

UL Evaluation Report

UL ER16529-02

Issued: April 30, 2021

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UL Category Code: ULEX

CSI MasterFormat®

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

Sub-level 2: 07 20 00 - Thermal Protection

Sub-level 3: 07 21 00 - Thermal Insulation

Sub-level 4: 07 21 13 - Board Insulation

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1. SUBJECT:

BORA-FOAM® INSULATION BOARDS

2. SCOPE OF EVALUATION:

- 2021 *International Building Code*® (IBC)
- 2021 *International Residential Code*® (IRC)
- 2021 *International Energy Code*® (IECC)
- ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12)
- ICC-ES Acceptance Criteria for Termite Resistant Foam Plastic (AC239)
- ICC-ES Acceptance Criteria for Quality Documentation (AC10)

Bora-Foam was evaluated for the following properties

- Surface Burning Characteristics (UL723)
- Physical Properties (ASTM C578)
- Flammability Testing for Use in Attics and Crawl Spaces (AC12, App. A and B)
- Termite Resistance (ICC-ES AC239)

3. REFERENCED DOCUMENTS

- ICC-ES:
 - ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12)
 - ICC-ES Acceptance Criteria for Quality Documentation (AC10)
 - ICC-ES Acceptance Criteria for Termite Resistant Foam Plastic (AC239)
- UL:
 - UL723, Test for Surface Burning Characteristics of Building Materials
- ASTM:
 - ASTM C578, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation

4. USES

4.1 Bora-Foam Insulation Boards

Bora-Foam is used as nonstructural insulation on the interior or exterior of above grade or below grade walls. Installation shall be in accordance with Section 6 of this report.

The insulation may be used to limit moisture infiltration when installed in accordance with Section 6.2, and may be used on walls in attics and crawl spaces when installed in accordance with Section 6.2.1.

5. PRODUCT DESCRIPTION

5.1 General:

Bora-Foam Insulation Boards are molded, closed-cell expanded polystyrene having a flame spread index not exceeding 25 and a smoke developed index not exceeding 450 for thicknesses up to 4 inches when tested in accordance with UL723 as required by Section 2603.3 of the IBC or Section R316.3 of the IRC, as applicable.

Bora-Foam Insulation Boards are treated for termite resistance in accordance with Section 2603.8, exception 2 of the IBC or Section R318.4, exception 2 of the IRC.

Bora-Foam Insulation Boards are manufactured at a minimum density of 0.90 lbs/ft³ and comply with ASTM C578 designation Type I. See Table 1 for thermal resistance.

Table 1 – Thermal Resistance of Bora-Foam Insulation Boards

PRODUCT	ASTM C578 Type	DENSITY, min., lb/ft³	THERMAL RESISTANCE¹, min., °F-ft²-h/Btu
Bora-Foam	I	0.90	3.6

¹Thermal resistance (R) values are based on tested values at 1-inch thickness and 75°F mean temperature and must be multiplied by the installed thickness for thicknesses greater than 1 inch.

Bora-Foam Insulation Boards may be used as vapor retarder, based on the permeance values described in Table 2, when required in accordance with Section 1404.3 of the IBC, Section R702.7 of the IRC, and Chapter 3 of the IECC. The specified sections of the codes categorize vapor retarders as Class I, II, or III based on how permeable they are to water vapor and are classified as follows:

Class I	Very Low Permeability	0.1 perm or less
Class II	Low Permeability	0.1 < perm ≤ 1.0
Class III	Medium Permeability	1.0 < perm ≤ 10.0

Table 2 – Water Vapor Permeance of Bora-Foam

PRODUCT	ASTM C578 Type	DENSITY, min., lb/ft³	PERMEANCE¹, max., perms
Bora-Foam	I	0.90	0.3

¹Water vapor permeance values are based on 1-inch thickness when tested in accordance with ASTM C578 and ASTM E96. Actual water vapor permeance values vary based on insulation thickness.

6. INSTALLATION

6.1 General:

Bora-Foam Insulation Boards are installed in accordance with the manufacturer's published installation instructions and this evaluation report. The manufacturer's published installation instructions and this report must be strictly adhered to, and a copy of the instructions shall be available on the jobsite during installation.

6.2 Bora-Foam Insulation Boards:

Bora-Foam Insulation Boards must be attached to the structure in a manner that will hold the insulation securely in place. The insulation boards must not be used structurally to resist transverse, axial or shear loads.

The interior of the building must be separated from the Bora-Foam Insulation Boards with a thermal barrier as required by Section 2603.4 of the IBC or Section R316.4 of the IRC, as applicable.

6.2.1 Bora-Foam Insulation Boards Used in Attics and Crawl Spaces:

Bora-Foam Insulation Boards may be used in attics and crawl spaces, without the ignition barrier listed in Section 2603.4.1.6 of the IBC or Sections R316.5.3 and R316.5.4 of the IRC, as follows:

1. Attic ventilation is provided when required Section 1203.2 of the IBC or Section R806 of the IRC, as applicable.
2. Under-floor (crawl space) ventilation is provided when required by Section 1202.4 of the IBC, or Section R408.2 or Section R408.3 of the IRC, as applicable.
3. Insulation boards are to be installed at a maximum thickness of 4 inches (102 mm).

7. CONDITIONS OF USE

7.1 General:

Bora-Foam Insulation Boards described in this report comply with, or are suitable alternatives to what is specified in those codes listed in Section 2 of this report, subject to the following conditions.

1. The Bora-Foam Insulation Boards must be produced, identified, and installed in accordance with the manufacturer's published installation instructions. If there is a conflict between this report and the manufacturer's instructions this report governs.
2. The use of Bora-Foam Insulation Boards are not restricted in areas where the probability of termite infestation is defined as "very heavy" in accordance with Section 2603.8 of the IBC or Section R318.4 of the IRC, as applicable.
3. The use of Bora-Foam Insulation Boards are not restricted in areas where the permeance values require the vapor retarders as Class II in accordance with Section 1404.3 of the IBC, Section R702.7 of the IRC, and Chapter 3 of the IECC.

7.2 Bora-Foam Insulation Boards:

The Bora-Foam Insulation Boards must be separated from the building interior with a thermal barrier, such as ½ inch thick gypsum board, as required by Section 2603.4 of the IBC or Section R316.4 of the IRC, as applicable.

For a listing of applicable UL Certifications for Bora-Foam Insulation Boards, see the Product iQ™ database for the following categories.

- See Product iQ™ database for Foamed Plastic, UL Classified for Surface Burning Characteristics in accordance with UL723 ([BRYX](#)).
- See Product iQ™ database for Polystyrene Thermal Insulation, Rigid Cellular, UL Classified in accordance with ASTM C578 ([QORW](#)).

7.3 Manufacturing Locations:

The products described herein are manufactured at locations under the UL, LLC Listing or Classification and Follow-Up Service Program, which includes audits in accordance with ICC-ES Acceptance Criteria for Quality Documentation, AC 10.

8. SUPPORTING EVIDENCE

8.1 Bora-Foam Insulation Boards:

8.1.1 Data in accordance with ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12)

8.1.2 Data in accordance with ICC-ES Acceptance Criteria for Termite Resistant Foam Plastics (AC239)

8.1.3 Documentation of quality system elements described in AC10.

9. IDENTIFICATION

The Bora-Foam Insulation Boards described in this evaluation report are identified by:

- a marking bearing the report holder's name
- the plant identification
- the product name
- the ASTM type designation
- the UL Classification Mark
- the evaluation report number UL ER16529-02

The validity of the evaluation report is contingent upon this identification appearing on the product or UL Classification Mark certificate. The product is manufactured for sole distribution by Crawlspace Depot, LLC.

10. USE OF UL EVALUATION REPORT

10.1 The approval of building products, materials or systems is under the responsibility of the applicable authorities having jurisdiction.

10.2 UL Evaluation Reports shall not be used in any manner that implies an endorsement of the product, material or system by UL.

10.3 The status of this report, as well as a complete directory of UL Evaluation Reports may be found at UL.com via [the Product iQ™ database](#).

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