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# ICC-ES Report

## ESR-2602

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Reissued 09/2016  
This report is subject to renewal 09/2017.

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

**REPORT HOLDER:**

**ENGINEERED PLASTIC SYSTEMS, LLC**

**885 CHURCH ROAD  
ELGIN, ILLINOIS 60123**

**EVALUATION SUBJECT:**

**BEARBOARD POLYETHYLENE DECK BOARD AND LUMBEROCK® POLYETHYLENE  
DECK BOARD**



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# ICC-ES Evaluation Report

**ESR-2602**
*Reissued September 2016*
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*A Subsidiary of the International Code Council®*
**DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES**
**Section: 06 50 00—Structural Plastics**
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**EVALUATION SUBJECT:**
**BEARBOARD POLYETHYLENE DECK BOARD AND LUMBEROCK® POLYETHYLENE DECK BOARD**
**1.0 EVALUATION SCOPE**
**1.1 Compliance with the following codes:**

- 2012 and 2009 *International Building Code*® (IBC)
- 2012 and 2009 *International Residential Code*® (IRC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)<sup>†</sup>

<sup>†</sup>The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

**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**

Bearboard and Lumberock® are limited to use as deck boards for exterior balconies, porches and decks of buildings of Type V-B (IBC) construction or buildings constructed in accordance with the IRC.

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

The Bearboard and Lumberock® polyethylene deck boards are manufactured through a continuous extrusion process involving high-density polyethylene (HDPE), inorganic filler and colorant. The deck boards are available in nominal sizes of 2 inches by 6 inches and 5/4 inch by 6 inches. See Figures 1 and 2 for typical cross-sectional profiles. The deck boards are manufactured in ten colors: white, putty, gray, canyon tan, cedar, redwood, chocolate-brown, forest green, weathered wood and black. One side of each extruded plank is embossed to emulate plastic lumber.

The attributes of the polyethylene 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 601.7, 11.601.7, and 12.1(A).601.7 for site-applied finishing materials; and (iii) ICC 700-2008 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. See Section 5.7 for limitations on termite-resistance use.

**3.2 Material:**

When subjected to weathering, insect attack and other decaying elements, Bearboard and Lumberock® 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 use within a temperature range of -20°F (-29°C) to 125°F (52°C).

**3.3 Surface-burning Characteristics:**

When tested in accordance with ASTM E84, Bearboard and Lumberock® deck boards have a flame-spread index of no greater than 200.

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

Bearboard and Lumberock® decking must be installed in accordance with the manufacturer's published installation instructions, subject to the conditions of use in this report. A copy of the manufacturer's published instructions must be available on the jobsite during installation.

**4.2 Deck Boards:**

**4.2.1 Structural:** Construction supporting Bearboard and Lumberock®, including but not limited to the posts, beams, joists, stringers, and associated connections, must be designed and constructed in accordance with the applicable code. The deck boards must be limited to the maximum allowable vertical loads indicated in Table 1 of this evaluation report.

**4.2.2 Installation:** Bearboard and Lumberock® deck boards must be installed perpendicular to the supporting construction, which must be limited to a maximum spacing as prescribed in Table 1 of this report. Bearboard and Lumberock® deck boards must be installed with a minimum gap of 1/8 inch (3.2 mm) between parallel boards, to permit adequate drainage, and a minimum space must be provided at each end in accordance with the manufacturer’s published installation instructions. The end of the boards must come together over a double joist to provide adequate support and embedment of fasteners. Bearboard and Lumberock® must not be attached to any solid surface or watertight flooring system, such as sheathing, waterproof membrane, concrete, roof deck or patio.

**4.2.3 Fasteners:** Bearboard and Lumberock® boards must be fastened with two No.10 by 2 1/2-inch- or 3-inch-long (63.5 or 76.2 mm) corrosion-resistant wood screws at each supporting solid sawn wood member. The minimum edge and end distance for fasteners is 3/4 inch (5.1 mm) from both the edge and the end of each board.

**5.0 CONDITIONS OF USE**

The Bearboard and Lumberock® 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 These products are limited to exterior use as a deck board for balconies, porches, decks and similar appendages of buildings of Type V-B (IBC) construction and structures constructed in accordance with the IRC.
- 5.2 Installation must comply with this report, the manufacturer’s published instructions and the applicable code. When the manufacturer’s published installation instructions differ from this report, the more restrictive governs.

- 5.3 The use of Bearboard and Lumberock® as components of a fire-resistance-rated assembly is outside the scope of this report.
- 5.4 The compatibility of the fasteners with the supporting construction, including chemically treated wood, is outside the scope of this report.
- 5.5 The use of Bearboard and Lumberock® as stair treads is outside the scope of this report.
- 5.6 Bearboard and Lumberock® must be directly fastened to supporting construction having adequate strength and stiffness. 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 construction complies with the applicable building code requirements and is adequate to resist the loads imparted upon it by 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 Adjustment factors outlined in the AF&PA National Design Standard and applicable codes must not apply to the allowable capacity and maximum spans for Bearboard and Lumberock®.
- 5.8 Bearboard and Lumberock® deck boards are produced by Engineered Plastic Systems, LLC, in Elgin, Illinois, under a quality control program with inspections by ICC-ES.

**6.0 EVIDENCE SUBMITTED**

Data in accordance with applicable portions of the ICC-ES Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems (AC174), dated January 2012.

**7.0 IDENTIFICATION**

Each deck board described in this report must be identified by a label bearing the company name (Engineered Plastic Systems), the product name (Bearboard or Lumberock®), the span rating, and the evaluation report number (ESR-2602).

**TABLE 1—DECK BOARD SPAN RATINGS**

PRODUCT NAME	NOMINAL DIMENSIONS OF BOARD (inches)	MAXIMUM SPAN <sup>1</sup> (inches)	ALLOWABLE CAPACITY <sup>2</sup> (lb/ft <sup>2</sup> )
Bearboard/Lumberock	5/4 X 6	16	94
Bearboard/Lumberock	2 X 6	24	80

For SI: 1 inch = 25.4 mm; 1 lb/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 is adjusted for durability. No further increases are permitted.

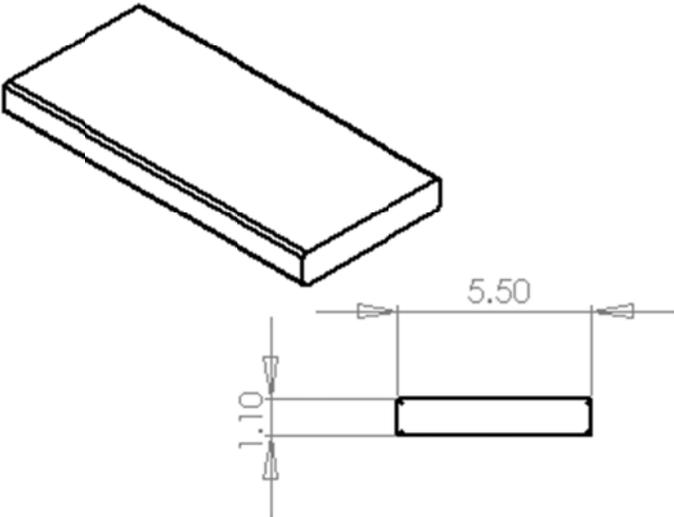


FIGURE 1—<sup>5</sup>/<sub>4</sub> X 6 DECK BOARD PROFILE

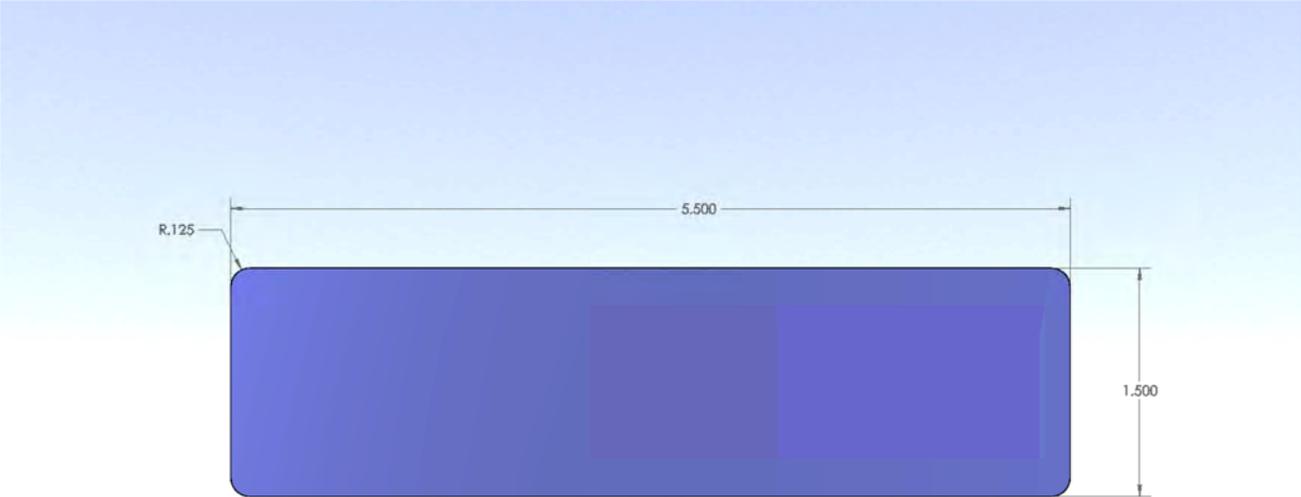


FIGURE 2—2 X 6 DECK BOARD PROFILE