



CERTIFICATION



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Technical Evaluation Report

TER 1306-03

EnergyShield® Pro, EnergyShield® Pro2, EnergyShield® CGF Pro & EnergyShield® Ply Pro Fire Performance in Buildings of Type I-V Construction

Atlas Roofing Corporation

Product:

EnergyShield® Products

Issue Date:

July 23, 2013

Revision Date:

September 6, 2019

Subject to Renewal:

April 1, 2020

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Technical Evaluation Report (TER)

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EnergyShield® CGF Pro & EnergyShield® Ply Pro
Fire Performance in Buildings of Type I-V Construction

TER No. 1306-03

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Subject to Renewal: April 1, 2020

DIVISION: 07 00 00 – THERMAL AND MOISTURE PROTECTION

Section: 07 21 00 – Thermal Insulation

1. Products Evaluated:

- 1.1. EnergyShield® Pro
- 1.2. EnergyShield® Pro2
- 1.3. EnergyShield® CGF Pro (formerly known as Rboard® Pro)
- 1.4. EnergyShield® Ply Pro
- 1.5. For the most recent version of this Technical Evaluation Report (TER), visit drjcertification.org. For more detailed state professional engineering and code compliance legal requirements and references, visit drjcertification.org/statelaw. DrJ is fully compliant with all state professional engineering and code compliance laws.
- 1.6. This TER can be used to obtain product approval in any country that is an IAF MLA Signatory (all countries found [here](#)) and covered by an [IAF MLA Evaluation](#) per the [Purpose of the MLA](#) (as an example, see [letter to ANSI](#) from the Standards Council of Canada). Manufacturers can go to jurisdictions in the U.S., Canada and other [IAF MLA Signatory Countries](#) and have their products readily approved by authorities having jurisdiction using [DrJ's ANSI accreditation](#).
- 1.7. Building code regulations require that evaluation reports are provided by an approved agency meeting specific requirements, such as those found in [IBC Section 1703](#). Any agency accredited in accordance with ANSI ISO/IEC 17065 meets this requirement within ANSI's scope of accreditation. For a list of accredited agencies, visit ANSI's [website](#). For more information, see drjcertification.org.
- 1.8. Requiring an evaluation report from a specific private company (i.e. ICC-ES, IAPMO, CCMC, DrJ, etc.) can be viewed as discriminatory and is a violation of international, federal, state, provincial and local anti-trust and free trade regulations.
- 1.9. DrJ's code compliance work:
 - 1.9.1. Conforms to code language adopted into law by individual states and any relevant consensus based standard such as an ANSI or ASTM standard.
 - 1.9.2. Complies with accepted engineering practice, all professional engineering laws and by providing an engineer's seal DrJ take professional responsibility for its specified scope of work.

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2. Applicable Codes and Standards:¹

- 2.1. 2012, 2015 and 2018 International Building Code (IBC)
- 2.2. 2012, 2015 and 2018 International Residential Code (IRC)
- 2.3. 2012, 2015 and 2018 International Energy Conservation Code (IECC)
- 2.4. 2010 and 2014 Florida Building Code – Building (FBC)²
- 2.5. ASTM C1289 – Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
- 2.6. ASTM C1371 – Test Method for Determination of Emittance of Materials near Room Temperature Using Portable Emisometers
- 2.7. ASTM D1929 – Standard Test Method for Determining Ignition Temperature of Plastics
- 2.8. ASTM E119 – Standard Test Method for Fire Tests of Building Construction and Materials
- 2.9. ASTM E1354 – Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter
- 2.10. ASTM E136 – Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
- 2.11. ASTM E2178 – Standard Test Method for Determining Air Permeance of Building Materials
- 2.12. ASTM E2357 – Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
- 2.13. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials
- 2.14. CAN/ULC S-742 – Standard for Air Barrier Assemblies – Specification
- 2.15. NFPA 259 – Standard Test Method for Potential Heat of Building Materials
- 2.16. NFPA 285 – Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components
- 2.17. NFPA 286 – Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth
- 2.18. UL 263 – Fire Tests of Building Construction and Materials
- 2.19. UL 723 – Test for Surface Burning Characteristics of Building Materials and Flammability Ratings

3. Performance Evaluation:

- 3.1. EnergyShield® Pro, EnergyShield® Pro2, EnergyShield® CGF Pro and EnergyShield® Ply Pro were evaluated to determine:
 - 3.1.1. Performance for use in buildings of Type V construction in accordance with [IBC Section 2603](#) and [IRC Section R316](#).
 - 3.1.2. Performance for use in buildings of Type I-IV construction in accordance with [IBC Section 2603.5](#).
 - 3.1.2.1. Performance in accordance with [UL 723](#) for flame spread and smoke development ratings in accordance with [IBC Section 2603.3](#) and [2603.5.4](#).
 - 3.1.2.2. Performance for use as an air barrier material in accordance with [IECC Section C402.5.2.1](#).
 - 3.1.2.3. Performance for use as part of an air barrier assembly in [ASTM E2357](#).
 - 3.1.2.4. Performance for use without a thermal barrier in accordance with [IBC Section 2603.4](#) and [2603.5.2](#).

¹ Unless otherwise noted, all references in this code compliant technical evaluation report (TER) are from the 2018 version of the codes and the standards referenced therein, including, but not limited to, *ASCE 7*, *SDPWS* and *WFCM*. This product also complies with the 2000-2015 versions of the *IBC* and *IRC* and the standards referenced therein. As required by law, where this TER is not approved, the building official shall respond in writing, stating the reasons this TER was not approved. For variations in state and local codes, if any see [Section 8](#).

² Unless otherwise noted, *IBC* reference numbers are the same as the *FBC* references.

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- 3.1.2.5. Performance with regard to the potential heat generated by the foam plastic insulating sheathing (FPIS) in accordance with [IBC Section 2603.5.3](#).
- 3.1.2.6. Performance with regard to vertical and lateral fire propagation in accordance with [IBC Section 2603.5.5](#).
- 3.1.2.7. Performance with regard to ignition in accordance with [IBC Section 2603.5.7](#).
- 3.1.2.8. Performance with regard to fire resistance rated wall assemblies in accordance with [IBC Section 2603.5.1](#).

3.1.3. The emissivity of the material in accordance with *ASTM C1371*.

3.2. Any code compliance issues not specifically addressed in this section are outside the scope of this TER.

4. Product Description and Materials:

4.1. EnergyShield® Pro, EnergyShield® Pro2, EnergyShield® CGF Pro and EnergyShield® Ply Pro are proprietary FPIS.

4.1.1. EnergyShield® Pro and EnergyShield® Pro2 are polyisocyanurate (polyiso) insulation boards that include a coated aluminum foil facer material on the front side and a reflective aluminum facer on the back side. The products are considered Class I vapor retarders at all thicknesses.

4.1.1.1. EnergyShield® Pro insulation boards are an *ASTM C1289* Type I, Class 1 sheathing.

4.1.1.2. EnergyShield® Pro2 insulation boards differ because they have a glass fiber reinforced polyiso core qualifying it as *ASTM C1289* Type I, Class 2 sheathing.

4.1.2. EnergyShield® CGF Pro is a polyiso insulation board that includes a coated glass facer material on the front side and on the back side (*ASTM C1289* Type II, Class 2 sheathing).

4.1.3. EnergyShield® Ply Pro is a polyiso insulation board that includes glass facers on both sides and is bonded on one side to an APA-TECO rated exposed fire retardant treated plywood (*ASTM C1289* Type V).

4.2. Material Availability

4.2.1. EnergyShield® Pro, EnergyShield® Pro2 and EnergyShield® CGF Pro

4.2.1.1. Thickness: 1/2" (13 mm) through 4" (76 mm)

4.2.2. EnergyShield® Ply Pro

4.2.2.1. Available with either a 5/8" or 3/4" fire retardant treated plywood bonded to 1" through 4" coated glass faced polyiso.

4.2.2.2. Total thickness with 5/8" plywood: 1.6" through 4.6"

4.2.2.3. Total thickness with 3/4" plywood: 1.7" through 4.7"

4.2.3. Standard product width: 48" (1219 mm)

4.2.3.1. Panels can also be supplied in nominal 16" and 24" widths for use in cavity wall applications.

4.2.4. Standard lengths: 96" (2438 mm) and 108" (2743 mm)

5. Applications:

5.1. General

5.1.1. The insulation boards are FPIS in compliance with [IBC Section 2603](#).

5.1.1.1. EnergyShield® Pro and EnergyShield® Pro2 comply with [IRC Section R316](#).

5.1.2. The insulation boards are used in buildings of Type I-IV construction in accordance with [IBC Section 2603.5](#).

5.1.2.1. EnergyShield® Pro, EnergyShield® Pro2 are also used in buildings of Type V construction in accordance with [IBC Section 2603.4](#), [2603.5](#) and [2603.10](#); and in residential construction in accordance with [IRC Section R316](#).

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- 5.1.3. EnergyShield® Pro and EnergyShield® Pro2 have an emittance value for the reflective side of less than 0.1, as measured by *ASTM C1371*.
- 5.1.4. Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with accepted engineering procedures, experience and technical judgment.

5.2. Fire Safety Performance

5.2.1. Surface Burn Characteristics

Table 1: Fire Performance of Insulation Boards

Product Name ¹	Flame Spread	Smoke Developed
EnergyShield® Pro, EnergyShield® CGF Pro, EnergyShield® Pro2 & EnergyShield® Ply Pro	< 25	< 450
1. Foam core tested in accordance with <i>UL 723</i> . Flame spread and smoke developed numbers are shown for comparison purposes only.		

- 5.2.2. EnergyShield® Pro insulation boards were tested in accordance with *NFPA 286* on walls and on ceilings and have met the acceptance criteria of [IBC Section 803.1.1.1](#)³ for use on either walls only or ceilings only without a thermal barrier, in accordance with [IBC Section 2603.4](#) and [2603.5.2](#).
 - 5.2.2.1. In addition, engineering analysis was performed to compare EnergyShield® Pro and EnergyShield® Pro2 insulation boards with respect to their flammability characteristics.
 - 5.2.2.2. Testing in accordance with the following test methods was compared for both of the products to determine the similarities between the products.
 - 5.2.2.2.1. *ASTM D1929 – Standard Test Method for Determining Ignition Temperature of Plastics*
 - 5.2.2.2.2. *NFPA 259 – Standard Test Method for Potential Heat of Building Materials*
 - 5.2.2.2.3. *UL 723 – Test for Surface Burning Characteristics of Building Materials*
 - 5.2.2.2.4. *ASTM E1354 – Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products using an Oxygen Consumption Calorimeter*
 - 5.2.2.3. Based on the similar performance of both products in these tests, EnergyShield® Pro and EnergyShield® Pro2 insulation boards are approved for use without a thermal barrier in accordance with [IBC Section 2603.9](#). However, installation on walls and ceilings in the same room is not approved.
- 5.2.3. The insulation boards were evaluated to assess performance with regard to ignition in accordance with [IBC Section 2603.5.7](#).
 - 5.2.3.1. The insulation boards comply with this section when the exterior side of the sheathing is protected with one or more of the following materials:
 - 5.2.3.1.1. A thermal barrier complying with [IBC Section 2603.4](#).
 - 5.2.3.1.2. A minimum 1" (25 mm) thickness of concrete or masonry.
 - 5.2.3.1.3. Glass-fiber-reinforced concrete panels of a minimum thickness of 3/8" (9.5 mm).
 - 5.2.3.1.4. Metal-faced panels having minimum 0.019"-thick (0.48 mm) aluminum or 0.016"-thick (0.41 mm) corrosion-resistant steel outer facings.
 - 5.2.3.1.5. A minimum 7/8" (22.2 mm) thickness of stucco complying with [IBC Section 2510](#).
- 5.2.4. The insulation boards were tested to assess the potential heat generated by the FPIS in accordance with [IBC Section 2603.5.3](#) and are shown in [Table 2](#).

Table 2: Potential Heat of Insulation Boards

³ [2015 IBC Section 803.1.2.1](#)

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Product	Potential Heat (Btu/lb.) ¹
EnergyShield® Pro	12,000
EnergyShield® Pro2	
EnergyShield® CGF Pro	
EnergyShield® Ply Pro ²	
1. Tested in accordance with <i>NFPA 259</i> . 2. EnergyShield® Ply Pro foam only.	

5.2.5. EnergyShield® Pro and EnergyShield® Pro2 were tested to assess their performance with regard to vertical and lateral fire propagation in accordance with *NFPA 285* and [IBC Section 2603.5.5](#).

5.2.5.1. Engineering analysis has also been conducted to assess substitution of other products within the approved wall assemblies, including EnergyShield® CGF Pro.

5.2.5.2. The wall assemblies listed in [Table 3](#) are approved for use in buildings of Type I-IV construction.

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Table 3: Approved *NFPA 285* Wall Assemblies¹

Wall Component	Materials
Base Wall Use either 1, 2, 3, or 4	1. Cast Concrete Walls (1" minimum) 2. CMU Concrete Walls (1" minimum) 3. 20 GA. (min.) 3 ⁵ / ₈ " (min.) steel studs with 5/8"-thick Type X gypsum wallboard on interior 4. FRT wood studs spaced at a maximum of 24" o.c. with 5/8"-thick Type X gypsum wallboard on interior
Floor Line Fire-Stopping Use 1 or 2	1. None 2. 4", 4 pcf mineral fiber (wool) safing insulation (e.g., Thermafiber) installed with Z-clips or equivalent
Cavity Insulation Use any item 1 - 16 Note: SPF cavity insulations 5 - 16 must use fire stopping at floor lines (compliant with Item 2) and 5/8" exterior gypsum sheathing.	1. None 2. Any noncombustible insulation per <i>ASTM E136</i> 3. Any mineral fiber (Board Type Class A <i>ASTM E84</i> faced or unfaced) 4. Any Fiberglass (Batt Type Class A <i>ASTM E84</i> faced or unfaced) 5. 5½" (max.) Icynene LD-C-50 spray foam in 6" deep studs (max.) full fill without an air gap 6. 5½" (max.) Icynene MD-C-200, 2 pcf spray foam in 6" deep studs (max.) full fill without an air gap 7. 5½" (max.) Icynene MD-R-210, 2 pcf spray foam in 6" deep studs (max.) full fill without an air gap 8. 6" (max.) SWD Urethane Quik-Shield (QS) 112, 2 pcf spray foam in 6" deep studs (max.) or partial fill with a maximum 2½" air gap 9. 3½" (max.) Gaco™ 183M spray foam in 3 ⁵ / ₈ " deep studs (max.) 10. 3½" (max) Gaco™ Western F1850 with 5/8" exterior sheathing in 3 ⁵ / ₈ " deep studs (max.) 11. 3 ⁵ / ₈ " (max.) Demilec Sealection® 500 with 5/8" exterior sheathing in 3 ⁵ / ₈ " deep studs (max.) 12. 3.4" (max.) Demilec HeatLok Soy 200 Plus® with 5/8" exterior sheathing in 3 ⁵ / ₈ " deep studs (max.) 13. 3" (max.) Bayer Bayseal® with 5/8" exterior sheathing 14. 3" (max.) Lapolla FoamLok™ FL 2000 with 5/8" exterior sheathing in 3 ⁵ / ₈ " deep studs (max.) 15. 3 ⁵ / ₈ " (max.) BASF SprayTite® 81206 or WallTite® (US & US-N) with 5/8" exterior sheathing in 3 ⁵ / ₈ " deep studs (max.) 16. 3 ⁵ / ₈ " (max.) Acella (Premium Spray Products) Foamsulate™ 220 with 5/8" exterior sheathing in 3 ⁵ / ₈ " deep studs (max.)
Exterior Sheathing Use either 1, 2, 3, or 4	1. ½" or thicker exterior type gypsum sheathing 2. None, when cavity SPF insulation is not used 3. 2" precast concrete panels attached to structural elements of building 4. ½" or thicker GP DensElement® sheathing with integrated water-resistive barrier (WRB). When SPF is used in cavity, exterior sheathing must be used. See specific sheathing thicknesses above.
WRB over Exterior Sheathing Use any item 1 - 24	1. None 2. Dupont™ Tyvek CommercialWrap® or CommercialWrap® D or other Tyvek Wraps in ESR 2375 – stapled (1 or 2 layers) 3. Henry Air-Bloc® 32MR (75 wet mils) 4. Any WRB which has been tested per <i>ASTM E1354</i> (at a minimum of 20 kW/m ² heat flux) and shown by analysis to be less flammable (improved T _{ign} , Pk. HRR) than those listed above. ² Examples of such are listed below: 5. BASF Enershield® HP, Enershield® 1 6. CCW Fire Resist 705, 705 VP, or 705 FR-A, Fire Resist Barritech NP, VP, or VP LT 7. Dow Chemical DefendAir 200 Low Temp or DefendAir 200 C (Charcoal) 8. Dryvit Backstop® NT™, NT™ Smooth, NT™ Spray, NT™ Texture 9. Dupont™ Fluid Applied (0.8 mm) 10. GE Momentive Elemax 2600 11. Grace Perm-A-Barrier® PAB VPL LT, PAB NPL 10, PAB NPL, PAB NPS, PAB VPS, PAB VPL, PAB AWM or PAB VPL 50 12. Henry Air-Bloc® 31MR, Air-Bloc® 33MR, Air-Bloc® 21FR, Air-Bloc® VP 160 13. Hohmann & Barnard Enviro-Barrier™ VP, X Barrier™, Enviro-Barrier™ 14. Jumpstart HWW-65A, HWW-65B, HWHP-80A, HWMP-90A, HWD2-72A, HWHPT-92A, HWMPC-110A 15. Parex WeatherSeal Spray and Roll On 16. Prosoco R-Guard® Spray Wrap, Spray Wrap MVP, R-Guard® MVP, R-Guard® VB, R-Guard® Cat-5, or Cat-5 Rainscreen 17. Sto Emerald Coat® or Gold Coat® 18. STS Wall Guardian® FW 100A

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Wall Component	Materials
	19. Tremco ExoAir® 230 (31.5 mils), ExoAir® 130, ExoAir® 111 20. Vaproshield Wrapshield SA®, Revealshield SA® 21. WR Meadows Air-Shield™ LMP (Gray), Air-Shield™ LMP (Black), Air-Shield™ TMP, Air-Shield™ LSR 22. Soprema® LM 204 VP, Sopraseal® Stick VP, Sopraseal® 1100T, Soprasolin HD 23. Siga Majvest 500 SA 24. Dörken Systems Inc. DELTA®-STRATUS SA
Exterior Insulation Use either 1, 2, 3, or 4 Items 1-3 may be multiple layers of 1 inch thick (minimum) Items 1, 2, & 3 may be multiple layers of thinner product with facers on each side.	1. 4" (max.) Atlas EnergyShield® Pro (or Pro2) 2. 4" (max.) RBoard Pro (or EnergyShield® CGF Pro) 3. 4¾" (max.) EnergyShield® Ply Pro (4" Energyshield® CGF Pro with 5/8" or ¾" FRT Plywood) 4. Any exterior insulation which has been tested per <i>ASTM E1354</i> (at a minimum of 20 kW/m ² heat flux) and shown by analysis to be less flammable (improved T _{ign} , Pk. HRR) than those listed above. ² Note: ½" (min.) exterior gypsum sheathing may be attached to exterior side of any item listed above.
WRB Over Exterior Insulation Use any item 1 - 17 Note – Item 2 is an insulation joint tape, not full coverage. Items 15 and 16 may only be used with claddings 1 - 6	1. None 2. Atlas 3" IPG Cold Weather Foil Tape 3. CCW 705FR-A, Barritech NP, Barritech VP, VP LT, 705 VP 4. Dow Chemical DefendAir 200 Low Temp or DefendAir 200 C (Charcoal) 5. Dryvit Backstop® NT™, NT™ Smooth, NT™ Spray, NT™ Texture 6. GE Momentive SEC 2500 Silshield, SilShield SEC2600 AWB (aka Elemax 2600) 7. Grace Perm-a-Barrier® PAB AWM, PAB VPL, PAB VPS, PAB NPS, PAB NPL, PAB VPLL T 8. Henry Foilskin, Metal Clad, Air-Bloc® 31MR, Air-Bloc® 33MR, Air-Bloc® 21FR, VP 160, AB 17 9. Jumpstart HWW-65A, HWW-65B, HWHP-80A, HWMP-90A, HWD2-72A, HWHPT-92A, HWMPC-110A 10. Parex WeatherSeal Spray and Roll On 11. Prosoco R-Guard® VB, R-Guard® Cat-5, R-Guard® Cat-5 Rainscreen, Spraywrap MVP 12. Sto EmeraldCoat® 13. Vaproshield Wrapshield SA®, Vaproshield Revealshield SA® 14. Soprema® Soprasolin HD (with any cladding) 15. Soprema® Sopraseal Stick VP (only with claddings 1-6) 16. Siga Majvest® 500 SA (only with claddings 1-6) 17. Dupont™ Tyvek® CommercialWrap or CommercialWrap D or other Tyvek Wraps in ESR 2375
Exterior Cladding Use any one of these items Note: Cladding 8 (Zinc) may only be used with EnergyShield® Pro or Pro2.	1. Brick – nominal 4" clay brick or veneer with maximum 2" air gap behind the brick. Brick ties/anchors 24" o.c. (max.) 2. Stucco – minimum ¾" thick exterior cement plaster and lath. A secondary WRB (WRB items above allowed over foam) can be installed between the insulation and lath and must not be full-coverage asphalt or butyl-based self-adhered membranes, but may be asphalt or butyl-based slip sheet (stapled) with no adhesive. 3. Limestone – minimum 2" thick 4. Natural stone veneer – minimum 2" thick 5. Cast artificial stone – minimum 1½" thick complying with <i>ICC-ES AC 51</i> 6. Terracotta cladding – minimum 1¼" thick 7. Any ACM that has successfully passed <i>NFPA 285</i> 8. Uninsulated sheet metal building panels including aluminum, steel, copper or zinc (see note) 9. Uninsulated fiber-cement cladding siding minimum ¼" thick 10. Stone/aluminum honeycomb composite building panels that have successfully passed <i>NFPA 285</i> criteria 11. Autoclaved-aerated-concrete (AAC) panels (minimum 1½" thick) 12. Reynobond® ZCM Zinc metal composite panel 13. Terreal Zephir® Evolution Rainscreen System (terra cotta), minimum 9/16" thick 14. FunderMax® M.Look using the manufacturer standard installation technique. The air gap between the cladding and insulation or WRB must not exceed 1½". 15. CERACLAD using the manufacturer standard installation technique with an air gap not exceeding 15 mm (0.59").
Notes on following page	

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SI: 1 inch = 25.4 mm

1. The assemblies' combinations created herein and the various substitutions of products are based on testing and professional thermal engineering analysis by Jensen Hughes, Inc. and Priest and Associates.
2. Acceptance criteria for *ASTM E1354* testing have not been well established in the referenced building codes and foam sheathing related sections. The criteria stated here for substitution of products is based on testing and professional thermal engineering analysis by Priest and Associates.
3. T_{ign} is the time to ignition from the start of the test until the sheathing ignites. Pk. HRR is the peak heat release rate during the test.

5.2.6. EnergyShield® Pro and EnergyShield® Pro2 were tested to assess their performance with regard to fire resistance rated walls in accordance with *UL 263* (or *ASTM E119*) and [IBC Section 2603.5.1](#).

5.2.6.1. EnergyShield® Pro, EnergyShield® Pro2 and EnergyShield® CGF Pro have been accorded a UL BRYX listing per *UL 723*, which allows them to be used in *UL 263* tested assemblies permitting products classified in accordance with the UL BRYX classification. Therefore, EnergyShield® Pro, EnergyShield® Pro2 and EnergyShield® CGF Pro are approved for the following UL assemblies:

5.2.6.1.1. BXUV.U424

5.2.6.1.2. BXUV.U425

5.2.6.1.3. BXUV.V499

5.2.6.2. Additionally, EnergyShield® Pro and EnergyShield® Pro2 are UL Listed in the following designs:

5.2.6.2.1. BXUV.U026

5.2.6.2.2. BXUV.U326

5.2.6.2.3. BXUV.U330

5.2.6.2.4. BXUV.U355

5.2.6.2.5. BXUV.U460

5.2.6.2.6. BXUV.U902

5.2.6.2.7. BXUV.U904

5.2.6.2.8. BXUV.U905

5.2.6.2.9. BXUV.U906

5.2.6.2.10. BXUV.U907

5.2.6.2.11. BXUV.V455

5.3. Air Barrier

5.3.1. EnergyShield® Pro and EnergyShield® Pro2 were tested to assess their performance and have met the requirements for use as the following:

5.3.1.1. Air barrier assembly in accordance with *ASTM E2357*, *CAN/ULC S-742* and [IECC Section C402.5.1.2.2](#) ([Table 4](#)).

Table 4: EnergyShield® Pro & EnergyShield® Pro2 Air Barrier Assembly Properties

EnergyShield® Pro & EnergyShield® Pro2 Air Barrier Assembly Properties	
<i>ASTM E2357</i>	< 0.2 (L/s.m ²) ¹ @ 75 Pa
<i>CAN/ULC S-742</i>	< 0.05 (L/s.m ²) ¹ @ 75 Pa
1. Liter per second per square meter	

5.3.1.2. Air barrier material in accordance with *ASTM E2178* and [IECC Section C402.5.1.2.1](#) ([Table 5](#)).

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Table 5: EnergyShield® Pro & EnergyShield® Pro2 Air Barrier Material Properties

EnergyShield® Pro & EnergyShield® Pro2 Air Barrier Material Properties	
ASTM E2178	< 0.02 (L/s-m ²) ¹ @ 75 Pa
1. Liter per second per square meter	

- 5.3.2.** EnergyShield® Pro and EnergyShield® Pro2 shall be installed in accordance with the manufacturer's installation instructions and this TER with all seams, including the top and bottom edges, taped. Additionally, the following requirements must be met if using EnergyShield® Pro and EnergyShield® Pro2 as an air barrier assembly:
- 5.3.2.1.** EnergyShield® Pro or EnergyShield® Pro2 must exceed ¾" in thickness.
 - 5.3.2.2.** Install directly over steel studs or over a structural sheathing.
 - 5.3.2.3.** Vertical joints of all rigid insulation shall be backed by studs or structural sheathing.
 - 5.3.2.4.** Joints shall be sealed with solvent acrylic adhesive tape min. 3" wide, such as Venture 1520CW or equivalent.
 - 5.3.2.5.** Penetrations, damage and transitions to other materials shall be flashed with solvent acrylic adhesive tape min. 3" wide (e.g., Venture 1520CW), butyl flashing tape min. 4" wide (e.g., 3M 8067), or caulk (e.g., Henry BES Sealant 925).
 - 5.3.2.6.** Seal Block Lok brick ties from Hohmann & Barnard, Inc. with caulk as needed.
 - 5.3.2.7.** No sealant is needed for Pos-i-Tie brick ties with Rodenhouse Thermal-Grip ci prong washers.
 - 5.3.2.8.** No sealant is needed for Grip Deck screws with Rodenhouse Thermal-Grip ci prong washers.
 - 5.3.2.9.** Ties or fasteners collectively shall be spaced 12" o.c. on the perimeter, otherwise 16" o.c.

6. Installation:

- 6.1.** Installation shall comply with the manufacturer's installation instructions and this TER. In the event of a conflict between the manufacturer's installation instructions and this TER, the more restrictive shall govern.
- 6.2.** All required wall bracing shall be installed prior to insulation board installation.
- 6.3.** The insulation boards should be oriented with the printed side facing the exterior side of the building.
- 6.4.** Insulation boards shall be installed horizontally with sheathing edges bearing directly on framing members and edges of abutting panels in moderate contact with each other.
- 6.5.** Secure the insulation boards to framing members with fasteners capable of resisting the imposed loads. Fasteners will vary, depending on the substrate and cladding materials.
 - 6.5.1.** Fastener heads shall be a minimum of 3/8" diameter. Do not allow the fastener head to penetrate the insulation board facer. Use of washers at the fastener head is recommended.
 - 6.5.2.** Space fasteners a maximum of 12" o.c. at the perimeter and 16" o.c. in the field.
 - 6.5.3.** For steel construction, fasteners shall be corrosion resistant, self drilling screws with a minimum ¾"-diameter cap washer. Fasteners shall be of sufficient length to penetrate through the framing a minimum of three (3) threads.
- 6.6.** Cladding materials shall be installed in accordance with the cladding manufacturer's installation instructions.
- 6.7.** Additional information on the installation and detailing of foam sheathing can be found on the American Chemistry Council's Foam Sheathing Committee web page at fsc.americanchemistry.com.

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7. Test and Engineering Substantiating Data:

- 7.1. Test reports and data supporting the following material properties and wall assembly performance:
 - 7.1.1. Flame spread and smoke developed ratings in accordance with *ASTM E84* by Intertek and in accordance with *UL 723* giving a BRYX classification.
 - 7.1.2. Fire performance criteria in accordance with *NFPA 285* by Intertek.
 - 7.1.3. Potential heat in accordance with *NFPA 259* by Intertek.
 - 7.1.4. Ignition temperature in accordance with *ASTM D1929* by Intertek.
 - 7.1.5. Contribution of materials to room fire growth in accordance with *NFPA 286* by Intertek.
 - 7.1.6. Emittance of materials near room temperature in accordance with *ASTM C1371* by R&D Services.
- 7.2. Engineering analysis comparing the fire resistance properties of EnergyShield® Pro and EnergyShield® Pro2 by Jensen Hughes, Inc.
- 7.3. Engineering analysis assessing the substitution of products within the approved *NFPA 285* tested wall assemblies by Jensen Hughes, Inc.
- 7.4. Engineering analysis assessing the substitution of products within the approved *NFPA 285* tested wall assemblies by Priest & Associates Consulting, LLC.
- 7.5. Manufacturer technical data sheets and installation instructions.
- 7.6. Manufacturer quality control manual and evidence of approved agency inspections.
- 7.7. Test reports and data for determining comparative equivalency for use as an alternative material in accordance with [IBC Section 104.11](#).
- 7.8. The product(s) evaluated by this TER fall within the scope of one or more of the model, state or local building codes for building construction. The testing and/or substantiating data used in this TER is limited to buildings, structures, building elements, construction materials and civil engineering related specifically to buildings.
- 7.9. The provisions of model, state or local building codes for building construction do not intend to prevent the installation of any material or to prohibit any design or method of construction. Alternatives shall use consensus standards, performance-based design methods or other engineering mechanics based means of compliance. This TER assesses compliance with defined standards, accepted engineering analysis, performance-based design methods, etc. in the context of the pertinent building code requirements.
- 7.10. Some information contained herein is the result of testing and/or data analysis by other sources, which DrJ relies on to be accurate, as it undertakes its engineering analysis.
- 7.11. DrJ has reviewed and found the data provided by other professional sources are credible. The information in this TER conforms to DrJ's procedure for acceptance of data from approved sources.
- 7.12. DrJ's responsibility for data provided by approved sources conforms to [IBC Section 1703](#) and any relevant professional engineering law.
- 7.13. Where appropriate, DrJ's analysis is based on design values that have been codified into law through codes and standards (e.g., IRC, WFCM, IBC, SDPWS, NDS®, ACI®, AISI, PS-20, PS-2, etc.). This includes review of code provisions and any related test data that aids comparative analysis or provides support for equivalency to an intended end-use application. Where the accuracy of design values provided herein is reliant upon the published properties of commodity materials (e.g. lumber, steel, concrete, etc), DrJ relies upon grade/properties provided by the raw material supplier to be accurate and conforming to the mechanical properties defined in the relevant material standard.

8. Findings:

- 8.1. EnergyShield® Pro and EnergyShield® Pro2 are approved for use in exterior or interior walls only or ceilings only without a thermal barrier in accordance with [IBC Section 2603.4](#).
- 8.2. EnergyShield® Pro, EnergyShield® Pro2 and EnergyShield® CGF Pro are approved for use in exterior walls of buildings of Type I-IV construction in accordance with [IBC Section 2603.5](#).

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- 8.3. EnergyShield® Pro, EnergyShield® Pro2, EnergyShield® CGF Pro and EnergyShield® Ply Pro are approved for use in exterior walls of buildings of Type I-IV construction in accordance with [IBC Section 2603.5.1](#) for fire resistance rated walls per the assemblies listed in [Section 5.2.6](#).
- 8.4. EnergyShield® Pro, EnergyShield® Pro2 and EnergyShield® CGF Pro are approved for use in wall assemblies meeting the requirements of *NFPA 285* testing when constructed in accordance with [Table 3](#).
- 8.5. EnergyShield® Pro and EnergyShield® Pro2 are approved for use without a thermal barrier in accordance with [IBC Section 2603.9](#). However, installation on walls and ceilings in the same room is not approved.
- 8.6. EnergyShield® Pro, EnergyShield® Pro2 and EnergyShield® CGF Pro described in this TER comply with, or are a suitable alternative to, the applicable sections of the codes listed in [Section 2](#).
- 8.7. [IBC Section 104.11](#) ([IRC Section R104.11](#) and [IFC Section 104.9](#) are similar) states:
- 104.11 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material, design or method of construction shall be *approved* where the *building official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code. ... Where the alternative material, design or method of construction is not *approved*, the *building official* shall respond in writing, stating the reasons the alternative was not *approved*.
- 8.8. This product has been evaluated with the codes listed in [Section 2](#) and is compliant with all known state and local building codes. Where there are known variations in state or local codes that are applicable to this evaluation, they are listed here:
- 8.8.1. No known variations
- 8.9. This TER uses professional engineering law, the building code, ANSI/ASTM consensus standards and generally accepted engineering practice as its criteria for all testing and engineering analysis. Dr.J's professional engineering work falls under the jurisdiction of each state Board of Professional Engineers, when signed and sealed.

9. Conditions of Use:

- 9.1. Where required by the authority having jurisdiction (AHJ) in which the project is to be constructed, this TER and the installation instructions shall be submitted at the time of permit application.
- 9.2. Any generally accepted engineering calculations needed to show compliance with this TER shall be submitted to the code official for review and approval.
- 9.3. Design loads shall be determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed and/or by the Building Designer (e.g., Owner, Registered Design Professional, etc.).
- 9.3.1. EnergyShield® Pro and EnergyShield® Pro2 are approved for use in both interior and exterior walls.
- 9.3.2. When the insulation boards are used on exterior walls of buildings of Type I, II, III or IV, construction must be as described in [Table 3](#).
- 9.3.3. In areas where the probability of termite infestation is very heavy, in accordance with [IBC Section 2603.8](#), the product must not be placed on exterior walls located within 6" (152 mm) of the ground.
- 9.3.4. This product shall not be used as a structural nailing base for claddings.
- 9.3.5. The insulation boards shall not be used to resist lateral loads. Walls shall be braced by other materials in accordance with the applicable code, and the exterior wall covering shall be capable of resisting the full design wind pressure.
- 9.3.6. The insulation boards are manufactured in East Moline, IL; Camp Hill, PA; Diboll, TX; and North Glenn, CO under a quality control program with quality control inspections in accordance with [IBC Section 110.3.8](#) and [110.3.9](#).

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9.3.7. The wall assemblies listed in [Table 3](#) are based on compliance with the fire provisions of the codes listed in [Section 2](#). Consideration of wall assembly performance with regard to other attributes, such as water vapor control, condensation, energy code requirements, etc. are outside the scope of this TER.

9.4. Design

9.4.1. Building Designer Responsibility

- 9.4.1.1. Unless the AHJ allows otherwise, the Construction Documents shall be prepared by a Building Designer for the Building and shall be in accordance with [IRC Section R106](#) and [IBC Section 107](#).
- 9.4.1.2. The Construction Documents shall be accurate and reliable and shall provide the location, direction and magnitude of all applied loads and shall be in accordance with [IRC Section R301](#) and [IBC Section 1603](#).

9.4.2. Construction Documents

- 9.4.2.1. Construction Documents shall be submitted to the Building Official for approval and shall contain the plans, specifications and details needed for the Building Official to approve such documents.

9.5. Responsibilities

- 9.5.1. The information contained herein is a product, material, detail, design and/or application TER evaluated in accordance with the referenced building codes, testing and/or analysis through the use of accepted engineering practice, experience and technical judgment.
- 9.5.2. DrJ TERs provide an assessment of only those attributes specifically addressed in the Products Evaluated or Code Compliance Process Evaluated sections.
- 9.5.3. The engineering evaluation was performed on the dates provided in this TER, within DrJ's professional scope of work.
- 9.5.4. This product is manufactured under a third-party quality control program in accordance with [IRC Section R104.4](#) and [R109.2](#) and [IBC Section 104.4](#) and [110.4](#).
- 9.5.5. The actual design, suitability and use of this TER, for any particular building, is the responsibility of the Owner or the Owner's authorized agent, and the TER shall be reviewed for code compliance by the Building Official.
- 9.5.6. The use of this TER is dependent on the manufacturer's in-plant QC, the ISO/IEC 17020 third-party quality assurance program and procedures, proper installation per the manufacturer's instructions, the Building Official's inspection and any other code requirements that may apply to demonstrate and verify compliance with the applicable building code.

10. Identification:

- 10.1. The insulation boards described in this TER are identified by a label on the board or packaging material bearing the manufacturer's name, product name, TER number, and other information to confirm code compliance.
- 10.2. Additional technical information can be found at atlasroofing.com.

11. Review Schedule:

- 11.1. This TER is subject to periodic review and revision. For the most recent version of this TER, visit drjcertification.org.
- 11.2. For information on the current status of this TER, contact [DrJ Certification](#).



- [Mission, Belief and Independence](#)
- [Product Evaluation Policies](#)
- [Product Approval – Building Code, Administrative Law and P.E. Law](#)