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ESR-1375

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Reissued 03/2018

This report is subject to renewal 03/2020.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

SECTION: 07 21 00—THERMAL INSULATION

SECTION: 07 22 00—ROOF AND DECK INSULATION

SECTION: 07 25 00—WATER-RESISTIVE BARRIERS/WEATHER BARRIERS

REPORT HOLDER:

ATLAS ROOFING CORPORATION

**2000 RIVEREDGE PARKWAY, SUITE 800
ATLANTA, GEORGIA 30328-4694**

EVALUATION SUBJECT:

**ENERGYSHIELD® CGF, ENERGYSHIELD® PANELCAST, ENERGYSHIELD® CGF PRO,
ENERGYSHIELD®, ENERGYSHIELD® PRO, AND STUCCO-SHIELD®
INSULATION BOARDS**



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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

Section: 07 21 00—Thermal Insulation

Section: 07 22 00—Roof and Deck Insulation

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

REPORT HOLDER:

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EVALUATION SUBJECT:

ENERGYSHIELD® CGF, ENERGYSHIELD® PANELCAST, ENERGYSHIELD® CGF PRO, ENERGYSHIELD® PRO, AND STUCCO-SHIELD® INSULATION BOARDS

1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2015 and 2012 *International Building Code*® (IBC)
- 2015 and 2012 *International Residential Code*® (IRC)
- 2015 and 2012 *International Energy Conservation Code*® (IECC)

Properties evaluated:

- Surface-burning characteristics
- Thermal resistance (*R*-values)
- Water resistance
- Physical properties
- Attic and crawl space installation
- Air permeability
- Air barrier assembly
- Air barrier material
- Use without thermal barrier

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

- 2013 California Green Building Standards Code (CALGreen), Title 24, Part 11
- 2012 and 2015 *International Green Construction Code*® (IgCC) (air barrier only)

- 2011 and 2014 ANSI/ASHRAE/USGBC/IES Standard 189.1—Standard for the Design of High-Performance Green Buildings, Except Low-Rise Residential Buildings (air barrier only)

- 2012 and 2008 ICC 700 *National Green Building Standard*™ (ICC 700-2012 and ICC 700-2008)

Attributes verified:

See Section 2.0

2.0 USES

The Atlas insulation boards described in this report are non-structural foam plastic boards used within or on interior walls, roof assemblies, floor assemblies, ceiling assemblies and wall cavities in non-fire-resistance-rated assemblies in all types of construction, except exterior walls in Types I through IV construction, under the IBC and construction allowed under the IRC. They are also used as an alternative to the water-resistive barrier requirements of IBC Section 1404.2 and IRC Section R703.2 when installed on exterior walls as described in Section 4.2 of this report.

The insulation boards may be left exposed without an ignition barrier when installed on either walls only or ceilings only in attics and crawl spaces in accordance with Section 4.5. EnergyShield® Pro may be left exposed to the interior of the building with no thermal barrier when installed on walls only or ceilings only in accordance with Section 4.4.

The attributes of the foam boards used as a water-resistive barrier have been verified as conforming to the provisions of (i) CALGreen Section 5.407.1 for water-resistive barriers and Section A4.407.5 for air barriers; (ii) 2012 and 2015 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 700-2012 Section 602.1.8, 11.602.1.8 and 12.5.602.1.8; and (v) ICC 700-2008 Section 602.9 for water-resistive barriers and Section 703.2.1.1.1(c) as an air impermeable insulation. 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.

3.0 DESCRIPTION

3.1 General:

The Atlas insulation boards each consist of closed cell, rigid polyisocyanurate foam core complying with ASTM

C1289 Type I, Class I or Type II, Class 2 and having a nominal density of 2.0 pcf (32 kg/m³). The difference between the boards is the various facer materials, as described in Section 3.2 of this report. The board thicknesses range from 1/2 inch to 4 inches (12.7 to 102 mm) with a standard width of 48 inches (1219 mm) and lengths of 8 and 9 feet (2.44 and 2.74 m).

3.2 Atlas Insulation Boards:

3.2.1 EnergyShield® CGF, EnergyShield® PanelCast and ACFOAM-III: EnergyShield® CGF and EnergyShield® PanelCast complies with ASTM C1289 Type II, Class 2 and has coated glass fiber facers on both sides. ACFOAM-III is the same as EnergyShield® CGF and EnergyShield® PanelCast except ACFOAM-III is used in roof applications.

3.2.2 EnergyShield® CGF Pro: EnergyShield® CGF Pro complies with ASTM C1289 Type II, Class 2 and has coated glass fibers on both sides.

3.2.3 EnergyShield® and ACFOAM Supreme: EnergyShield® complies with ASTM C1289 Type I, Class 1 and has tri-laminate (foil/kraft/foil) facers on both sides or a tri-laminate facer on one side and aluminum hard foil on the other side. ACFOAM Supreme is the same as EnergyShield® with tri-laminate facers on both sides except ACFOAM Supreme is used in roof applications.

3.2.4 EnergyShield Pro: EnergyShield Pro complies with ASTM C1289 Type I, Class 1 and has solid aluminum facers on both sides.

3.2.5 Stucco-Shield®: Stucco-Shield® complies with ASTM C1289 Type II, Class 2 and is the same as EnergyShield® CGF and EnergyShield® PanelCast, except for the proprietary coated facer, and is intended for use as a substrate for exterior insulation and finish systems (EIFS).

3.3 Joint-sealing Tapes:

Joint-sealing tapes are used in conjunction with the insulation boards to seal joints between two or more edges of the boards, when installed as an alternative water-resistive barrier. The installation shall be as set forth in Section 4.2 of this report.

3.3.1 Venture Tape® 1599B: The tape is a polypropylene self-adhering flashing tape with an acrylic adhesive. The tape is nominally 0.003 inch thick and is produced in minimum 3-inch-wide (76 mm) rolls.

3.3.2 Venture Tape® 1519CW or 1520CW: The tape is an aluminum foil-coated, self-adhering flashing tape with an acrylic adhesive. The tape is nominally 0.003 inch thick and is produced in minimum 3-inch-wide (76 mm) rolls.

3.3.3 Protecto-Wrap BT-20XL: The tape is a polyethylene-backed, rubberized, self-adhering flashing tape. The tape is nominally 0.002-inch-thick and is produced in minimum 2-inch-wide (51 mm) rolls.

3.3.4 3M All Weather Flashing Tape 8067: The tape is a pressure sensitive tape consisting of a proprietary multi-layer film with acrylic adhesive. The tape is nominally 9.9 mils thick and produced in rolls with a minimum width of 2 inches (51 mm) and in various lengths, as described in [ESR-2797](#).

3.3.5 Zip System Flexible Flashing Tape: The tape is a pressure-sensitive tape consisting of a polyolefin film with an acrylic adhesive which complies with AAMA 711. The tape is nominally 12 mils thick and produced in rolls with a minimum width of 3 3/4 inches (95 mm) and in various lengths, as described in [ESR-2227](#).

3.3.6 Sealant: A sealant complying with ASTM C920 Type S, Grade NS, Class 35, Use NT, M, G, A, and O must be used with Atlas insulation boards to seal exterior penetrations and panel defects, when the insulation boards are installed as an alternative water resistive barrier or air barrier. The installation must be as described in Sections 4.2.2 and 4.3.2, respectively.

3.4 Surface-burning Characteristics:

The insulation core has a flame-spread index of less than 75 and a smoke-developed index of less than 450 at a maximum thickness of 4 inches (102 mm) when tested in accordance with ASTM E84 (UL 723) for EnergyShield®, EnergyShield® CGF & EnergyShield® PanelCast and Stucco-Shield®.

The insulation core with proprietary fiber has a flame-spread index of less than 25 and a smoke-developed index of less than 450, at a maximum thickness of 4 inches (102 mm), when tested in accordance with ASTM E84 (UL 723) for EnergyShield Pro, EnergyShield® CGF Pro.

3.5 Thermal Resistance, R-values:

Atlas Insulation Boards have the thermal resistance (R-value) at a mean temperature of 75°F (24°C) as shown in Table 1.

3.6 Vapor Retarder:

3.6.1 EnergyShield® has a vapor permeance of 0.1 perm (5.7x10⁻¹² kg/Pa-s-m²) or less at a minimum thickness of 1 inch (25.4 mm) when tested in accordance with ASTM E96 (Procedure A desiccant method), and qualify as a Class I vapor retarder.

3.6.2 EnergyShield Pro have a vapor permeance of greater than 0.1 perm (5.7x10⁻¹² kg/PA-s-m²) and 1 perm (5.7x10⁻¹¹ kg/Pa-s-m²) or less at a minimum thickness of 1 inch (25.4 mm) when tested in accordance with ASTM E96 (Procedure A desiccant method), and qualify as a Class II vapor retarder.

3.6.3 EnergyShield® CGF, EnergyShield® PanelCast and Stucco-Shield® have a vapor permeance of greater than 1.0 perm (5.7x10⁻¹¹ kg/PA-s-m²) and 10 perms (5.7x10⁻¹⁰ kg/PA-s-m²) or less at a minimum thickness of 1 inch (25.4 mm) when tested in accordance with ASTM E96 (Procedure A desiccant method), and qualify as a Class III vapor retarder.

3.7 Air Permeability:

3.7.1 EnergyShield® CGF, EnergyShield® PanelCast and EnergyShield® CGF Pro, at a minimum thickness of 1.1 inches (28 mm), is considered air-impermeable based on testing in accordance with ASTM E2178.

3.7.2 EnergyShield®, at a minimum thickness of 3/4 inch (19.1 mm), is considered air-impermeable based on testing in accordance with ASTM E2178.

4.0 INSTALLATION

4.1 General:

The Atlas insulation boards shall be attached in a manner that shall hold the insulation in place, prior to the installation of the exterior wall or roof covering material. The boards shall be installed in accordance with the manufacturer's published installation instructions, subject to the conditions of this report.

The boards shall be separated from the interior of the building by an approved 15-minute thermal barrier. The boards shall be covered on the outside with approved wall or roof coverings that are structurally adequate to resist all

required forces. All walls shall be braced in accordance with the requirements of the applicable code.

4.2 Foam Plastic Boards Used as a Water-resistive Barrier:

4.2.1 General: The EnergyShield® CGF, EnergyShield® PanelCast, EnergyShield® CGF Pro, EnergyShield®, EnergyShield Pro, and Stucco-Shield® insulation boards described in Section 3.2 of this report, along with the joint-sealing tapes described in Section 3.3, may be used as an alternate to the water-resistive barrier prescribed in IBC Section 1404.2 and IRC Section R703.2 when installed on exterior walls as described in this section.

The insulation boards shall be installed vertically with the board joints placed directly over exterior framing spaced a maximum of 24 inches (610 mm). Where wood framing is used, the fasteners used to attach the insulation shall be corrosion-resistant roofing nails with a minimum $\frac{3}{8}$ -inch-diameter head (9.5 mm) and with a length sufficient to penetrate into the framing members a minimum of $\frac{3}{4}$ inch (19.1 mm). Where steel framing is used, the fasteners shall be self-drilling screws with minimum $\frac{3}{4}$ -inch-diameter (19.1 mm) cap washers. Fastener heads and all joints between boards and between boards and corners or abutments with dissimilar materials shall be covered with one of the flashing tapes described in Section 3.3 of this report. Boards shall be installed with a corrosion-resistant weep screed and flashing complying with the requirements of the applicable code. The boards shall be covered by an approved wall cladding complying with the requirements of the applicable code.

4.2.2 Installation around Penetrations and Openings:

The system shall be limited to use with flange-type windows. At the perimeter of the flange, the interface shall be covered by one of the flashing tapes described in Section 3.3, completely covering the framing sill and extending a minimum of 6 inches (152 mm) up the sides of the opening and approximately $1\frac{1}{2}$ inches (38 mm) beyond the face of the foam plastic board at the front of the window opening. Windows shall be flashed with sill flashing complying with the requirements of the applicable code, prior to installation of the window. The window shall be set in accordance with the window manufacturer's installation instructions. Jamb flashing shall be installed prior to the installation of head flashing. All jamb and head flashing shall completely cover the window flanges. See Figure 1 of this report for typical installation details.

Flashing of pipe penetrations shall be accomplished by sealing around the pipe with one of the flashing tapes described in Section 3.3. Flashing of other penetrating items shall be in accordance with the wall covering manufacturer's instructions. Exterior penetrations may also be sealed with a sealant complying with ASTM C920, Type S, Grade NS, Class 35 in accordance with the sealant manufacturer's instructions.

4.3 Air Barrier:

4.3.1 Air Barrier Material: When used as an air barrier material, the Atlas insulation boards noted in Section 3.6 must be installed in accordance with the Atlas Roofing installation instructions and this report.

4.3.2 Air Barrier Assembly: When installed as described in Section 4.2, the Atlas insulation boards noted in Section 3.6, comply with the requirements for an air barrier assembly in accordance with 2015 IECC Section C402.5.1.2.2 (2012 IECC Section C402.4.1.2.2), based on testing in accordance with ASTM E2357.

Penetrations in the air barrier assembly must be sealed as described in Section 4.2.2 and in IECC Section C402.4.2.

Wall coverings must be mechanically attached through the insulation boards to the wall framing or sheathing.

4.4 Thermal Barrier:

4.4.1 Application with a Prescriptive Thermal Barrier: Atlas Insulation Boards, at a maximum thickness of 4 inches (102 mm), must be separated from the interior of the building by an approved thermal barrier of $\frac{1}{2}$ -inch-thick (12.7 mm) gypsum wallboard or an equivalent 15-minute thermal barrier complying with and installed in accordance with the applicable code, except where the installation complies with the requirements set forth in Section 4.4.2. When installation is within an attic or crawlspace, as described in Section 4.5, a thermal barrier is not required between the foam plastic and the attic or crawlspace, but is required between the insulation and the interior of the building.

4.4.2 Application without a Prescriptive Thermal Barrier: Atlas EnergyShield Pro, at a maximum thickness of 4 inches (102 mm), may be installed exposed to the interior of the building without installation of the 15-minute thermal barrier when installed in accordance with this section. The Atlas insulation boards must be applied to either the walls only or ceilings only.

4.5 Ignition Barrier-Attics and Crawlspaces:

4.5.1 Application with a Prescriptive Ignition Barrier: When Atlas Insulation Boards are installed within attics and crawl spaces, where entry is made only for service of utilities, an ignition barrier must be installed in accordance with IBC Section 2603.4.1.6 or IRC Sections R316.5.3 and R316.5.4, as applicable. The ignition barrier must be consistent with the requirements for the type of construction required by the applicable code, and must be installed in such a manner that the insulation boards are not exposed. The attic or crawl space area must be separated from the interior of the building by an approved 15-minute thermal barrier, as described in Section 4.4.1.

4.5.2 Application without a Prescriptive Ignition Barrier:

4.5.2.1 EnergyShield® CGF, EnergyShield® PanelCast and EnergyShield® Insulation Boards may be installed at a maximum thickness of 4 inches (102 mm) on walls and ceilings of attics and crawl spaces. The insulation boards are permitted to be installed exposed in attics and crawl spaces without a covering applied to the attic or crawl space side of the insulation boards provided all of the following conditions apply:

1. Entry into the attic is only for service to utilities, and no storage is permitted.
2. There are no interconnected attic areas or crawl space areas.
3. Air in the attic or crawl space is not circulated to other parts of the building.
4. Attic ventilation is provided when required by IBC Section 1203.2 or IRC Section R806, except air-impermeable insulation is permitted in unvented attics in accordance with 2015 IRC Section R806.5 [2012, IRC Section R806.4].
5. Under-floor (crawl space) ventilation is provided when required by 2015 IBC Section 1203.4 [2012 IBC Section 1203.3] or IRC Section R408.1, as applicable.

- 6. Combustion air is provided in accordance with IMC (*International Mechanical Code*) Section 701.

4.5.2.2 EnergyShield Pro may be installed at a maximum thickness of 4 inches (102 mm) to either walls only or ceilings only of attics and crawl spaces. The insulation boards are permitted to be installed exposed in attics and crawl spaces without a covering applied to the attic or crawl space side of the insulation boards provided all of the following conditions apply:

- 1. Attic ventilation is provided when required by IBC Section 1203.2 or IRC Section R806, except air-impermeable insulation is permitted in unvented attics in accordance with IRC Section R806.5.
- 2. Under-floor (crawl space) ventilation is provided when required by 2015 IBC Section 1203.4 [2012 IBC Section 1203.3] or IRC Section R408.1, as applicable.
- 3. Combustion air is provided in accordance with IMC (*International Mechanical Code*) Section 701.

5.0 CONDITIONS OF USE

The Atlas Roofing Products EnergyShield® CGF, EnergyShield® PanelCast, EnergyShield® CGF Pro, EnergyShield®, EnergyShield Pro, and Stucco-Shield® insulation boards 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 shall comply with this report and the manufacturer’s published installation instructions. In the event of a conflict between the manufacturer’s installation instructions and this report, this report shall govern.
- 5.2 The insulation boards, when installed on the exterior face of exterior walls, shall be covered with an approved exterior wall cladding. Where the boards are not installed as an alternative water-resistive barrier, as described in Section 4.2 of this report, the boards shall be covered by a water-resistive barrier complying with the requirements of the applicable code.
- 5.3 Use of the insulation boards to structurally resist transverse, racking-shear or vertical loadings is outside the scope of this report.
- 5.4 The insulation boards shall not be used as a nailing base for exterior siding materials. All nailing shall be made through the sheathing into the wall framing or

structural sheathing as required by the siding manufacturer’s instructions or the applicable code.

- 5.5 In areas where the probability of termite infestation is “very heavy” and the insulation boards are installed on buildings containing wood frame construction, the installation shall meet the requirements of IRC Section R320.4 or SBC Section 2603.3, as applicable.
- 5.6 The insulation boards shall be manufactured at the Atlas Roofing Corporation plants located in Camp Hill, Pennsylvania; Diboll, Texas; Northglenn, Colorado; LaGrange, Georgia; East Moline, Illinois; Phoenix, Arizona; Delta, British Columbia, Canada; and Etobicoke, Ontario, Canada, under a quality-control program with inspections provided by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2015 (editorially revised May 2016), including testing in accordance with Appendix B.
- 6.2 Data in accordance with NFPA 286 for room corner testing.
- 6.3 Data in accordance with ASTM E2357 for air barrier assemblies.
- 6.4 Data in accordance with ASTM E2178 for air barrier material.
- 6.5 Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Sheathing Used as Weather-Resistive Barriers (AC71), dated February 2003 (editorially revised January 2016).

7.0 IDENTIFICATION

The Atlas Roofing Products EnergyShield®, EnergyShield Pro, EnergyShield® CGF, EnergyShield® PanelCast, EnergyShield® CGF Pro, Stucco-Shield®, ACFOAM-III and ACFOAM Supreme insulation boards described in this report shall be identified by a label bearing the Atlas Roofing Corporation name, the specific product name, the manufacturing location, and the evaluation report number (ESR-1375).

TABLE 1—THERMAL RESISTANCE (R-VALUES)

ASTM C1289 TYPE, CLASS	THICKNESS (INCHES)	R-VALUE (minimum) [(°F-ft ² -hr)/BTU] at 75°F MEAN TEMPERATURE
Type I, Class 1	1	6.0
Type I, Class 1	1.5	9.0
Type I, Class 1	2	12.0

For SI: 1 inch = 25.4 mm; 1°F-ft²-hr/BTU = 0.176 K-m²/W.

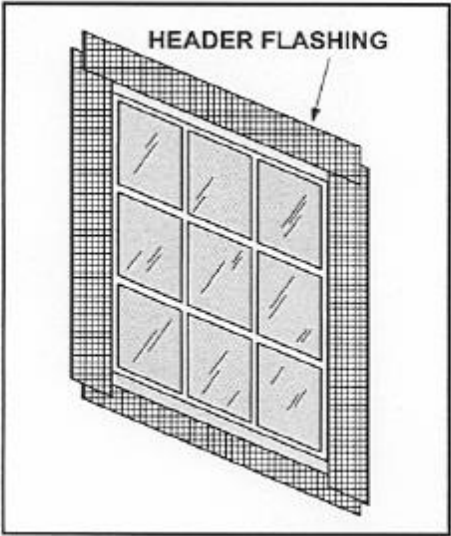
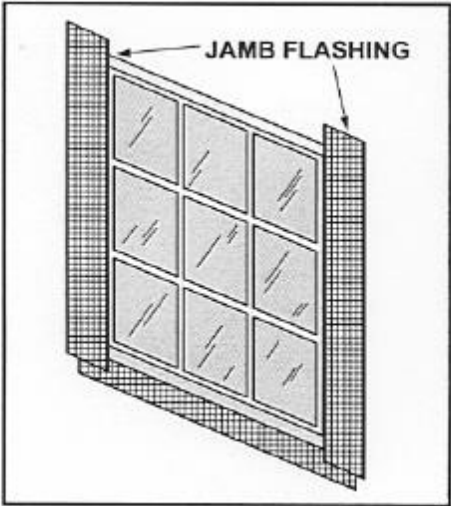


FIGURE 1—TYPICAL WINDOW FLASHING INSTALLATION