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# ICC-ES Report

## ESR-3487

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This report is subject to renewal 04/2017.

**DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES**  
**SECTION: 06 50 00—STRUCTURAL PLASTICS**

**REPORT HOLDER:**

**NEWTECHWOOD, LTD.**

**19111 WALDEN FOREST DRIVE, SUITE B  
HUMBLE, TEXAS 77346**

**EVALUATION SUBJECT:**

**ULTRASHIELD US01, UH01 AND UH02 WOOD-PLASTIC  
COMPOSITE DECK BOARDS**



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# ICC-ES Evaluation Report

**ESR-3487**

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**DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES**  
**Section: 06 50 00—Structural Plastics**

**REPORT HOLDER:**

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**EVALUATION SUBJECT:**

**ULTRASHIELD US01, UH01 AND UH02 WOOD-PLASTIC COMPOSITE DECK BOARDS**

**1.0 EVALUATION SCOPE**
**1.1 Compliance with the following codes:**

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

**Properties evaluated:**

- Structural
- Durability
- Surface-burning characteristics

**1.2 Evaluation to the following green code(s) and/or standards:**

- 2013 California Green Building Standards Code (CALGreen), Title 24, Part 11
- 2012 and 2008 ICC 700 *National Green Building Standard*™ (ICC 700-2012 and ICC 700-2008)

**Attributes verified:**

- See Section 3.1

**2.0 USES**

The NewTechWood UltraShield US01, UH01 and UH02 wood-plastic composite deck boards described in this evaluation report are limited to exterior use as deck boards for balconies, porches, and decks. US01 and UH02 deck boards can also be used as stair treads of buildings of Type V-B (IBC) construction and dwellings constructed in accordance with the IRC.

**3.0 DESCRIPTION**
**3.1 General:**

The NewTechWood UltraShield US01, UH01 and UH02 wood-plastic composite deck boards are manufactured

composite products consisting of rice hulls, high-density polyethylene (HDPE), and other processing additives. The deck boards are manufactured by a co-extrusion process with an integrated shell heat-pressed onto the core of the deck boards in accordance with the approved quality control manual. The US01 and UH01 deck boards are available in solid and hollow profiles with grooves at board edges. The US01 and UH01 deck boards have a wood grain texture finish and are available in Walnut color, while the UH02 deck boards are available in Maple, Antique, Teak, Ipe, Walnut, Redwood and Light Grey colors. See Figure 1 for typical cross sections of deck board profiles.

The US01 and UH02 deck boards are nominally 1 inch thick by 6 inches wide [actually 0.886 inch (22.5 mm) thick by 5.433 inches (138 mm) wide].

The UH01 deck boards are also nominally 1 inch thick by 6 inches wide [actually 0.807 inch (20.5 mm) thick by 5.55 inches (141 mm) wide]. Deck boards are manufactured in various lengths.

The attributes of the composite deck boards have been verified as conforming to the provisions of (i) CALGreen Section A5.406.1.2 for reduced maintenance; (ii) ICC 700-2012 Sections 602.1.6 and 11.602.1.6 for termite-resistant materials and Sections 601.7, 11.601.7, and 12.1(A).601.7 for site-applied finishing materials; and (iii) ICC 700-2008 Section 602.8 for termite-resistant materials and Section 601.7 for site-applied finishing materials. Note that decisions on compliance for those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. These codes or standards often provide supplemental information as guidance.

**3.2 Durability:**

When subjected to weathering, insect attack, and other decaying elements, the deck boards are equivalent in durability to preservative-treated or naturally durable lumber when used in locations described in Section 2.0 of this report. The deck boards have been evaluated for structural capacity when exposed to temperatures from 20°F to 125°F (-29°C to 52°C).

**3.3 Surface-burning Characteristics:**

When tested in accordance with ASTM E84, the deck boards have a flame spread index no greater than 200.

**4.0 DESIGN AND INSTALLATION**
**4.1 General:**

Installation of the NewTechWood UltraShield US01, UH01 and UH02 wood-plastic composite deck boards must

comply with this report and the manufacturer's published installation instructions. The manufacturer's published installation instructions must be available at the jobsite at all times during installation. When the manufacturer's published installation instructions differ from this report, this report governs.

#### 4.2 Design:

The NewTechWood UltraShield US01, UH01 and UH02 wood-plastic composite deck boards have an allowable capacity of 100 psf (4.79 MPa) when installed at a maximum center-to-center spacing of the supporting construction as prescribed in Table 1.

#### 4.3 Installation:

**4.3.1 Deck Boards:** The NewTechWood UltraShield US01, UH01 and UH02 wood-plastic composite deck boards must be installed perpendicular to the supports with two No. 10 by 2<sup>1</sup>/<sub>2</sub>-inch-long (63.5 mm) corrosion-resistant wood screws per support. The fasteners must be placed through the solid part of the deck boards and into the supporting structure, and not through the grooved edges, at a minimum distance of 1 inch (25.4 mm) from the edge of the deck boards. Fasteners must be placed a minimum of 1 inch (25.4 mm) from the end of each board, and a minimum <sup>1</sup>/<sub>16</sub>-inch (1.6 mm) gap must be left between ends of boards at butt joints. Multiple joists or blocking must be used to provide adequate surface for fastener embedment of board ends. Fasteners located within 1<sup>1</sup>/<sub>2</sub> inches (38 mm) of board ends must be predrilled. A minimum <sup>1</sup>/<sub>16</sub>-inch (1.6 mm) gap must be left between deck boards.

**4.3.2 Deck Boards Used as Stair Treads:** The NewTechWood UltraShield US01 and UH02 wood-plastic composite deck boards, when used as stair treads, are satisfactory to resist the code-prescribed concentrated load of 300 lbf (1.33 kN) when installed at a maximum center-to-center spacing of the supporting construction as shown in Table 2.

### 5.0 CONDITIONS OF USE

The NewTechWood UltraShield US01, UH01 and UH02 wood-plastic composite deck boards 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 The deck boards are limited to exterior use as deck boards for balconies, porches, decks and stair treads of Type V-B (IBC) construction and dwellings constructed in accordance with the IRC.
- 5.2 Installation must comply with this report, the manufacturer's published installation instructions and the applicable code. Only those fasteners and fastener configurations described in this report have been evaluated for the installation of the NewTechWood UltraShield wood-plastic composite

deck boards. When the manufacturer's published installation instructions differ from this report, this report governs.

- 5.3 The use of deck boards as a component of a fire-resistance-rated assembly is outside the scope of this report.
- 5.4 The compatibility of the fasteners, metal post mount components and other metal hardware with the supporting structure, including chemically treated wood, is outside the scope of this report.
- 5.5 Adjustment factors outlined in the AF&PA *National Design Standard* and applicable codes must not be applied to the allowable capacity and maximum spans for the NewTechWood UltraShield wood-plastic composite deck boards.
- 5.6 The NewTechWood UltraShield wood-plastic composite deck boards must be directly fastened to the supporting structure. Where required by the code official, engineering calculations and construction documents consistent with this report must be submitted for approval. The calculations must verify that the supporting structure complies with the applicable building code requirements and is adequate to resist the loads imparted upon it from the products and systems discussed in this report. The documents must contain details of the attachment to the supporting structure consistent with the requirements of this report. The documents must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.7 The NewTechWood UltraShield wood-plastic composite deck boards are produced in Daling, Huidong, Guangdong Province, China, under a quality control program with inspections by ICC-ES.

### 6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems (Guards and Handrails) (AC174), dated January 2012 (editorially revised December 2014).

### 7.0 IDENTIFICATION

The NewTechWood UltraShield wood-plastic composite deck boards described in this report are identified by a label on each individual piece, or on the packaging, bearing the manufacturer's name (NewTechWood, Ltd.) and address, the product name (NewTechWood US01, UH01 or UH02 deck boards), the date of manufacturing, the span rating for use as a deck board and stair tread, as applicable, and the ICC-ES evaluation report number (ESR-3487).

TABLE 1—DECK BOARD SPAN RATINGS

PRODUCT NAME	MAXIMUM SPAN (inches) <sup>1</sup>	ALLOWABLE LIVE LOAD CAPACITY (lbf/ft <sup>2</sup> ) <sup>2</sup>
NewTechWood US01	16	100
NewTechWood UH01	12	100
NewTechWood UH02	16	100

For SI: 1 inch = 25.4 mm; 1 lbf/ft<sup>2</sup> = 47.9 Pa.

<sup>1</sup>Maximum span is measured center-to-center of the supporting construction.

<sup>2</sup>Maximum allowable capacity has been adjusted for durability. No further increases are permitted.

TABLE 2—MAXIMUM STAIR TREAD SPANS<sup>1,2</sup>

PRODUCT NAME	MAXIMUM SPAN (inches)
NewTechWood US01	10
NewTechWood UH02	10

For SI: 1 inch = 25.4 mm.

<sup>1</sup>Maximum span is measured center-to-center of the supporting construction.

<sup>2</sup>Based on a single-span installation.

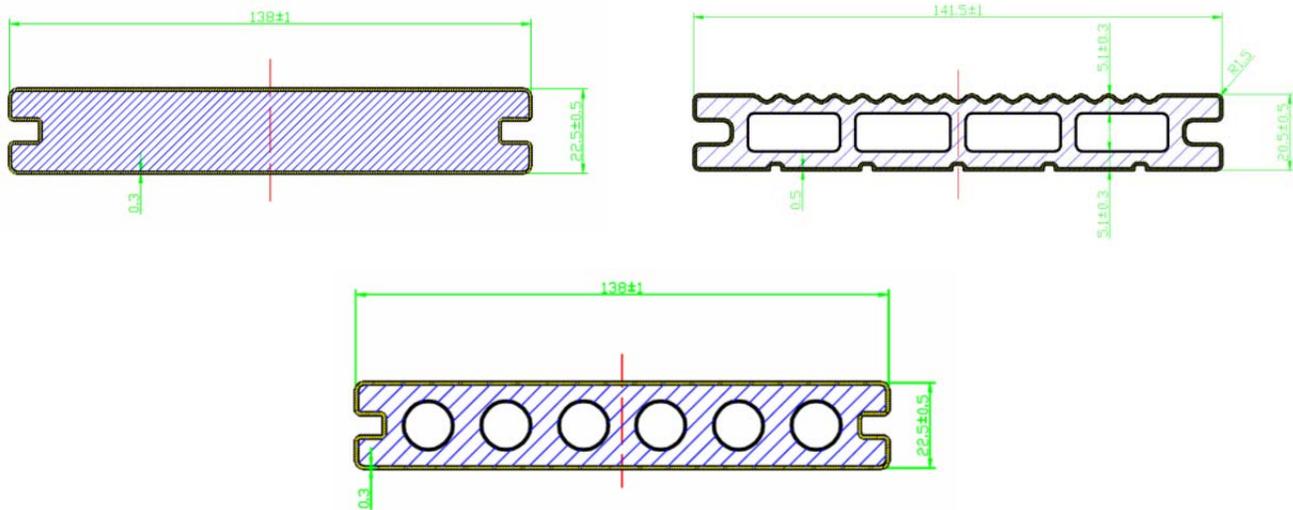


FIGURE 1—NEWTECHWOOD ULTRASHIELD WOOD-PLASTIC COMPOSITE DECK BOARD PROFILES  
(Clockwise from left US01, UH01 and UH02)