

# UL Evaluation Report



## UL ER25876-01

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DIVISION: 06 00 00 – Wood, Plastics, and Composites

Sub-level 2: 06 70 00 – Structural Composites

Sub-level 3: 06 73 00 – Composite Decking

Sub-level 4: 06 73 13 – Composite Structural Decking

### COMPANY:

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### 1. SUBJECT:

Envision Distinction™, Envision Inspiration™, and Envision Expression™ Composite Lumber

### 2. SCOPE OF EVALUATION

- 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), dated January 2012
- ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated January 2018

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

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

**3. REFERENCED DOCUMENTS**

- ASTM D7032-10a, 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), dated January 2012
- ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated January 2018

**4. USES**

Envision® Composite Lumber (Envision Distinction™, Envision Inspiration™, and Envision Expression™) 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 5.5") 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, and Woodland Bark. All Envision® Composite Lumber boards have an embossed walking surface.

**5.2 Span Rating**

Envision® Composite Lumber boards covered under this report are rated for the uniform live and snow loads as 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® 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® 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 (ASTM E84), as required by 2018, 2015 IBC Section 2612.3 and 2015 IRC Section R507.3.2.

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

Envision® Composite Lumber boards have demonstrated resistance to decay and termite attack (including Formosan termites) as required by 2018, 2015 IBC Section 2612.4, 2018 IRC Section R507.2.2.3 and R507.2.2.4, 2015 IRC Sections R507.3.3 and R507.3.4. Resistance was found equivalent to that of preservative-treated or the heartwood of naturally durable wood used in identical applications.

## **6. INSTALLATION**

### **6.1 General:**

Envision® 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 0.75 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 0.75 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 0.75 inch from the end of the board and 1.375 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 0.75 inch from the end of the board and 1.375 inch from the edge of the board. See Table 2 for uplift resistance rating.

## 7. CONDITIONS OF USE

### 7.1 General:

Envision® 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 Online Certifications Directory Decking Materials for Use in Wildland-Urban Interface Fire Areas ([BIIH](#)).
- 7.4 The deck boards described in this report are permitted for Type V-B (5B) construction as specified in the 2018 and 2015 IBC Section 2612.5 for jurisdictions adopting the 2018 and 2015 IBC and for dwellings regulated by the 2018 and 2015 IRC.

The deck boards are 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 2012 IBC Section 1406.3 for jurisdictions adopting the 2012 IBC and for dwellings regulated by 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® 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 code for the type of framing and condition of the supporting construction.
- 7.9 Only those types of fasteners and fastening methods described in this report have been evaluated for installation of Envision® Composite Lumber boards; other methods of attachment are outside the scope of this report.
- 7.10 Envision® Composite Lumber boards are manufactured by TAMKO Building Products, Inc. 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), dated January 2012.
- 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), dated January 2018.
- 8.5 Data in accordance with ASTM D7032.

## 9. IDENTIFICATION

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

- The report holder's name, TAMKO Building Products, Inc.,
- 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.
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**Table 1 – Span/Load Ratings and Stair Tread Support Spacing**

Envision® Composite Lumber	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> )	
Solid or Grooved	17 / 100	17 / 250 or 14 / 350	12

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

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

Envision® Composite Lumber	Support Spacing (in)	Fastener <sup>1</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
Solid	17	DECKFAST® Cap-Tor® XD	175	530
Solid	17	CAMO Marksman Pro® Hidden Fastener System	180	560
Solid	17	EG 1-2-3 Hidden Fastener System	45	135
Grooved	17	EverClip™ Hidden Fastener	260	800
Grooved	17	FastenMaster TigerClaw TC-G Hidden Fastener	290	895

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

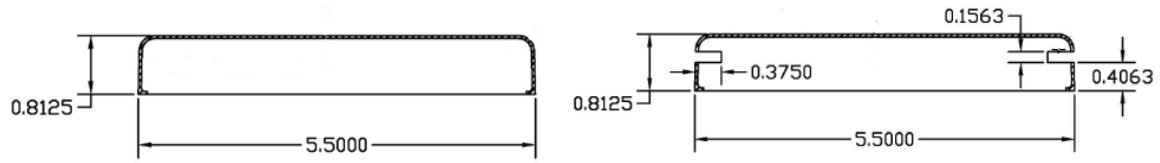
<sup>2</sup> Average fastener load divided by a safety factor of 3.0.

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

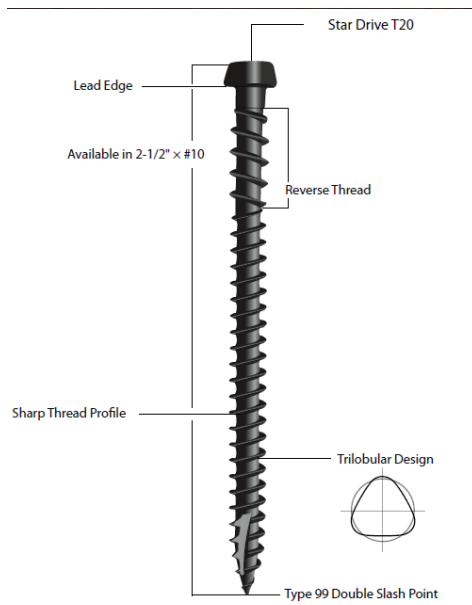
<sup>4</sup> A safety factor of 3.0 has been applied.

**Table 3 – Fastener Description**

Generic Fastener	Uses	Detailed Fastener Description
#10 x 2-1/2" Envision Composite Deck Screw (Figure 2)	Face Fastening solid board (see Section 6.1)	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
#10 x 2-3/4" DECKFAST® Cap-Tor XD Deck Screw (Figure 3)	Face Fastening solid board (see Section 6.1)	0.60" length of left-hand thread (9 TPI), 2.0" length of tri-lobular right-handed thread (12 TPI), major diameter of 0.20", 0.270" head diameter with T-20 star drive recess, Type 99 point
#7 x 1-7/8" CAMO Marksman Pro Deck Screw (Figure 4)	Edge Fastening solid board (see Section 6.1)	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 dia
EG 1-2-3 (Figure 5)	Hidden Fastening Clips for solid deck boards (see Section 6.1)	Painted metal clip: Attached to underside of deck board with one #6 x 3/4" 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 1-1/2 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
FastenMaster TigerClaw TC-G Hidden Fastener System (Figure 6)	Hidden Fastening Clips for grooved deck boards	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.)
EverClip Hidden Fastener (Figure 7)	Hidden Fastening Clips for grooved deck boards	Clips are attached to joists with one #10 x 2-1/2" 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)

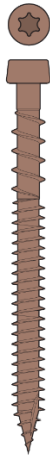


**Figure 1. Envision® Composite Lumber Profiles**

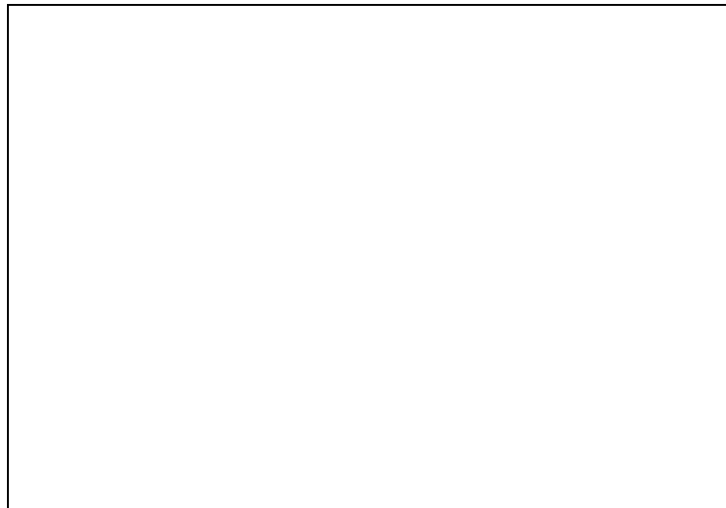


**Figure 2. Envision® Composite Deck Screws**





**Figure 3. DECKFAST® Cap-Tor® XD**



**Figure 4. CAMO Marksman Pro Deck Screw**



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

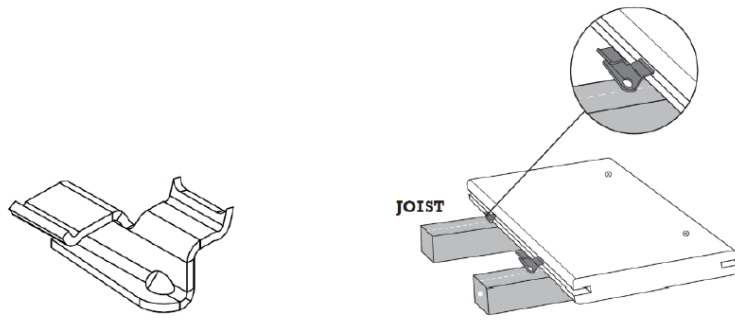


**Hidden Fastener Installation to Bottom Surface of Board**



**Hidden Fastener Installation to Joist**

**Figure 5. EG 1-2-3 Hidden Fastener System**



**Figure 6. FastenMaster TigerClaw TC-G Clips**



**Figure 7. EverClip Hidden Fastener System**

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