

# UL Evaluation Report

## UL ER25876-01

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Sub-level 3: 06 73 00 – Composite Decking

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### 1. SUBJECT:

- A. Envision Distinction™, Envision Inspiration™, and Envision Expression™ Composite Lumber
- B. Ridge Premium™ Composite Lumber



## 2. SCOPE OF EVALUATION

### A. Envision Distincion™, Envision Inspiration™, and Envision Expression™ Composite Lumber

- 2018, 2015, 2012 *International Building Code*® (IBC)
- 2018, 2015, 2012 *International Residential Code*® (IRC)
- ICC-ES Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems (Guards and Handrails) (AC174)
- ICC-ES Acceptance Criteria for Quality Documentation (AC10)

### B. Ridge Premium™ Composite Lumber

- 2018 *International Building Code*® (IBC)
- 2018 *International Residential Code*® (IRC)
- Testing Demonstrating Compliance with ASTM D7032, Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails)
- ICC-ES Acceptance Criteria for Quality Documentation (AC10)

#### The products were evaluated for the following properties:

- Structural Performance
- Durability
- Surface Burning
- Decay Resistance
- Termite Resistance

## 3. REFERENCED DOCUMENTS

- ASTM D7032, Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails)
- ASTM D7032, Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails)
- ICC-ES Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems (Guards and Handrails) (AC174)
- ICC-ES Acceptance Criteria for Quality Documentation (AC10)

## 4. USES

Envision® Composite Lumber (Envision Distincion™, Envision Inspiration™, and Envision Expression™) and Ridge Premium™ boards are for use as a walking surface on exterior decks, balconies, porches, walkways, and stairs.

## 5. PRODUCT DESCRIPTION

### 5.1 General:

Envision Distinction™, Envision Inspiration™, and Envision Expression™ Composite Lumber boards are a compression molded composite material comprised of part wood fiber and part plastic. Envision® Composite Lumber boards are nominal 1" x 6" (actual 7/8" x 5-1/2") in size, available in 12', 16', and 20' lengths, provided in grooved and square edge profiles (see [Figure 1](#)), and offered in the following colors: GreyWood, Rustic Walnut, Shaded Auburn, Spiced Teak, Barnwood Plank, Tangled Twine, Weathered Wicker, Caribou Brown, Canyon Ridge, Harbor Grey, Woodland Bark, and Driftwood. All Envision® Composite Lumber boards have an embossed walking surface.

Ridge Premium™ Composite Lumber boards are a compression molded composite material comprised of part wood fiber and part plastic. Ridge Premium™ Composite Lumber boards are nominal 1" x 6" (7/8" x 5-1/2" actual) in size, available in 12', 16' and 20' lengths, provided in grooved and square edge profiles (see [Figure 2](#)), and are offered in the following colors: Alpine Fog, Black Walnut, Driftwood, Gunstock, Sandstone, and Vintage Oak. All Ridge Premium™ Composite Lumber boards have an embossed walking surface.

### 5.2 Span Rating

Envision® Composite Lumber and Ridge Premium™ Composite Lumber boards covered under this report are rated for the loads indicated in [Table 1](#). Structural performance has been demonstrated for a temperature range from -20°F to 125°F for live load.

### 5.3 Stair Tread:

Envision® and Ridge Premium™ Composite Lumber boards may be used as stair treads when installed in a minimum two-span condition. Maximum span is shown in [Table 1](#).

### 5.4 Uplift:

Envision® and Ridge Premium™ Composite Lumber boards have uplift resistance ratings based on the fastening method, as shown in [Table 2](#).

### 5.5 Flame Spread Index:

Envision® Composite Lumber boards have a flame spread index of less than 200 when tested in accordance with UL723, as required by Section 2612.3 of the 2018 IBC, Section R507.2.2 of the 2018 IRC and Section R507.3.2 of the 2015 IRC.

Envision® Ridge Premium™ Composite Lumber boards have a flame spread index of less than 200 when tested in accordance with UL723, as required by Section 2612.3 of the 2018 IBC and Section R507.2.2 of the 2018 IRC.

## **5.6 Termite and Decay Resistance:**

Envision® Composite Lumber boards have demonstrated resistance to decay and termite attack (including Formosan termites) as required by Section 2612.4 of the 2018 and 2015 IBC, Section R507.2.2.3 and Section R507.2.2.4 of the 2018 IRC, and Section R507.3.4 and Section R507.3.5 of the 2015 IRC. Resistance was found equivalent to that of preservative-treated or the heartwood of naturally durable wood used in identical applications.

Ridge Premium™ Composite Lumber boards have demonstrated resistance to decay and termite attack (including Formosan termites) as required by Section 2612.4 of the 2018 IBC, and Section R507.2.2.3 and Section R507.2.2.4 of the 2018 IRC. Resistance was found to be equivalent to that of preservative-treated lumber and the heartwood of naturally durable wood used in identical applications.

## **6. INSTALLATION**

### **6.1 General:**

Envision® and Ridge Premium™ Composite Lumber boards shall be installed in accordance with the applicable code, this report and the manufacturer's published installation instructions.

The manufacturer's published installation instructions shall be available at all times on the jobsite during installation. Uplift ratings are available for the six fastening options described below. Additional acceptable fastening systems, which have not been evaluated for uplift resistance, are identified in the manufacturer's installation instructions.

### **6.2 Envision® Composite Lumber - Solid Profile**

Envision® Composite Lumber solid profile boards may be face-fastened with Envision® Composite Deck Screws or DECKFAST® Cap-Tor® xd screws at each support. Minimum edge distance for fasteners is 1.0 inch from the board edge, and the minimum end distance for fasteners is ¾-inch from the end of each board. See [Table 2](#) for uplift resistance rating.

Envision® Composite Lumber solid profile boards may be edge-fastened with CAMO® Marksman Pro® Hidden Deck Fastening System, following the fastener manufacturer's installation instructions. Minimum end distance for fasteners is ¾ inch from the end of each board. See Table 2 for uplift resistance rating.

Envision® Composite Lumber solid profile boards may be fastened using the TAMKO EG 1-2-3 hidden fastener system. The EG 1-2-3 hidden fastener consists of a painted metal clip attached to the bottom surface of the deck board which is then attached to the joist. See Table 2 for uplift resistance rating.

### **6.3 Envision® Composite Lumber - Grooved Profile**

Envision® Composite Lumber grooved profile boards may be fastened at each support using TAMKO EverClip™ hidden fasteners. The first and last Envision® grooved profile boards are face fastened using fasteners identified in Table 2 for the equivalent solid deck board with fasteners spaced so that no part of the fastener is within ¾-inch from the end of the board and 1-⅜ inch from the edge of the board. See Table 2 for uplift resistance rating.

Envision® Composite Lumber grooved profile boards may be fastened at each support using FastenMaster TigerClaw® TC-G grooved board hidden deck fasteners. The first and last Envision® grooved profile boards are face fastened using fasteners identified in Table 2 for the equivalent solid deck board with fasteners spaced so that no part of the fastener is within ¾-inch from the end of the board and 1-⅜ inch from the edge of the board. See Table 2 for uplift resistance rating.

## 6.4 Ridge Premium™ Composite Lumber

Ridge Premium™ Composite Lumber solid profile boards may be face-fastened with Envision® Composite Deck Screws at each support. Minimum edge distance for fasteners is 1 inch from the board edge, and the minimum end distance for fasteners is ¾-inch from the end of each board. See [Table 2](#) for uplift resistance rating.

Ridge Premium™ Composite Lumber grooved profile boards may be fastened at each support using FastenMaster TigerClaw® TC-G grooved board hidden deck fasteners. The first and last Ridge Premium™ grooved profile boards are face fastened using fasteners identified in Table 2 for the equivalent solid deck board with fasteners spaced so that no part of the fastener is within ¾-inch from the end of the board and 1-⅜ inch from the edge of the board. See Table 2 for uplift resistance rating.

## 7. CONDITIONS OF USE

### 7.1 General:

Envision® and Ridge Premium™ Composite Lumber boards described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 2 of this report, subject to the following conditions:

- 7.2** Materials and methods of installation shall comply with this report and the manufacturer's published installation instructions. In the event of a conflict between the installation instructions and this report, this report governs.
- 7.3** See UL, LLC's [Product iQ™](#) database for Decking Materials for Use in Wildland-Urban Interface Fire Areas ([BIIH](#)).
- 7.4** Envision® Composite Lumber described in this report is permitted for Type V-B (5B) construction as specified in the Section 2612.5 of the 2018 and 2015 IBC and for dwellings located in jurisdictions which are signatory to the 2018 and 2015 IRC.
- Ridge Premium™ described in this report is permitted for Type V-B (5B) construction as specified in the Section 2612.5 of the 2018 and for dwellings located in jurisdictions which are signatory to the 2018 IRC.
- Envision® Composite Lumber is permitted for use on balconies and similar projections on buildings of Type III, IV, and V construction where sprinkler protection is extended to these areas as specified in Section 1406.3 of the 2012 IBC and for dwellings located in jurisdictions which are signatory to the 2012 IRC.
- 7.5** Boards placed at an angle other than 90 degrees to the supporting joist will require support framing at a reduced spacing such that the span of the deck board does not exceed 17 inches.
- 7.6** Envision® and Ridge Premium™ Composite Lumber boards used as stair treads shall be installed in a minimum of a two-span condition.
- 7.7** Compatibility of the supporting construction materials with all fasteners and other hardware components is subject to approval by the code official.
- 7.8** Where required by the building official, engineering calculations and details shall be provided. The calculations shall verify that the anchorage complies with the building construction.

- 7.9** Only those types of fasteners and fastening methods described in this report have been evaluated for installation of Envision® and Ridge Premium™ Composite Lumber boards; other methods of attachment are outside the scope of this report.
- 7.10** Envision® and Ridge Premium™ Composite Lumber boards are manufactured by Envision® Building Products LLC. in Lamar, MO, under the UL LLC Listing/Classification and Follow-Up Service Program, which includes inspections in accordance with the quality elements of ICC-ES Acceptance Criteria for Quality Documentation, AC10.

## **8. SUPPORTING EVIDENCE**

- 8.1** Data in accordance with ICC-ES Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems (Guards and Handrails) (AC174), (applicable for Envision® Composite Lumber only).
- 8.2** Manufacturer's descriptive product literature, including installation instructions.
- 8.3** UL test reports and Classification in accordance with California Office of the State Fire Marshal SFM Standard 12-7A-4A, "Decking Alternate Method A." See UL Product Certification Category for Decking Materials for Use in Wildland-Urban Interface Fire Areas ([BIH](#)), File R25876.
- 8.4** Data in accordance with ICC-ES Acceptance Criteria for Quality Documentation (AC10).
- 8.5** Data in accordance with ASTM D7032 (applicable for both Envision® and Ridge Premium™ Composite Lumber).

## **9. IDENTIFICATION**

Envision® and Ridge Premium™ Composite Lumber boards described in this evaluation report are identified by a marking bearing:

- The report holder's name, Envision Building Products LLC
- The plant identification
- The UL Listing/Classification Mark
- The evaluation report number UL ER25876-01
- A statement indicating compliance with ASTM D7032

The validity of the evaluation report is contingent upon this identification appearing on the product or product label or UL Listing/Classification Mark/Certification Mark.

## **10. USE OF UL EVALUATION REPORT**

- 10.1** The approval of building products, materials or systems is under the responsibility of the applicable authorities having jurisdiction.
- 10.2** UL Evaluation Reports shall not be used in any manner that implies an endorsement of the product, material or system by UL.
- 10.3** The status of this report, as well as a complete directory of UL Evaluation Reports may be found at UL.com via the [Product iQ™ database](#).

**Table 1 – Span/Load Ratings and Stair Tread Support Spacing**

Product Designation	Span/Load Ratings		Stair Tread Support Spacing <sup>1</sup> (in)
	Live Load (in/lb/ft <sup>2</sup> )	Snow Load (in/lb/ft <sup>2</sup> )	
Envision® Composite Lumber Solid or Grooved	17 / 100	17 / 250 or 14 / 350	12
Ridge Premium™ Solid or Grooved	17 / 100	N/A	8

<sup>1</sup>Continuous two-span installation.

**Table 2 – Fastener Load and Estimated Uplift Capacity**

Composite Lumber-Edge Detail	Support Spacing (in)	Fastener <sup>1</sup>	Envision®		Ridge Premium™	
			Avg. Max Fastener Load (lbf) <sup>2</sup>	Estimated Uplift Capacity (psf) <sup>3,4</sup>	Avg. Max Fastener Load (lbf) <sup>2</sup>	Estimated Uplift Capacity (psf) <sup>3,4</sup>
Solid	17	Envision® Composite Deck Screw	230	710	146	435
Solid	17	DECKFAST® Cap-Tor® XD	175	530	N/A	N/A
Solid	17	CAMO Marksman Pro® Hidden Fastener System	180	560	N/A	N/A
Solid	17	EG 1-2-3 Hidden Fastener System	45	135	N/A	N/A
Grooved	17	EverClip™ Hidden Fastener	260	800	N/A	N/A
Grooved	17	FastenMaster TigerClaw TC-G Hidden Fastener	290	895	N/A	N/A

<sup>1</sup>As described in Table 3.

<sup>2</sup>Average fastener load divided by a safety factor of 3.0.

<sup>3</sup>Two fasteners per board per joist; joists spaced 17 inches O.C.

<sup>4</sup>A safety factor of 3.0 has been applied.

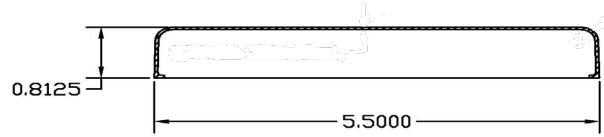
**Table 3 – Fastener Description**

Generic Fastener	Uses	Detailed Fastener Description
<p>#10 x 2-½” Envision® Composite Deck Screw (<a href="#">Figure 3</a>)</p>	<p>Face Fastening solid board (see Section 6.1)</p>	<p>Trim cutting head 5.59-6.22 mm in dia, 6-lobe T20 star drive recess depth of 2.00-2.40 mm, 62-65 mm in overall screw length, Trilobular 4.8-5.2 mm in lower outside thread dia, 5.05-5.3 upper thread dia, 3.7 mm wire dia, type 99 double cutting point</p>
<p>#10 x 2-¾” DECKFAST® Cap- Tor XD Deck Screw (<a href="#">Figure 4</a>)</p>	<p>Face Fastening solid board (see Section 6.1)</p>	<p>0.60” length of left-hand thread (9 TPI), 2.0” length of trilobular right-handed thread (12 TPI), major diameter of 0.20”, 0.270” head diameter with T-20 star drive recess, Type 99 point</p>
<p>#7 x 1-7/8” CAMO Marksman Pro Deck Screw (<a href="#">Figure 5</a>)</p>	<p>Edge Fastening solid board (see Section 6.1)</p>	<p>T15 star drive trim head, 5.00 – 5.09 mm in dia, recess depth of 1.8 – 2.0 mm, 1.875” length, 6 lobes dual thread, 3.86 – 4.24 mm in lower outside thread dia, 3.26 – 3.65 mm in upper thread diameter</p>
<p>EG 1-2-3 (<a href="#">Figure 6</a>)</p>	<p>Hidden Fastening Clips for solid deck boards (see Section 6.1)</p>	<p>Painted metal clip: Attached to underside of deck board with one #6 x ¾” screw, 12 TPI, 0.73 in. overall length, 0.145 in. major dia., 0.088 in. shank dia., 0.261 in. head dia., square drive trim head, Type 17 point attached to joist with one #6 x 1-½ in. screw, 12 TPI with a 1.47 in. overall length, 0.145 in. major dia., 0.088 in. shank dia., 0.261 in. head dia., square drive trim head, Type 17 point</p>
<p>FastenMaster TigerClaw TC-G Hidden Fastener System (<a href="#">Figure 7</a>)</p>	<p>Hidden Fastening Clips for grooved deck boards</p>	<p>Clips are attached to joists with a 1.63 in. long stainless steel screw (0.164 in. major dia., 0.113 in. minor dia., 0.229 dia.)</p>
<p>EverClip Hidden Fastener (<a href="#">Figure 8</a>)</p>	<p>Hidden Fastening Clips for grooved deck boards</p>	<p>Clips are attached to joists with one #10 x 2-½” deck screw (8 TPI, 0.179 in. major dia., 0.126 in. shank dia., 0.323 in. head dia., Phillips drive, trim Head, Type A point)</p>

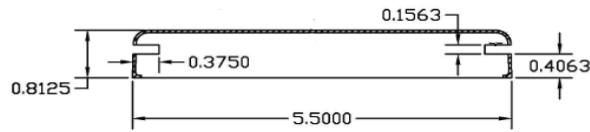


**Figure 1** Envision® Composite Lumber Profiles

**Square**

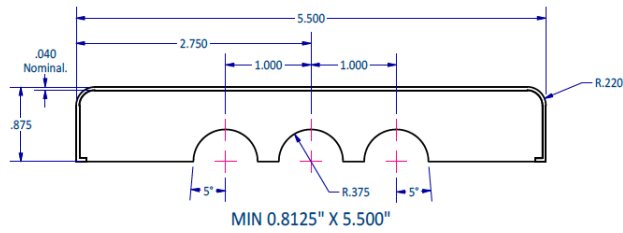


**Grooved**

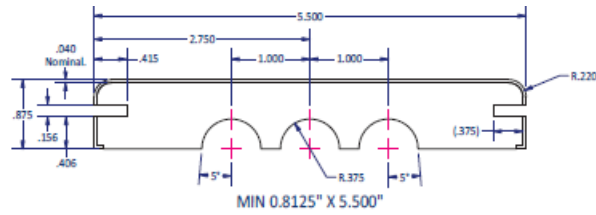


**Figure 2** Ridge Premium™ Composite Lumber Profile

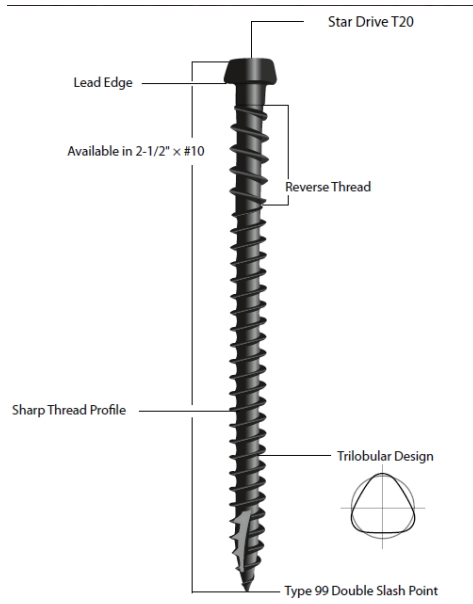
**Square**



**Grooved**



**Figure 3** Envision® Composite Deck Screws



**Figure 4** DECKFAST® Cap-Tor® XD



**Figure 5** CAMO Marksman Pro Deck Screw



**Figure 6** EG 1-2-3 Hidden Fastener System



**EG 1-2-3 Hidden Fastener System with Fasteners**

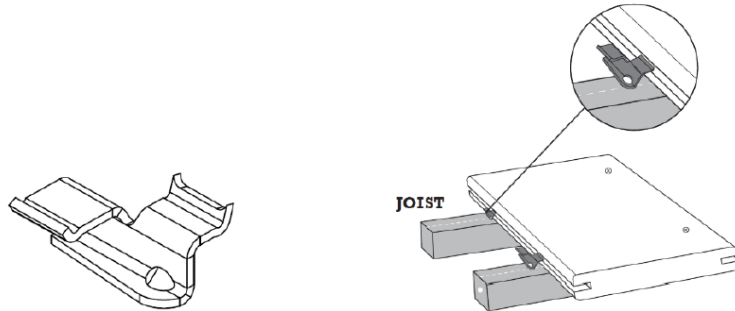


**Hidden Fastener Installation to Bottom Surface of Board**



**Hidden Fastener Installation to Joist**

**Figure 7** FastenMaster TigerClaw TC-G Clips



**Figure 8** EverClip Hidden Fastener System



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