

# ICC-ES Evaluation Report

**ESR-2052\***

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**DIVISION: 07 00 00—THERMAL AND MOISTURE  
PROTECTION**
**Section: 07 21 00—Thermal Insulation**
**REPORT HOLDER:**
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**EVALUATION SUBJECT:**
**ISO-C1/2.0 POLYISOCYANURATE FOAM INSULATION  
BOARD; EXPANDED POLYSTYRENE FOAM INSULATION  
BOARD**

## 1.0 EVALUATION SCOPE

**Compliance with the following codes:**

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

**Properties evaluated:**

- Physical properties
- Thermal performance
- Surface-burning characteristics
- Attic and crawl space installation (EPS board only)

## 2.0 USES

ISO-C1/2.0 Polyisocyanurate Foam Insulation Board, and Expanded Polystyrene (EPS) Foam Insulation Board, are used as nonstructural thermal insulation. The insulation boards may be used as the core of sandwich panels when specifically recognized for such use in a current ICC-ES evaluation report.

## 3.0 DESCRIPTION

### 3.1 ISO-C1/2.0:

ISO-C1/2.0 is an unfaced polyisocyanurate foam insulation board that complies with ASTM C 591. The 4-foot-wide (1219 mm) board is manufactured in a minimum density of 2.0 lb/ft<sup>3</sup> (32.1 kg/m<sup>3</sup>) and in lengths from 2 feet to 24 feet (610 mm to 7315 mm). Boards up to 4 inches thick (102 mm) have a flame-spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84. Thermal resistance (*R*-value) per inch of thickness at 75°F (23.8°C) is 5.7 hr·ft<sup>2</sup>·°F/Btu (1.0 m<sup>2</sup>·K/W).

### 3.2 EPS:

These are Type I, II, VIII and IX unfaced expanded polystyrene insulation boards that comply with ASTM C 578, manufactured in minimum densities of 0.90, 1.35, 1.15, and 1.80 lb/ft<sup>3</sup> (14.4, 21.6, 18.4 and 28.8 kg/m<sup>3</sup>), respectively. Thermal resistance (*R*-value) per inch of thickness at 75°F (23.8°C) is 3.71, 4.16, 4.03, and 4.21 hr·ft<sup>2</sup>·°F/Btu (0.65, 0.73, 0.71, 0.74 m<sup>2</sup>·K/W), respectively. The boards are 4 feet (1219 mm) wide and 2 to 20 feet (610 mm to 6096 mm) long.

Boards up to 4 inches (102 mm) thick have a flame-spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E 84.

## 4.0 INSTALLATION

### 4.1 General:

Installation of ISO-C1/2.0 Polyisocyanurate Foam Insulation Board and Expanded Polystyrene (EPS) Foam Insulation 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.

### 4.2 Special Use—Attic and Crawl Spaces:

EPS Foam Insulation Board may be used on walls in attics and crawl spaces without a covering applied to the attic or crawl space side of the foam plastic, provided *all* of the following conditions are met:

- a. Entry to the attic or crawl space is only for servicing utilities, and heat-producing appliances are not permitted.
- b. There are no interconnected attic or basement areas.
- c. Air in the attic or crawl space is not circulated to other parts of the building.
- d. Attic ventilation is provided in accordance with IBC Section 1203.2 or IRC Section R806, as applicable. Under-floor ventilation is provided in accordance with IBC Section 1203.3 or IRC Section R408, as applicable.
- e. Boards are produced from Flint Hills Resources, LP, beads recognized in [ESR-1634](#), with a maximum nominal density of 1.0 pcf (16 kg/m<sup>3</sup>) and a maximum thickness of 4 inches (76 mm) or a maximum nominal density of 2.0 pcf (32 kg/m<sup>3</sup>) and a maximum thickness of 2 inches (51 mm); or boards are produced from Nova Chemicals beads recognized in [ESR-1798](#), with a maximum nominal density of 1.0 pcf (16 kg/m<sup>3</sup>) and a maximum thickness of 5 inches (127 mm) or a maximum nominal density 2.0 pcf (32 kg/m<sup>3</sup>) and a

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maximum thickness of 2 inches (51 mm); or boards are produced from BASF Corporation beads recognized in [ESR-1498](#), with a maximum nominal density of 1.0 pcf (16 kg/m<sup>3</sup>) and a maximum thickness of 3 inches (76 mm) or a maximum nominal density of 2.0 pcf (32 kg/m<sup>3</sup>) and a maximum thickness of 2 inches (51 mm).

- f. Combustion air is provided in accordance with Sections 701 and 703.1 of the 2003 *International Mechanical Code*<sup>®</sup> (IMC) or Section M1703.4 of the IRC.

## 5.0 CONDITIONS OF USE

The Dyplast insulation products 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 Installation must comply with this report, the manufacturer's published installation instructions and the applicable code. In the event of a conflict between the manufacturer's published installation instructions and this report, this report governs.
- 5.2 The insulation must be separated from the building interior with an approved thermal barrier complying with the applicable code.
- 5.3 When applied on exterior walls, the boards are to be protected by a water-resistive barrier complying with IBC Section 1404.2 or a weather-resistant sheathing paper complying with IRC Section R703.2, and by wall coverings that provide the necessary structural resistance to wind and seismic forces in spanning between wall framing members.

- 5.4 Walls are braced in accordance with the applicable code.

- 5.5 In jurisdictions enforcing the IRC, where the probability of termite infestation is "very heavy" and when foam plastic insulation is used with wood construction, the foam plastic is required to be installed in accordance with IRC Section R320.4.

- 5.6 A vapor retarder must be installed in accordance with the applicable code.

- 5.7 Use of the products evaluated in this report is limited to Type V construction.

- 5.8 ISO-C1/2.0 Polyisocyanurate Foam Insulation and Expanded Polystyrene (EPS) Foam Insulation are manufactured in Miami, Florida, under a quality control program with inspections by RADCO (AA-650).

## 6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2009.

## 7.0 IDENTIFICATION

The insulation packaging must be labeled with the manufacturer's name (Dyplast Products, LLC) and address, the date of manufacture, the product type, the density, the flame-spread and smoke-developed indices, the thermal-resistance *R*-value, the name of the inspection agency (RADCO) and the evaluation report number (ESR-2052).