

ICC-ES Evaluation Report

ESR-3914

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A Subsidiary of the International Code Council®

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

Section: 07 21 00—Thermal Insulation

Section: 07 25 00—Water-Resistive Barriers/Weather Barriers

Section: 07 27 00—Air Barriers

REPORT HOLDER:

R.L. ADAMS PLASTICS, INC.

EVALUATION SUBJECT:

POLYCORE BRAND INSULATION

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)
- 2012 and 2009 *International Energy Conservation Code*® (IECC)

Property evaluated:

- Surface-burning characteristics
- Thermal resistance
- Air barrier
- Water-resistive barrier

1.2 Evaluation to the following green code(s) and/or standards:

- 2016 California Green Building Standards Code (CALGreen), Title 24, Part 11
- 2015 and 2012 *International Green Construction Code*® (IgCC)
- 2014 and 2011 ANSI/ASHRAE/USGBC/IES Standard 189.1—Standard for the Design of High-Performance Green Buildings, Except Low-Rise Residential Buildings
- 2015, 2012 and 2008 ICC 700 *National Green Building Standard*™ (ICC 700-2015, ICC 700-2012 and ICC 700-2008)

Attributes verified:

- See Section 3.1

2.0 USES

Polycore Brand Insulation products are extruded polystyrene foam plastic boards used as nonstructural thermal insulation on foundations or on walls of buildings of Type V construction under the IBC and dwellings under the IRC.

3.0 DESCRIPTION

3.1 Polycore Brand Insulation:

Polycore Brand Insulation products are extruded polystyrene foam plastic insulation provided in “fan-folded” bundles. The boards are available in various lengths and widths and in nominal thicknesses up to 1/2 inch (12.7 mm). Table 1 details the physical properties of the fan-fold products.

The attributes of the Polycore Brand Insulation products have been verified as conforming to the requirements of (i) CALGreen Section 5.407.1 for water-resistive barriers and Section A4.407.5 for air barriers; (ii) 2015 and 2012 IgCC Section 605.1.2.1 for air barriers; (iii) 2014 ASHRAE 189.1 Section 7.3.1.1 and 2011 ASHRAE 189.1 Section 7.4.2.9 for air barriers; (iv) ICC 700-2015 Section 602.1.8, 11.602.1.8 and 12.6.602.1.8; (v) ICC 700-2012 Section 602.1.8, 11.602.1.8 and 12.5.602.1.8; and (vi) ICC 700-2008 Section 602.9 for water-resistive barriers. 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.

3.2 Joint Sealing:

WEATHERMATE™ Construction Tape, manufactured by Dow Chemical Company, is nominally 2⁷/₈ inches (73 mm) wide and is used in conjunction with Polycore Insulation products to seal joints between two or more edges of the boards, when the insulation boards are installed as a water-resistive barrier. The installation must be as described in Section 4.2 of this report.

3.3 Surface-burning Characteristics:

Polycore Brand Insulation products have a flame-spread index (FSI) of 25 or less and a smoke-developed index (SDI) of 450 or less when tested in accordance with ASTM E84 at a maximum thickness of 1/2 inches (12.7 mm) and a maximum density of 4.0 pcf (64 kg/m³).

3.4 Thermal Resistance:

Polycore Brand Insulation products have a thermal resistance (R-value) as noted in Table 1.

3.5 Air Permeability:

At a minimum thickness of 1/4 inch (6.4 mm), the insulations are considered air-impermeable in accordance with 2012 IRC Section R806.5 (2009 IRC Section R806.4), based on testing in accordance with ASTM E283.

4.0 INSTALLATION

4.1 General:

Polycore Brand Insulation products must be installed in accordance with the manufacturer's published installation instructions and this report.

The interior of the building must be separated from the insulation boards by an approved 15-minute thermal barrier as required in IBC Section 2603.4, or IRC Section R316.4. The installation of the insulation boards in areas of "very heavy" termite infestation probability must comply with 2012 IBC Section 2603.9 (2009 IBC Section 2603.8) or 2012 IRC Section R318.4 (2009 IRC Section R320.5). Under the IBC, protection against condensation must be provided in accordance with IBC Section 1403.2; under the IRC, a vapor retarder must be provided in accordance with 2012 IRC Section R702.7.1 (2009 IRC Section R601.3). Insulation boards must not be used as a nailing base for finish materials or wall covering materials. Fasteners used to attach exterior finish material over insulation boards must comply with a current ICC-ES evaluation report for proprietary wall covering materials, IBC Section 1404 or 1405, IRC Table 703.4, and the installation instructions from the finish manufacturer. For cementitious exterior wall coating applications, fasteners for insulation board thicker than 1/2 inches (38 mm) must be considered for lateral resistance to ensure support for the exterior wall coatings.

Exterior wall assembly, exterior finish or a wall covering in conjunction with insulation boards must be structurally adequate to resist horizontal forces perpendicular to the wall. All walls must be braced in accordance with IBC Sections 2308.9.3 and 2308.12.4, or IRC Section R602.10, as applicable.

4.2 Water-resistive Barrier:

Polycore Brand Insulation products may be used as alternate water-resistive barriers as prescribed in Section 1404.2 of the IBC or Section 703.2 of the IRC, when installed on exterior walls as described in this section.

Polycore Brand Insulation products measuring 4 feet by 8 to 10 feet are installed horizontally or vertically with long joints in contact with one another. Boards measuring 2 feet by 8 feet (0.6 m by 2.4 m) are installed horizontally. The insulation boards are attached using 3/8-inch-head (9.5 mm) galvanized nails, 1-inch-crown (25.4 mm) galvanized staples or 1-inch-head (25.4 mm) plastic cap nails or equivalent fasteners long enough to penetrate framing a minimum of 3/4 inch (19.1 mm). Nails or staples must not be over-driven. Fastener spacing for boards measuring 4 feet by 8 to 10 feet (1.2 m by 2.4m or 3.0 m) is a minimum of 12 inches (305 mm) on center around the perimeter and 16 inches (406 mm) on center in the field; for 2-foot-by-8-foot (0.6 m by 2.4 m) boards, fastener spacing is a minimum of 12 inches (305 mm) on center on each stud (three fasteners per stud). For window installation, the nailing flange is set against sealant bedding and fastened to the framing with galvanized roofing nails 3 inches (76 mm) from each corner and 8 inches (203 mm) on center. Minimum 3-inch-wide (76 mm) flashing is used to seal the sill of windows, and minimum 2-inch-wide (51 mm) flashing is used to seal jambs and heads. Window installation must be in accordance with the window manufacturer's instructions. See also Figure 1.

Polycore Brand Insulation products must be installed over wood structural sheathing with long joints butted tightly together. The insulation foam board joints must be staggered relative to joints in the structural sheathing. The remainder of the installation is as described above for rigid boards.

Polycore Brand Insulation products seams and joints between boards must be covered by minimum 2 7/8-inch-wide (73 mm) WEATHERMATE™ Construction Tape or equivalent. Penetrations in exterior walls must be sealed with Dow GREAT STUFF™ Gaps & Cracks sealant, or an equivalent expanding spray foam sealant, or an elastomeric sealant. See Figures 2 and 3.

4.3 Air Barrier Material:

When used as an air barrier material, the insulation boards must be installed in accordance with R.L. Adams' installation instructions and this report.

5.0 CONDITIONS OF USE

The Polycore Brand Insulation products 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:

The Polycore Brand 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 Polycore Brand Insulation products must be installed in accordance with the manufacturer's published installation instructions, this evaluation report and the applicable code. In the event of a conflict between the installation instructions and this report, this report governs.
- 5.2 This evaluation report and the manufacturer's published installation instructions, when required by the code official, must be submitted at the time of permit application.
- 5.3 A water-resistive barrier complying with the requirements of the applicable code must be provided except when installation is as described in Section 4.2 of this report.
- 5.4 Use of the insulation boards to structurally resist transverse, racking-shear or vertical loading is outside the scope of this report. The walls must be braced in accordance with the requirements of the applicable code.
- 5.5 The insulation boards must not be used as a nailing base for exterior siding materials. All nailing must be into the wall framing as required by the siding manufacturer's instructions or the applicable code.
- 5.6 The insulation boards must be separated from the interior of the building by an approved 15-minute thermal barrier.
- 5.7 Where required by the applicable code, a vapor retarder system, which may include the foam plastic insulation, must be installed in the exterior wall assembly.
- 5.8 Jobsite certification and labeling of the insulation must comply with 2012 IRC Section N1101.12.1, 2009 IRC Section N1101.4 and IECC Section 303.1.1, as applicable.
- 5.9 Use of insulation in areas where the probability of termite infestation is "very heavy" must be in accordance with 2012 IBC Section 2603.9 (2009 IBC Section 2603.8) or IRC Section R318.4.
- 5.10 Polycore Brand Insulation products are manufactured in Wyoming, Michigan, under a quality control program with inspections by ICC-ES.

5.11 WEATHERMATE™ Flashing Tape has not been evaluated by ICC-ES for use as flashing under IBC Section 1405.4.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2015.
- 6.2 Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Sheathing Panels Used as Water-resistive Barriers (AC71), dated January 2015 (editorially revised April 2015).
- 6.3 Reports of air leakage tests in accordance with ASTM E283.

7.0 IDENTIFICATION

- 7.1 Polycore Brand Insulation products described in this report are identified by a label on the board or packaging material bearing the R.L. Adams Plastics, Inc. name, product name, plant code or manufacturing address, other information to confirm code compliance, and the ICC-ES evaluation report number (ESR-3914).
- 7.2 The report holder’s contact information is the following:

R.L. ADAMS PLASTICS, INC.
5955 CROSSROADS COMMERCE PARKWAY
WYOMING, MICHIGAN 49519
(616) 261-4400
www.goadams.com
web@goadams.com

8.0 OTHER CODES

In addition to the codes referenced in Section 1.0, the products described in this report were evaluated for compliance with the requirements of the following codes:

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

The products comply with the above-mentioned codes as described in Sections 2.0 through 7.0 of this report, with the revisions noted below:

- **General:** See Section 4.1, except the approved thermal barrier must be installed in accordance with Section R314.4 or R314.5 of the 2006 IRC.
- **Protection against Termites:** See Sections 4.1 and 5.9, except use of the insulation in areas where the probability of termite infestation is “very heavy” must be in accordance with Section 2603.8 of the 2006 IBC and Section R320.5 of the 2006 IRC.
- **Protection against Condensation:** See Section 4.1, except a vapor barrier must be provided in accordance with Sections R318 and N1102.5 of the 2006 IRC.
- **Jobsite Certification and Labeling:** See Section 5.8, except jobsite certification and labeling must comply with Section 102.1.2 of the 2006 IECC, when applicable.

TABLE 1—POLYCORE BRAND INSULATION PRODUCTS

PRODUCT NAME	NOMINAL THICKNESS (inch)	THERMAL RESISTANCE (R-VALUE) at 75°F (ft ² -hr-°F/Btu)
Polycore Brand Insulation	1/4	1.0
	3/8	1.5
	1/2	2.0

For SI: 1 inch = 25.4 mm, 1 pcf = 16.02 kg/m³, 1°F-ft²-hr/Btu = 0.176 m²-K/W, 1°F = 1.8°C+32.

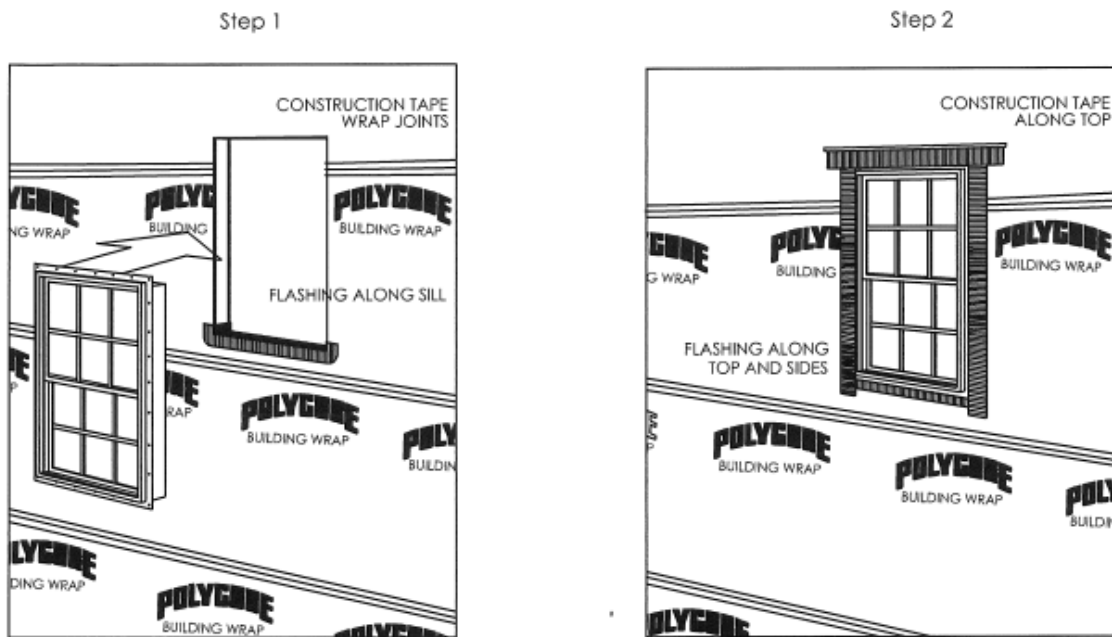


FIGURE 1 - TYPICAL WINDOW FLASHING DETAIL

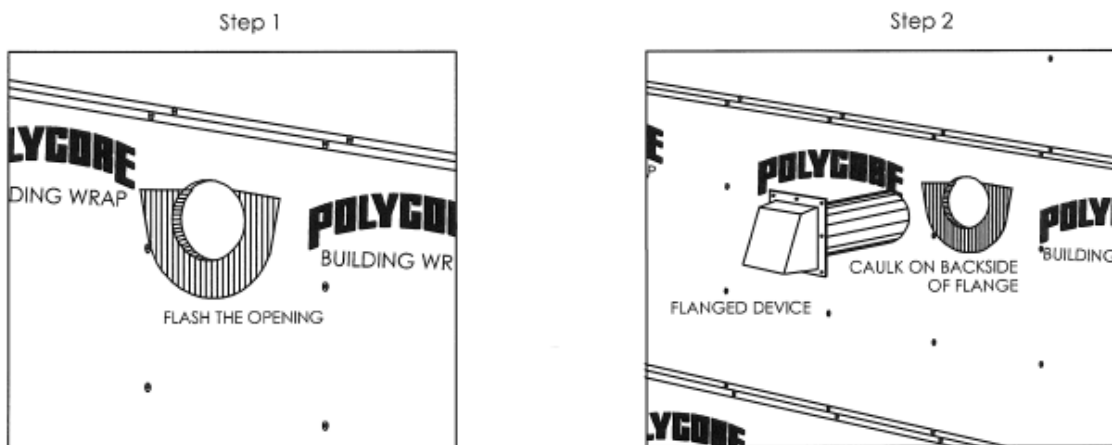


FIGURE 2 - TYPICAL PENETRATION FLASHING DETAIL - FLANGED

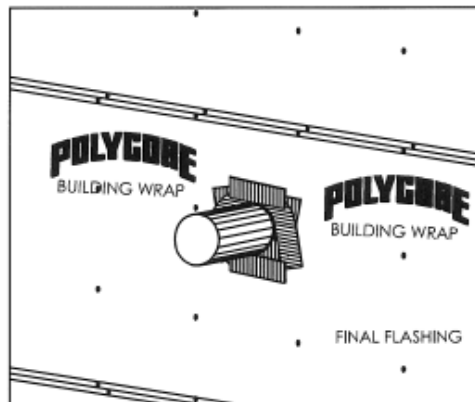


FIGURE 3 - TYPICAL FLASHING DETAIL - UNFLANGED