**(909) 376-2328**  
[www.cedur.com](http://www.cedur.com)

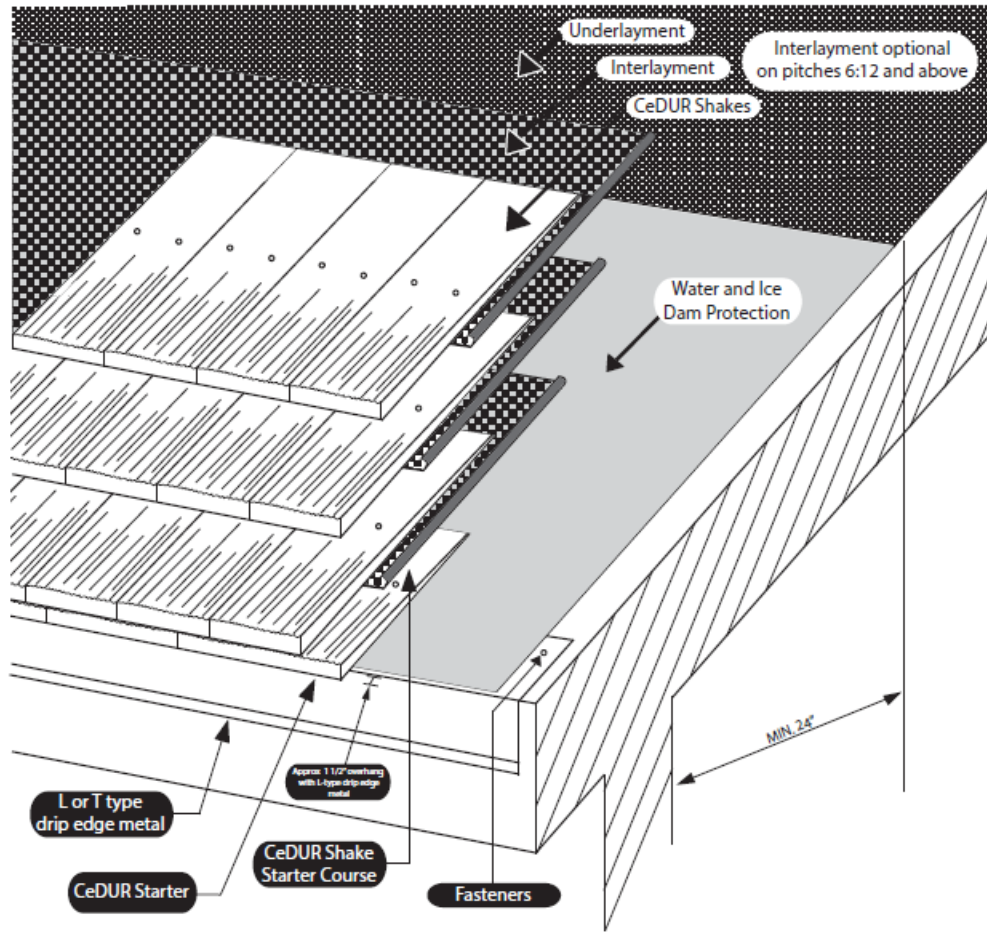


FIGURE 1—CeDUR® SHAKE CLASS A FIRE RATED ASSEMBLY

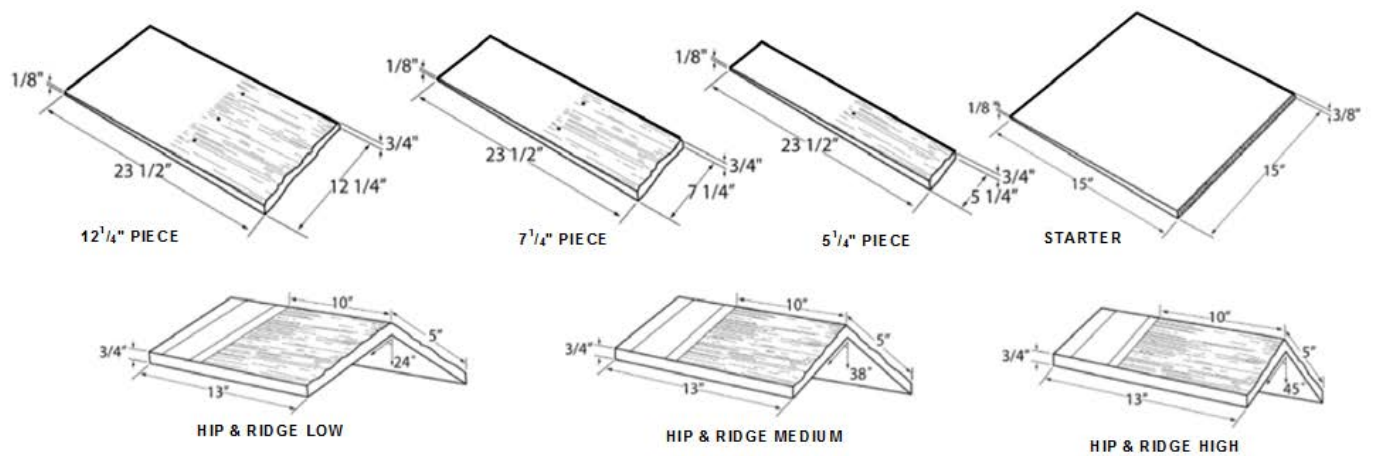


FIGURE 2—CeDUR® SHAKE PROFILES AND DIMENSIONS

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**EVALUATION SUBJECT:**

CeDUR® SHAKES

**1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that CeDUR® Shakes, described in ICC-ES evaluation report ESR-3838, have also been evaluated for compliance with the codes noted below.

**Applicable code editions:**

- 2016 *California Building Code* (CBC)
- 2016 *California Residential Code* (CRC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) and Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

**2.0 CONCLUSIONS****2.1 CBC:**

The CeDUR® Shakes described in the evaluation report ESR-3838 may be used where the CBC requires a Class A roof covering complying with CBC Section 1505.1.1, a Class B roof covering complying with CBC Section 1505.1.2, or a Class C roof covering complying with CBC Section 1505.1.3, provided installation is in accordance with the 2015 *International Building Code*® (IBC) provisions noted in the evaluation report.

**2.1.1 OSHPD:**

The applicable OSHPD Sections of the CBC are beyond the scope of this supplement.

**2.1.2 DSA:**

The applicable DSA Sections of the CBC are beyond the scope of this supplement.

**2.2 CRC:**

The CeDUR® Shakes described in the evaluation report ESR-3838 may be used where the CRC requires a Class A roof cover complying with CRC Section R902.1.1, a Class B roof covering complying with CRC Section R902.1.2, or a Class C roof covering complying with CRC Section R902.1.3, provided installation is in accordance with the 2015 *International Residential Code*® (IRC) provisions noted in the evaluation report.

This supplement expires concurrently with the evaluation report, reissued November 2021.