

UL Evaluation Report

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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
Sub-level 5: 07 21 13.13- Foam Board Insulation
Sub-level 3: 07 27 00 - Air Barriers

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1. SUBJECT:

ENERGYSHIELD PRO, ENERGYSHIELD PRO2, INFINISH ES, AND INFINISH ES2
POLYISOCYANURATE FOAM INSULATION BOARDS

Throughout this report, unless specifically indicated otherwise, the reference to Atlas insulation boards will apply to EnergyShield Pro, EnergyShield Pro2, InFinish ES and InFinish ES2 insulation boards.

2. SCOPE OF EVALUATION:

- 2012 *International Building Code*® (IBC)
- 2012 *International Residential Code*® (IRC)
- 2012 *International Energy Conservation Code*® (IECC)
- ICC-ES Acceptance Criteria for Quality Documentation (AC 10), June 2014



The products were evaluated for the following properties:

- Surface Burning Characteristics, (ANSI/UL723, ASTM E84)
- Fire-resistant-rated construction (ANSI/UL263, ASTM E119)
- For Use Without a Thermal Barrier – Special Approval (NFPA 286)
- For Use on Exterior Commercial Walls (NFPA 285)
- Air Barrier (ASTM E2178)
- Air Barrier Assembly (ASTM E2357)
- Ignition Properties (ASTM D1929)
- Potential Heat (NFPA 259)

3. REFERENCED DOCUMENTS

- ANSI/UL 723, Tenth Edition, (ASTM E84-15a), Test for Surface Burning Characteristics of Building Materials
- ANSI/UL 263, Fourteenth Edition, (ASTM E119-14), Fire Tests of Building Construction and Materials
- ASTM D1929-96 (2001)e01, Standard Test Method for Determining Ignition Properties of Plastics
- ASTM E2178-13, Standard Test Method for Air Permeance of Building Materials
- ASTM E2357-11, Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
- NFPA 259, 2008 Edition, Standard Test Method for Potential Heat of Building Materials
- NFPA 285, 2011 Edition, Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components
- NFPA 286, 2011 Edition, Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth
- ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated June 2014

4. USES

4.1 Atlas insulation boards evaluated in this report are used as nonstructural, thermal insulation materials for building construction Types I, II, III and IV, under the IBC and dwellings under the IRC. Installation shall be in accordance with Section 6 of this report.

The insulation boards are manufactured in standard panel dimensions of four foot widths, and can be supplied in nominal 16 inch and 24 inch widths. Standard board lengths are eight and nine feet, having thicknesses ranging from $\frac{1}{2}$ inch to 4 inches.

The insulation may be used as an air barrier to limit air infiltration in accordance with IECC Section [C402.4.1.2](#) when installed as noted in Section 6.1.

5. PRODUCT DESCRIPTION

5.1 General:

Atlas insulation boards described in this report consist of a rigid polyisocyanurate core with a nominal core density of 2.0 pcf. The insulation boards are faced with an embossed white acrylic-coated aluminum foil facer on the front and a reflective foil facer on the back. EnergyShield Pro2 and InFinish ES2 additionally contain glass reinforcement in the foam core.

5.2 Surface Burning Characteristics:

The foam plastic core has a flame spread index not exceeding 25 and a smoke developed index not exceeding 450, when tested in accordance with UL723 (ASTM E84) as required by IBC [Section 2603.3](#) or IRC [Section R316.3](#), as applicable.

5.3 Ignition Properties:

See Table 1 for ignition properties of insulation boards when tested in accordance with ASTM D1929.

Table 1—Ignition Properties of Insulation Boards

PRODUCT	FLASH IGNITION TEMPERATURE (°C)	SPONTANEOUS IGNITION TEMPERATURE (°C)
EnergyShield Pro	503	499
EnergyShield Pro2	524	510

5.4 Potential Heat:

See Table 2 for potential heat content of insulation boards when tested in accordance with NFPA 259.

Table 2—Potential Heat of Insulation Boards

PRODUCT	HEAT OF COMBUSTION (SI)	HEAT OF COMBUSTION (METRIC)
EnergyShield Pro	11340.8 (Btu/lb)	26373.9 (kJ/kg)
EnergyShield Pro2	11444.4 (Btu/lb)	26614.9 (kJ/kg)

6. INSTALLATION

6.1 General:

Installation of Atlas polyisocyanurate foam plastic insulation must comply with this report and the manufacturer's published installation instructions. The manufacturer's published installation instructions must be available at all times on the jobsite during installation. The insulation boards must be attached to supports in a manner that will secure the insulation in place.

The insulation boards must not be used structurally to resist transverse, vertical or in-plane loads. The boards must not be used as exterior stud wall bracing. Wall bracing must be provided in accordance with the applicable code. All walls must be braced in accordance with IBC [Sections 2308.9.3](#) and [2308.12.4](#) or IRC [Section R602.10.3](#).

The insulation boards must not be used as a nailing base for exterior siding materials. All fastening must be made through the boards and either into the wall framing or into structural sheathing, as required by the siding manufacturer's published installation instructions, or in accordance with the applicable code. All board joints and fastener locations must be sealed with the applicable products noted in [Table 3](#).

The rigid foam insulation boards may be used as an air barrier assembly with an air leakage rating of not greater than 0.04 cfm/ft² (0.2L/s m²) @75Pa as per ASTM E2357 when following all conditions [Table 4](#).

6.2 Fire-Resistance Rated Construction:

EnergyShield Pro and EnergyShield Pro2 boards have been evaluated for fire resistance when used as a part of UL Fire Resistance Designs U026, U326, U330, U354, U355, U424, U460, U902, U904, U905, U906, U907, V454, and V499. Refer to the UL Fire Resistance Certification information for File R15890 ([CCVV](#)) for applicable design coverage and details of the fire-resistance rated wall assemblies covered by this report. Fire-resistance ratings are only applicable when the assemblies are constructed in accordance with the published designs.

6.3 Uses without a Thermal Barrier:

At a maximum thickness of 4 inches, Atlas insulation boards may be installed exposed to the interior of the building without installation of a 15 minute thermal barrier as required in IBC [Section 2603.4](#) or IRC [Section R316.4](#) when installed in accordance with this section. The insulation boards may be applied to either the walls only or ceilings only, based on NFPA 286 tests in accordance with IBC [Section 2603.10](#) or IRC [Section R316.6](#).

6.4 Uses on the Exterior of Above Grade Walls:

Atlas Insulation boards may be used on the exterior of above grade walls as follows:

- Exterior Walls of One- and Two-Family Dwellings in accordance with the 2012 IRC,
- Exterior walls of one story buildings of Types I, II, III, or IV construction in accordance with IBC [Section 2603.4.1.4](#),
- Exterior walls of Type V construction in accordance with IBC Sections [2603.2](#), [2603.3](#), and [2603.4](#), or
- Exterior walls of buildings of Types I, II, III, or IV construction in accordance with IBC [Section 2603.5](#), based on testing in accordance with NFPA 285. [Table 3](#) outlines the allowable wall construction elements. Note that one element from each “Wall Component” must be selected, unless “None” is an available selection.

Table 3 – NFPA 285 Compliant Assembly Options

Wall Component	Options
Base Wall Use 1, 2, or 3	1) Cast Concrete Walls 2) CMU Cast Concrete Walls 3) 20 GA (min) 3-5/8 inch (min) steel studs spaced 24 inch oc (max) Any 5/8 inch type X gypsum wallboard interior
Fire Stopping at Floor Lines Use 1 or 2	1) None 2) Any approved 4.0 pcf density mineral fiber based safing insulation in each stud cavity at floor line. Safing thickness must match stud cavity depth. Use mineral fiber insulation manufacturer instructions for installation
Cavity Insulation Use any of 1 through 9 Note: Usage of Items 5 through 9 requires fire stopping item 2 and 5/8 inch exterior gypsum sheathing	1) None 2) Any ANSI/UL 723 Class A Fiberglass batt insulation (faced or unfaced) 3) Any ASTM E136 non-combustible insulation 4) Any Mineral ANSI/UL 723 Mineral Fiber Board (faced or unfaced) 5) Maximum 5 1/2 inch Icynene LD-C-50 spray foam in maximum 6 inch deep studs-full fill without air gap 6) Maximum 5 1/2 inch Icynene MD-C-200 2 pcf spray foam in maximum 6 inch deep studs 7) Maximum 5 1/2 inch Icynene LD-R-210 2 pcf spray foam in maximum 6 inch deep studs 8) Maximum 6 inch SWD Urethane QS 112 2 pcf spray foam in maximum 6 inch deep studs or partial fill with a maximum 2 1/2 inch air gap 9) Maximum 3 1/2 inch Gaco Western 183M spray foam in maximum 3 5/8 inch deep studs
Exterior Sheathing Use 1, 2, or 3	1) None when utilizing exterior claddings 1-7 2) 1/2 inch or thicker exterior gypsum sheathing, unless otherwise noted 3) 2 inch precast concrete panels attached to the structural elements
WRB over Exterior Base Wall Surface Use 1 or 2	1) None 2) Any of the following applied per individual manufacturer instruction: BASF Enershield HP BASF Enershield I DuPont Fluid Applied WB DuPont Tyvek Commercialwrap (1 or 2 layers) Grace Permabarrier VPL LT, NPL 10, NPL, NPS, VPS, VPL, or AWM Henry Air Bloc 21 FR Henry Air Bloc 31MR Henry Air Bloc 32MR Henry Air Bloc 33MR Henry VP160 Prosoco R-Guard Cat-5 Prosoco R-Guard MVP Prosoco R-Guard Spray Wrap Prosoco R-Guard VB Tremco EXOAir 111, 130, 230STS Wall Guardian FW 100A WR Meadows Air-Shield LMP – Gray WR Meadows Air-Shield LMP – Black WR Meadows Air-Shield TMP WR Meadows Air-Shield LSR Sto Emerald Coat Dow Corning DefendAir 200 Low Temp Hohmann & Barnard Enviro-Barrier VP Hohmann & Barnard X Barrier Hohmann & Barnard Enviro-Barrier CCW Fire Resist 705 VP, or 705 FR-A CCW Fire Resist Barritech NP,VP, or VP LT
Exterior Insulation Use any of 1 through 4	1) EnergyShield Pro Rigid Polyisocyanurate Insulation Board (2 pcf) 2, 3, or 4 inches thick 2) EnergyShield Pro2 Rigid Polyisocyanurate Insulation Board (2 pcf) 2, 3, or 4 inches thick 3) InFinish ES Rigid Polyisocyanurate Insulation Board (2 pcf) maximum 4 inches thick 4) InFinish ES2 Rigid Polyisocyanurate Insulation Board (2 pcf) maximum 4 inches thick

Table 3 – NFPA 285 Compliant Assembly Options (continued)

Wall Component	Options
WRB Over Exterior Insulation Use any of 1 through 9	<ol style="list-style-type: none"> 1) None 2) 4 inch Atlas WRB System Tape 3) 3 inch IPG Cold Weather Foil Tape 4) Venture Tape 1559B 5) Venture Tape 1519CW Asphalt or Butyl-based Flashing Tape 6) Henry Foilskin 7) Henry Metal Clad 8) CCW 705FR-A 9) Grace Permabarrier PAB AWM
Exterior Cladding Use any of 1 through 14 ¹	<ol style="list-style-type: none"> 1) Brick – nominal 4 inch clay brick or veneer with maximum 2 inch air gap cavity behind the cladding. Brick with ties / anchors spaced 24 inch oc (max) 2) Concrete – minimum 2 inch thick with a maximum 2 inch air gap cavity behind the cladding 3) Concrete Masonry Units – minimum 4 inch thick with maximum 2 inch air gap cavity behind the cladding 4) Limestone – minimum 2 inch thick with non-open joints installation technique such as shiplap 5) Natural Stone Veneer – minimum 2 inch thick with non-open joints installation technique such as shiplap 6) Precast Artificial Stone – minimum 1-¹/₂ inch thick complying with ICC-ES AC51. 7) Terra Cotta Cladding – minimum 1-¹/₄ inch thick (solid) with non-open joint installation technique such as shiplap. 8) Autoclaved-aerated-concrete (AAC) panels that have successfully passed NFPA 285 testing by an accredited laboratory 9) Alpolic/fr, Alucobond PLUS, or Reynobond PB 160 FR ACM panels-minimum 4mm thick. 10) Stone/Aluminum honeycomb composite building panels that have successfully passed NFPA 285 testing by an accredited laboratory 11) Stucco – minimum ³/₄ inch thick exterior cement plaster and lath 12) Uninsulated cement board or fiber-cement board siding 13) Uninsulated sheet metal building panels² including aluminum, steel, and copper 14) Reynobond ZCM Zinc metal composite panel

¹Exterior claddings 1-7 require exterior gypsum.

² Refer to IBC [Table 1405.2](#) for minimum thicknesses for metals.

Table 4 – ASTM E2357 Compliant Assembly Details

Wall Component	Options
Insulation Product	1) Minimum ³ / ₄ inch thick EnergyShield Pro 2) Minimum ³ / ₄ inch thick EnergyShield Pro2
Base Wall Use 1, 2, 3, or 4	1) Cast Concrete Walls 2) CMU Cast Concrete Walls 3) 20 GA (min) 3-5/8 inch (min) steel studs spaced 24 inch oc (max) 4) Framed Wall With Structural Sheathing
Rigid Insulation Board Orientation	1) Horizontally or vertically over Concrete, CMU, or Structurally Sheathed Base Wall 2) Horizontally over framed wall with all vertical edges resting on framing supports
Rigid Foam Board Fasteners or Ties ¹	1) Hohmann & Barnard Block Lok brick ties, sealed with caulk as needed 2) Pos-i-Tie brick tie with Rodenhouse Thermal-Grip ci prong washers 3) Ø2 inch Rodenhouse Thermal-Grip ci prong washers with Grip Deck screws
Joint and Transition Sealing Materials	1) Minimum 3 inch wide solvent based acrylic adhesive backed tape, Venture 1520CW 2) Minimum 4 inch 3M 8067 butyl flashing tape Henry BES Sealant 925

¹Rigid Insulation Board fastening is to be 12 inch o.c. perimeter, 16 inch o.c. field of board along framing. Brick ties and Insulation Fasteners may be used in combination to meet the fastening requirements.

7. CONDITIONS OF USE

7.1 General:

The polyisocyanurate 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:

7.1.2 The 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.

7.1.3 The insulation boards must be separated from the building interior with a thermal barrier complying with the applicable code, such as minimum ¹/₂-inch-thick (12.7 mm) gypsum wallboard installed in accordance with the applicable code, except as described in Section 6.3 of this report.

7.1.5 Walls must be braced in accordance with the applicable code.

7.1.6 The insulation boards must not be used as a nailing base for exterior siding materials. All nailing must be into the wall framing or a nailable substrate as required by the siding manufacturer’s instructions or the applicable code.

7.1.7 In areas where the probability of termite infestation is defined as “very heavy”, the foam plastic must be installed in accordance with IBC [Section 2603.9](#) or IRC [Section 318.4](#).

7.1.8 For a listing of applicable UL Certifications, see the Online Certifications Directory for the following categories:

- See UL Online Certifications Directory for Foamed Plastic, UL Classified for Surface Burning Characteristics in accordance with UL723 ([BRYX](#)).
- See UL Online Certifications Directory for products evaluated as a part of fire-resistance-rated assemblies in accordance with UL 263, Foamed Plastic ([CCVW](#)).

7.1.9 For Atlas Insulation boards used in exterior walls of buildings of Types I, II, III, or IV construction in accordance with IBC [Section 2603.5](#), see Section 6.4 and Table 3.

8.2 Manufacturing Locations:

The products are manufactured at the following 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:

- Camp Hill, PA (CH)
- Diboll, TX (DB)
- Northglenn, CO (DN)
- East Moline, IL (QC)

9. SUPPORTING EVIDENCE

9.1 UL Classification reports in accordance with UL 723 and UL 263. See UL Product Certification Categories (BRYX) and (CCVW).

9.2 Documentation of quality system elements described in ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated June 2014.

9.3 Reports of combustion properties in accordance with NFPA 259.

9.4 Reports of room corner fire tests in accordance with NFPA 286.

9.5 Reports and analysis of wall fire tests in accordance with NFPA 285.

9.6 Reports and analysis of ignition properties of plastics in accordance with ASTM D1929.

9.7 Reports of air barrier tests in accordance with ASTM E2178 and ASTM E2357.

10. IDENTIFICATION

Atlas polyisocyanurate insulations described in this evaluation report are identified by a marking bearing the report holder's name (Atlas Roofing Corporation) and address code, the product name, the UL Certification Mark where applicable, and the evaluation report number UL ER13089-01. The validity of the evaluation report is contingent upon this identification appearing on the product or UL Classification Mark certificate.

11. USE OF UL EVALUATION REPORT

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

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

11.3 The current status of this report, as well as a complete directory of UL Evaluation Reports may be found at UL.com via the On-Line Certifications Directory at www.ul.com/erdirectory.

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