

# **ICC-ES Evaluation Report**

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# **ESR-3325**

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION Section: 07 31 53—Plastic Shakes Section: 07 32 26—Plastic Roof Tiles

#### **REPORT HOLDER:**

ECOSTAR™ LLC 42 EDGEWOOD DRIVE HOLLAND, NEW YORK 14080 (800) 211-7170 www.ecostarlic.com

#### **EVALUATION SUBJECT:**

# EMPIRE SYNTHETIC COMPOSITE ROOF SHINGLES

#### **1.0 EVALUATION SCOPE**

#### Compliance with the following codes:

■ 2012 and 2009 International Building Code<sup>®</sup> (IBC)

■ 2012 and 2009 International Residential Code<sup>®</sup> (IRC)

## Properties evaluated:

- Weather protection
- Wind resistance
- Fire classification

#### 2.0 USES

EcoStar<sup>™</sup> Empire roof shingles are used as roof covering materials and are recognized as Class A or Class C roof coverings when installed in accordance with this report.

#### 3.0 DESCRIPTION

## 3.1 Roof Shingles:

Empire roof shingles are synthetic composite roofing tiles manufactured using virgin and recycled polyolefin polymers. The tiles are available in Traditional, Beaver Tail, Chisel Point and Beveled Edge Slate styles as shown in Figure 1. The finished product is 18 inches (457 mm) long, 10 inches or 12 inches (254 mm or 305 mm) wide, and  $1/_4$  inch (6.4 mm) thick. The installed weight of the product is 3.0 pounds per square foot (15 kg/m<sup>2</sup>) when installed with a 6-inch (152 mm) exposure.

# 3.2 Hip and Ridge Shingles:

The Empire Slate Hip and Ridge Shingle is 1/4 inch (6.35 mm) thick, 12 inches (305 mm) wide, and 18 inches (457 mm) long as shown in Figure 2. The tiles are manufactured with an angle running along the length direction to facilitate installation.

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# 3.3 Sheathing:

Empire roof shingles must be installed on solid sheathing consisting of minimum  $^{15}/_{32}$ -inch (11.9 mm) plywood, minimum  $^{7}/_{16}$ -inch (11.1 mm) oriented strand board (OSB) or minimum 1-by tongue-and-groove wood decking.

#### 3.4 Underlayment:

The underlayment must comply with ASTM D226 Type II, or be an alternative recognized in a current ICC-ES evaluation report, manufactured under the listing program of an accredited inspection agency.

#### 3.5 Ice Barrier:

Two layers of underlayment as described in Section 3.4, solidly cemented together; a self-adhering polymermodified-bitumen sheet complying with ASTM D1970; or an alternative recognized in an ICC-ES evaluation report, manufactured under the listing program of an accredited inspection agency.

#### 3.6 Flashing:

Flashing materials must be in accordance with IBC Sections 1503.2 and 1507.7.7 or IRC Sections R903.2 and R905.6.6, as applicable.

#### 3.7 Fasteners:

Fasteners, supplied by EcoStar<sup>TM</sup> LLC, are minimum  $1^{1}/_{2^{-1}}$  inch-long (38.1 mm) ring shank, stainless steel nails having  ${}^{3}/_{8^{-1}}$ inch-diameter (9.5 mm) heads and 0.121-inch-diameter (3.1 mm) shanks.

#### 4.0 INSTALLATION

#### 4.1 General:

Empire roof shingles must be installed in accordance with IBC Section 1507.7 or IRC Section R905.6, except as noted in this report, and the manufacturer's published installation instructions. The manufacturer's installation instructions must be available at the jobsite at all times during installation.

#### 4.2 Slope:

Empire roof shingles must only be applied to roofs having a minimum slope of 3:12 (25 percent) and a maximum slope of 21:12 (175 percent).

### 4.3 Sheathing:

Empire roof shingles must be installed on roofs with solid sheathing in accordance with Section 3.3. The sheathing must be structurally adequate and fastened to resist the wind loads specified by IBC Section 1609 or IRC Section R301.2 for components and cladding.

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#### 4.4 Underlayment:

An ice barrier as described in Section 3.5 must be installed in areas where there has been a history of ice forming along the eaves causing a backup of water in accordance with IBC Section 1507.7.4 and IRC Section R905.6.3.1. Underlayment as described in Section 3.4 must be installed over the entire roof deck, including those areas covered by the ice barrier, in accordance with IBC Section 1507.7.3 and IRC Section R905.6.3.

## 4.5 Flashing:

Flashing materials conforming to Section 3.6 must be installed in accordance with IBC Sections 1503.2 and 1507.7.7 or IRC Sections R903.2 and R905.6.6, as applicable.

# 4.6 Roof Shingle:

The roof shingles must be installed beginning at the eave edge. A starter row of shingles must be fastened with two nails conforming to Section 3.7 placed in each shingle in the positions noted on the shingle. A second layer is similarly fastened directly over the starter row (no exposure) with a horizontal offset of a half tile. A consistent  ${}^{3}$ /<sub>8</sub>-inch (9.5 mm) gap is required between tiles and between tiles and protrusions. Subsequent courses must be installed with a 6-inch (152 mm) exposure and be offset half a tile to cover the nails from the previous row.

# 4.7 Hips and Ridges:

Hip & Ridge shingles must be installed in accordance with the manufacturer's published installation instructions with a 6-inch (152 mm) exposure, with two 2-inch-long (50.8 mm) or 2.5-inch-long (63.5 mm) nails conforming to Section 3.7 for each shingle.

#### 4.8 Fire Classification:

**4.8.1 Class A Assembly:** Limited to minimum <sup>15</sup>/<sub>32</sub>-inch (11.9 mm) code-complying plywood deck; one layer of minimum <sup>1</sup>/<sub>4</sub>-inch (6.35 mm) G-P Gypsum DensDeck<sup>®</sup> with all joints staggered a minimum of 6 inches (152 mm) from the plywood joints; and one ply of ASTM D226 Type II (Type 30) asphalt felt or one ply of ELK VERSASHIELD<sup>TM</sup> Underlayment (ESR-2053) or Atlas Roofing "FR 50" underlayment; covered with any one or a combination of the following Empire shingles: "Traditional," "Beavertail," "Chisel Point," and "Beveled Edge". All other installation details must be as described in Sections 4.1 through 4.7.

**4.8.2** Class C Assembly: Limited to minimum<sup>15</sup>/<sub>32</sub>-inch (11.9 mm) code-complying plywood deck; one ply of ASTM D226 Type II (Type 30) underlayment; covered with any

#### 4.9 Wind Resistance:

Under the 2012 IBC, when installation is in accordance with this report, the roof coverings are limited to a maximum ultimate design wind speed of 130 mph (209 km/hr) on structures having a mean roof height of 40 feet (12.2 m) or less in Exposure B areas. Under the 2009 IBC, 2012 IRC, and 2009 IRC, when installation is in accordance with this report, the roof coverings are limited to installation in areas subject to a maximum basic wind speed (3-second gust) of 100 mph (161 km/h) on structures having a mean roof height of 40 feet (12.2 m) or less in Exposure B areas.

# 4.10 Reroofing:

Existing roof coverings must be removed and the Empire roof shingles must be installed as described for new construction in Sections 4.1 through 4.8.

# 5.0 CONDITIONS OF USE

The EcoStar<sup>™</sup> Empire roof shingles described in this report comply with, or are suitable alternatives 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 and the manufacturer's published installation instructions. In the event of a conflict between the manufacturer's instructions and this report, the instructions in this report govern.
- **5.2** The shingles are manufactured in Holland, New York, under a quality control program with inspections by UL LLC (AA-668).

#### 6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Special Roofing Systems (AC07), dated June 2012.

# 7.0 IDENTIFICATION

Each tile must be identified with the EcoStar<sup>™</sup> name and phone number, the product name (Empire roof shingles) and the production date. Each bundle of tiles must be labeled with the number of tiles in the bundle, color of the tile, the evaluation report number (ESR-3325) and the name of the inspection agency (UL LLC). Each pallet of bundles must be identified with the product name (Empire roof shingles), production code, and color.

