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ICC-ES Evaluation Report

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES

SECTION: 06 50 00—STRUCTURAL PLASTICS

SECTION: 06 53 00—PLASTIC DECKING

REPORT HOLDER:



EVALUATION SUBJECT:

**WPC DECKING ORDINARY SOLID FLOOR 217 AND
CO-EXTRUSION SOLID FLOOR 221G**



*“2014 Recipient of Prestigious Western States Seismic Policy Council
(WSSPC) Award in Excellence”*



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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES

Section: 06 50 00—STRUCTURAL PLASTICS

Section: 06 53 00—PLASTIC DECKING

REPORT HOLDER:

ZHEJIANG NEW INSIGHT MATERIAL TECHNOLOGY CO., LTD.

EVALUATION SUBJECT:

WPC DECKING ORDINARY SOLID FLOOR 217 AND CO-EXTRUSION SOLID FLOOR 221G

1.0 EVALUATION SCOPE

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

2.0 USES

The WPC Decking Ordinary Solid Floor 217 (Model LHMA 217) and Co-Extrusion Solid Floor 221G (Model LHMA 221G), described in this evaluation report, are limited to exterior use as deck boards for balconies, porches, and decks. The deck boards can be used as stair treads for buildings of Type-VB (IBC) construction and dwellings constructed in accordance with the IRC.

3.0 DESCRIPTION

3.1 General:

The WPC Decking Ordinary Solid Floor 217 and Co-Extrusion Solid Floor 221G are manufactured composite products consisting of wooden powder, high-density polyethylene (HPDE), and other processing additives. The deck boards are manufactured by either a continuous extrusion process (LHMA 217) or a co-extrusion process with an integrated shell heat-pressed onto the core of the deck boards (LHMA 221G) in accordance with the approved quality-control manual. The LHMA 217 deck boards are square fluted profiles with grooves at the edges while the LHMA 221G deck boards are square solid profiles with grooves at the edges. The deck boards have a wood grain texture finish. The LHMA 217 deck boards are available in Teak and Dark Gray Black colors while the

LHMA 221G deck boards are available in Teak and Light Gray colors. See Figures 1 and 2 for profiles.

The LHMA 217 deck boards are manufactured in nominally 1-inch-thick-by-5¹/₂-inch-wide (22.5 mm by 138 mm) planks while the LHMA 221G deck boards are manufactured in nominally 1-inch-thick-by-5¹/₂-inch-wide (23 mm by 138 mm) planks. The deck boards are manufactured in various lengths.

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 WPC Decking Ordinary Solid Floor 217 and Co-Extrusion Solid Floor 221G deck boards have a flame-spread index no greater than 200.

4.0 DESIGN AND INSTALLATION

4.1 General:

Installation of the WPC Decking Ordinary Solid Floor 217 and Co-Extrusion Solid Floor 221G 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 WPC Decking Ordinary Solid Floor 217 and Co-Extrusion Solid Floor 221G deck boards have allowable load capacities when installed at a maximum center-to-center spacing of the supporting construction as prescribed in Table 1.

The allowable fastener head pull-through load and allowable fastener withdrawal load using No. 10-by-2³/₄-inch-long (69.8 mm) stainless steel deck screws are 313 lbf (1392 N) and 240 lbf (1068 N), respectively.

4.3 Installation:

4.3.1 Deck Boards: The WPC Decking Ordinary Solid Floor 217 and Co-Extrusion Solid Floor 221G deck boards must be installed perpendicular to the supporting joists with two No.10-by-2³/₄-inch-long (69.8 mm) stainless steel deck screws per board per support joist. The fasteners must be

placed through the pre-drilled pilot holes into the supporting joists at a minimum distance of 1¼-inch (31.8 mm) from the end of each board and ¾-inch (19.1 mm) from edges of each board. Pilot holes are pre-drilled using No. 8 countersink drill tools for all fasteners. A minimum of 1⁄8-inch (3.2 mm) gap must be left between ends of boards at butt joints and a minimum 1⁄16-inch (1.6 mm) gap must be left between the edges of boards. Multiple joists or blocking must be used to provide adequate surface for fastener embedment of board ends.

4.3.2 Deck Boards Used as Stair Treads: The WPC Decking Ordinary Solid Floor 217 and Co-Extrusion Solid Floor 221G deck boards, when used as stair treads, are satisfactory to resist the code-prescribed concentrated load of 300 lbf (1333 N) when installed at a maximum center-to-center spacing of the supporting construction as shown in Table 2.

5.0 CONDITIONS OF USE

The WPC Decking Ordinary Solid Floor 217 and Co-Extrusion Solid Floor 221G deck boards 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 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 WPC Decking Ordinary Solid Floor 217 and Co-Extrusion Solid Floor 221G deck boards. When the manufacturer's published installation instructions differ from this report, this report governs.
- 5.3 The use of the 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 AWC *National Design Specification® (NDS) for Wood Construction*, as applicable, and applicable codes must not be applied to the allowable capacity and maximum spans for the deck boards.
- 5.6 The WPC Decking Ordinary Solid Floor 217 and Co-Extrusion Solid Floor 221G deck boards must be

directly fastened to supporting joists in accordance with Section 4.3.1. When 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 WPC Decking Ordinary Solid Floor 217 and Co-Extrusion Solid Floor 221G deck boards are produced in De Qing, Zhejiang 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

- 7.1 The WPC Decking Ordinary Solid Floor 217 and Co-Extrusion Solid Floor 221G deck boards described in this report are identified by a label on each individual piece, or on the packaging, bearing the manufacturer's name (Zhejiang New Insight Material Technology Co., Ltd.) and address, the product name (WPC Decking Ordinary Solid Floor 217 and Co-Extrusion Solid Floor 221G 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-4210).
- 7.2 The report holder's contact information is the following:

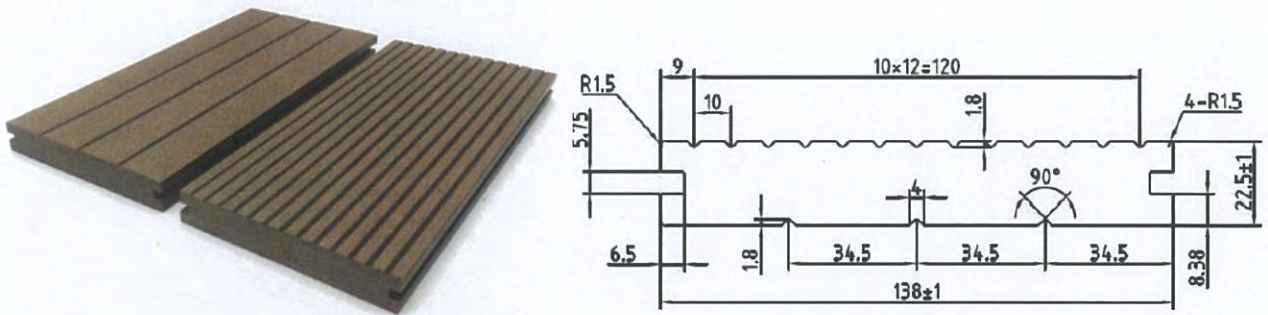


FIGURE 1—WPC DECK BOARD MODEL LHMA 217

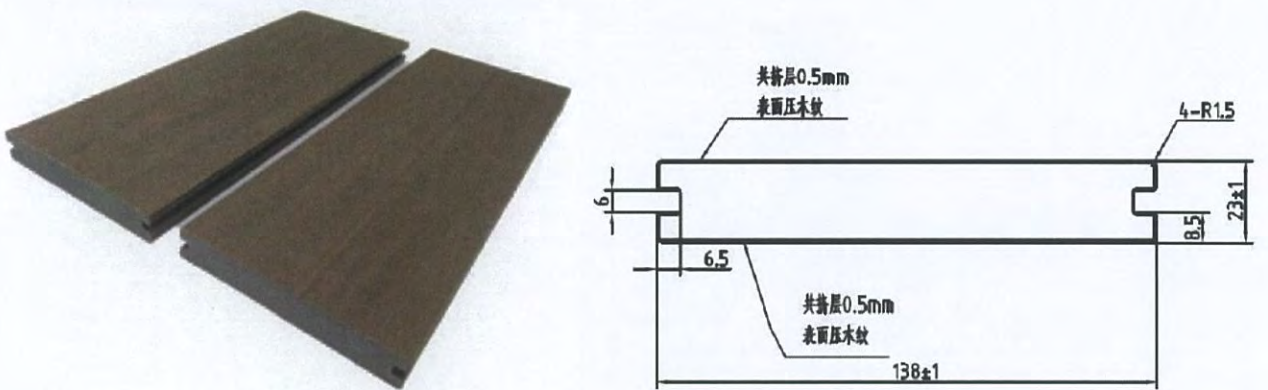


FIGURE 2—WPC DECK BOARD MODEL LHMA 221G

TABLE 1—DECK BOARD SPAN RATINGS

PRODUCT NAME	MAXIMUM SPAN (INCHES) ¹	ALLOWABLE LIVE LOAD CAPACITY (lb/ft ²) ²
LHMA 217	16	100
LHMA 221G	16	100

For SI: 1 inch = 25.4 mm; 1 lb/ft² = 47.9 Pa

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

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

TABLE 2—MAXIMUM STAIR TREAD SPANS^{1,2}

PRODUCT NAME	MAXIMUM SPAN (INCHES)
LHMA 217	11
LHMA 221G	11

For SI: 1 inch = 25.4 mm

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

²Based on a single-span installation.