

ICC-ES Evaluation Report

ESR-2387

Issued January 1, 2010

This report is subject to re-examination in one year.

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DIVISION: 06—WOOD AND PLASTICS
Section: 06500—Structural Plastics
REPORT HOLDER:
TREX COMPANY, INC.
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EVALUATION SUBJECT:
TREX® WOOD POLYMER FIRE DEFENSE DECK BOARDS
1.0 EVALUATION SCOPE
Compliance with the following codes:

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)

Properties evaluated:

- Structural
- Durability
- Surface-burning characteristics

2.0 USES

The Trex® Wood Polymer Fire Defense Deck Board described in this report is limited to exterior use as a deck board for balconies, porches, decks and stair treads of Type V-B (IBC) construction and structures constructed in accordance with the IRC.

3.0 DESCRIPTION
3.1 General:

The Trex® Wood Polymer Fire Defense Deck Board is a wood thermoplastic composite lumber (WTCL) made from 50 percent wood fiber and 50 percent polyethylene by weight. The Trex® Wood Polymer Fire Defense Deck Board is manufactured by an extrusion process in six colors: Woodland Brown, Madeira, Saddle, Burnished Amber, Cayenne and Winchester Grey. Trex® Wood Polymer Fire Defense Deck Boards are manufactured in two sizes: (1) nominally 5/4 inches thick and 6.0 inches wide [actual dimensions 1.1 inches by 5.5 inches (27.9 mm by 140 mm)]; and (2) nominally 2 inches thick and 6.0 inches wide [actual dimensions 1.5 inches by 5.5 inches (38.1 mm by 140 mm)]. See Figure 1 for typical cross sections.

3.2 Durability:

When subjected to weathering, insect attack and other decaying elements, material used to manufacture the Trex® Wood Polymer Fire Defense Deck Board is equivalent in durability to preservative-treated or naturally durable lumber when used in locations described in Section 2.0 of this report. The Trex® Wood Polymer Fire Defense Deck Board has been evaluated for structural performance when exposed to temperatures from -20°F (-29°C) to 125°F (52°C).

3.3 Surface-burning Characteristics:

When tested in accordance with ASTM E 84, the Trex® Wood Polymer Fire Defense Deck Board has a flame-spread index of no greater than 200.

4.0 INSTALLATION AND DESIGN
4.1 General:

Installation of the Trex® Wood Polymer Fire Defense Deck Board 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:

4.2.1 Structural: Trex® Wood Polymer Fire Defense Deck Board, when used as a deck board, has an allowable live load capacity when installed perpendicular to the supporting construction, and at a maximum center-to-center spacing of the supporting construction, as prescribed in Table 1.

4.2.2 Deck Boards Used as Stair Treads: Trex® Wood Polymer Fire Defense Deck Board (5/4 by 6 and 2 by 6), when used as a stair tread, is satisfactory to resist the code-prescribed concentrated load of 300 lbf (1.33 kN) when installed at a maximum center-to-center spacing of 12 inches (305 mm), and must have a minimum of two continuous spans over three supports.

4.2.3 Fasteners: The boards must be attached at each wood joist using two No. 8 by 2¹/₂-inch-long (64 mm) corrosion-resistant wood screws. The maximum allowable fastener head pull-through load is 299 lbf (1330 N) per fastener.

4.3 Installation:

Trex® Wood Polymer Fire Defense Deck Board must be installed perpendicular to the supporting construction, which must be limited to a maximum spacing as prescribed

in Table 1 of this report. Trex® Wood Polymer Fire Defense Deck Board must be installed with a minimum gap of 1/4 inch (6.4 mm) between parallel boards, to permit adequate drainage, and a minimum 1/8-inch (3.2 mm) space must be provided at each end in accordance with the manufacturer's published installation instructions. The ends of the boards must come together over a double joist to provide adequate support and embedment of fasteners. Fasteners located within 1 inch (25.4 mm) of the ends of each board must be predrilled. A minimum 1/4-inch (6.4 mm) space must be provided between installed deck boards. Trex® Wood Polymer Fire Defense Deck Board must not be attached to any solid surface or watertight flooring system, such as sheathing, waterproof membrane, concrete, roof deck or patio.

5.0 CONDITIONS OF USE

The Trex® Wood Polymer Fire Defense Deck Board described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The use of this product must be limited to exterior use as a deck board for balconies, porches, decks and stair treads 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 installation instructions and the applicable code. When the manufacturer's published installation instructions differ from this report, this report governs.
- 5.3 The use of the Trex® Wood Polymer Fire Defense Deck Board as a component 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 Adjustment factors outlined in the AF&PA *National Design Standard* and applicable codes do not apply to the allowable capacity and maximum spans for Trex® Wood Polymer Fire Defense Deck Board.

5.6 Trex® Wood Polymer Fire Defense Deck Board 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 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 Trex® Wood Polymer Fire Defense Deck Board is produced in Fernley, Nevada, under a quality control program with inspections by PFS (AA-652).

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 February 2008 (editorially revised April 2008).

7.0 IDENTIFICATION

The Trex® Wood Polymer Fire Defense Deck Board described in this report is identified by a stamp, on each individual piece or on the packaging, bearing the manufacturer's name (Trex®), the product type, the name of the inspection agency and the ICC-ES evaluation report number (ESR-2387).

TABLE 1—DECK BOARD SPAN RATING

PRODUCT NAME	MAXIMUM SPAN (in) ¹	ALLOWABLE CAPACITY ^{2,3} (lbf/ft ²)
Trex® Wood Polymer Fire Defense Deck Board (5/4 by 6)	16	100
Trex® Wood Polymer Fire Defense Deck Board (2 by 6)	24	100

For **SI**: 1 inch = 25.4 mm; 1 lbf/ft² = 47.9 Pa.

¹Maximum span is measured center-to-center of the supporting construction.

²Maximum allowable capacity is adjusted for durability. No further increases are permitted.

³Tabulated span and load based on a deflection limit of L/180.

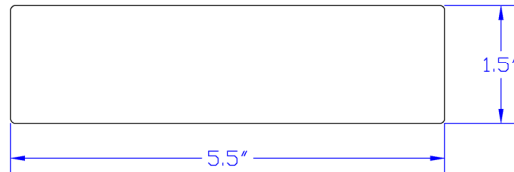
TABLE 2—MAXIMUM STAIR TREAD SPANS

DECK BOARDS USED AS STAIR TREADS	MAXIMUM SPAN (in) ¹
Trex® Wood Polymer Fire Defense Deck Board (5/4 by 6 and 2 by 6)	12

For **SI**: 1 inch = 25.4 mm; 1 lbf/ft² = 47.9 Pa.

¹Maximum span is measured center-to-center of the supporting construction.

2x6



5/4x6

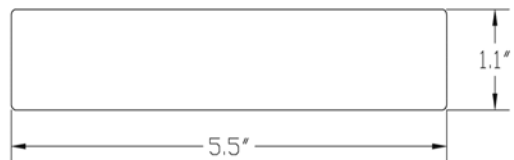


FIGURE 1—DECK BOARD CROSS SECTIONS