



CERTIFICATION



Approved. Sealed. Code Compliant.

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:

December 17, 2020

Subject to Renewal:

April 1, 2021



COMPANY
INFORMATION:

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DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

SECTION: 07 21 00 - Thermal Insulation

1 PRODUCT EVALUATED¹

1.1 EnergyShield® Products

- 1.1.1 EnergyShield® Pro
- 1.1.2 EnergyShield® Pro2
- 1.1.3 EnergyShield® CGF Pro (formerly known as Rboard® Pro)
- 1.1.4 EnergyShield® Ply Pro

2 APPLICABLE CODES AND STANDARDS^{2,3}

2.1 Codes

- 2.1.1 *IBC— 12, 15, 18: International Building Code®*
- 2.1.2 *IRC— 12, 15, 18: International Residential Code®*
- 2.1.3 *IECC— 12, 15, 18: International Energy Conservation Code®*
- 2.1.4 *FBC— 10, 14: Florida Building Code*

2.2 Standards and Referenced Documents

- 2.2.1 *ASTM C1289: Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board*
- 2.2.2 *ASTM C1371: Test Method for Determination of Emittance of Materials near Room Temperature Using Portable Emisimeters*
- 2.2.3 *ASTM D1929: Standard Test Method for Determining Ignition Temperature of Plastics*

¹ Building codes require data from valid [research reports](#) be obtained from [approved sources](#). Agencies who are accredited through ISO/IEC 17065 have met the [code requirements](#) for approval by the [building official](#). DrJ is an ISO/IEC 17065 [ANAB-Accredited Product Certification Body – Accreditation #1131](#).

Through ANAB accreditation and the [IAF MLA](#), DrJ certification can be used to obtain product approval in any [jurisdiction](#) or country that has [IAF MLA Members & Signatories](#) to meet the [Purpose of the MLA](#) – “certified once, accepted everywhere.”

Building official approval of a licensed [registered design professional](#) (RDP) is performed by verifying the RDP and/or their business entity complies with all professional engineering laws of the relevant [jurisdiction](#). Therefore, the work of licensed RDPs is accepted by [building officials](#), except when plan (i.e., peer) review finds an error with respect to a specific section of the code. Where this TER is not approved, the [building official](#) responds in writing stating the reasons for [disapproval](#).

For more information on any of these topics or our mission, product evaluation policies, product approval process, and engineering law, visit drjcertification.org or call us at 608-310-6748.

² Unless otherwise noted, all references in this TER are from the 2018 version of the codes and the standards referenced therein (e.g., ASCE 7, NDS, ASTM). This material, design, or method of construction also complies with the 2000-2015 versions of the referenced codes and the standards referenced therein.

³ All terms defined in the applicable building codes are italicized.



- 2.2.4 *ASTM E119: Standard Test Methods for Fire Tests of Building Construction and Materials*
- 2.2.5 *ASTM E1354: Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter*
- 2.2.6 *ASTM E136: Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C*
- 2.2.7 *ASTM E2178: Standard Test Method for Air Permeance of Building Materials*
- 2.2.8 *ASTM E2357: Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies*
- 2.2.9 *ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials*
- 2.2.10 *CAN/ULC S-742: Standard for Air Barrier Assemblies – Specification*
- 2.2.11 *NFPA 259: Standard Test Method for Potential Heat of Building Materials*
- 2.2.12 *NFPA 285: Standard Fire Test Method for the Evaluation of Fire Propagation Characteristics of Exterior Nonload-bearing Wall Assemblies Containing Combustible Components*
- 2.2.13 *NFPA 286: Standard Methods of Fire Test for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth*
- 2.2.14 *UL 263: Standard for Fire Tests of Building Construction and Materials*
- 2.2.15 *UL 723: Test for Surface Burning Characteristics of Building Materials*

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.
 - 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.
- 3.3 Any engineering evaluation conducted for this TER was performed on the dates provided in this TER and within DrJ's professional scope of work.



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 both sides (*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: ½" (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" (2,438 mm) and 108" (2,743 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 and 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*.
 - 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	< 25	< 450
EnergyShield® CGF Pro		
EnergyShield® Pro2		
EnergyShield® Ply Pro		
1. Foam core tested in accordance with UL 723. 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*⁴ 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*.

⁴ *2015 IBC Section 803.1.2.1*



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

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.

TABLE 3. APPROVED *NFPA 285* WALL ASSEMBLIES¹

Wall Component	Materials
Base Wall Use any of these items	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 any of these items	1. None – only with exterior sheathing option 1, 3, or 4 (gypsum wallboard, concrete, or DensElement®) 2. 4", 4 pcf mineral fiber (wool) safing insulation (e.g., Thermafiber) installed with Z-clips or equivalent 3. 1 ¹ / ₂ " FRT lumber for use with FRT studs
Cavity Insulation Use any of these items 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. 5 ¹ / ₂ " (max.) Icynene LD-C-50 spray foam in 6" deep studs (max.) full fill without an air gap 6. 5 ¹ / ₂ " (max.) Icynene MD-C-200, 2 pcf spray foam in 6" deep studs (max.) full fill without an air gap 7. 5 ¹ / ₂ " (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 2 ¹ / ₂ " air gap 9. 3 ¹ / ₂ " (max.) Gaco™ Western 183M spray foam in 3 ⁵ / ₈ " deep studs (max.) 10. 3 ¹ / ₂ " (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 ³ / ₈ " (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.)



Wall Component	Materials
<p>Exterior Sheathing Use any of these items</p> <p>Note: when Items 4 or 5 (integrated sheathing WRBs) are used, WRBs listed below may not be added on top of the sheathing.</p>	<ol style="list-style-type: none"> 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) 5. ½" or 5/8" thick USG Securock ExoAir 430 <p>When SPF is used in the cavity, exterior sheathing must be used. See specific sheathing thicknesses above.</p>
<p>WRB over Exterior Sheathing Use any of these items</p>	<ol style="list-style-type: none"> 1. None 2. DuPont™ Tyvek CommercialWrap® or CommercialWrap® D or other Tyvek Wraps in ESR 2375 – stapled (one or two 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/m² 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®-I 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 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, Air-Shield™ SMP 22. Soprema® LM 204 VP, Sopraseal® Stick VP, Sopraseal® 1100T, Soprasolin HD 23. Siga Majvest 500 SA 24. Dörken Systems Inc. DELTA®-STRATUS SA 25. Fortifiber WeatherSmart, WeatherSmart Drainable, WeatherSmart Commercial 26. Pecora XL-Perm^{ULTRA} VP, XL-Perm^{ULTRA} NP, ProPerm VP 27. NaturaSeal NS-A-250LP, NS-A-250HP
<p>Exterior Insulation Use any of these items</p> <p>Items 1-3 may be multiple layers of 1 inch thick (minimum)</p> <p>Items 1, 2, and 3 may be multiple layers of thinner product with facers on each side.</p>	<ol style="list-style-type: none"> 1. 4" (max.) Atlas EnergyShield® Pro (or Pro2) 2. 4" (max.) RBoard® Pro (or EnergyShield® CGF Pro) 3. 4^{3/4}" (max.) EnergyShield® Ply Pro (4" EnergyShield® CGF Pro with 5/8" or 3/4" FRT Plywood) 4. Any exterior insulation which has been tested per <i>ASTM E1354</i> (at a minimum of 20 kW/m² heat flux) and shown by analysis to be less flammable (improved T_{ign}, Pk. HRR) than those listed above.² <p>Note: ½" (min.) exterior gypsum sheathing may be attached to exterior side of any item listed above.</p>



Wall Component	Materials
<p>WRB Over Exterior Insulation Use any of these items</p> <p>Note – Item 2 is an insulation joint tape, not full coverage.</p> <p>Items 15 and 16 may only be used with claddings 1 - 6</p>	<ol style="list-style-type: none"> 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 VPL LT 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 18. WR Meadows Air-Shield SMP 19. Fortifiber WeatherSmart, WeatherSmart Drainable, WeatherSmart Commercial 20. Pecora XL-Perm^{ULTRA} VP, XL-Perm^{ULTRA} NP, ProPerm VP
<p>Exterior Cladding Use any of these items</p> <p>Note: Cladding 8 (zinc) may only be used with Energyshield® Pro or Pro2.</p>	<ol style="list-style-type: none"> 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 0.59" (15 mm). 16. CUPACLAD Slate: 101 Logic, 101 Random, 101 Parallel, 210 Vanguard 17. Glen-Gery Thin Tech Masonry Veneer
<p>SI: 1 inch = 25.4 mm</p> <ol style="list-style-type: none"> 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 <i>ASTM E1354</i> 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

Test Method	Property
<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).

TABLE 5. ENERGYSHIELD® PRO & ENERGYSHIELD® PRO2 AIR BARRIER MATERIAL PROPERTIES

Test Method	Property
<i>ASTM E2178</i>	< 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 *Installation Procedure*
 - 6.2.1 All required wall bracing shall be installed prior to insulation board installation.
 - 6.2.2 The insulation boards should be oriented with the printed side facing the exterior side of the building.
 - 6.2.3 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.
 - 6.2.4 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.
 - 6.2.4.1 Fastener heads shall be a minimum of $\frac{3}{8}$ " diameter. Do not allow the fastener head to penetrate the insulation board facer. Use of washers at the fastener head is recommended.
 - 6.2.4.2 Space fasteners a maximum of 12" o.c. at the perimeter and 16" o.c. in the field.
 - 6.2.4.3 For steel construction, fasteners shall be corrosion resistant, self-drilling screws with a minimum $\frac{3}{4}$ " diameter cap washer. Fasteners shall be of sufficient length to penetrate through the framing a minimum of three (3) threads.
 - 6.2.5 Cladding materials shall be installed in accordance with the cladding manufacturer's installation instructions.
 - 6.2.6 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.

7 TEST 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 Test reports and data for determining comparative equivalency for use as an alternative material in accordance with [*IBC Section 104.11*](#).



- 7.6 Some information contained herein is the result of testing and/or data analysis by other sources which conform to IBC Section 1703 and relevant professional engineering law. DrJ relies on accurate data from these sources to perform engineering analysis. DrJ has reviewed and found the data provided by other professional sources to be credible.
- 7.7 Where appropriate, DrJ's analysis is based on design values that have been codified into law through codes and standards (e.g., *IBC*, *IRC*, *NDS®*, and *SDPWS*). This includes review of code provisions and any related test data that aids in 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, and concrete), DrJ relies upon the grade mark, stamp, and/or design values provided by raw material suppliers to be accurate and conforming to the mechanical properties defined in the relevant material standard.

8 FINDINGS

- 8.1 When used and installed in accordance with this TER and the manufacturer's installation instructions, the product(s) listed in Section 1.1 are approved for the following:
 - 8.1.1 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.
 - 8.1.2 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.
 - 8.1.3 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.
 - 8.1.4 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.
 - 8.1.5 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.
 - 8.1.6 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 1.1.1.
- 8.2 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*.

- 8.3 This product has been evaluated in the context of 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 applicable to this TER, they are listed here.
 - 8.3.1 No known variations

9 CONDITIONS OF USE

- 9.1 EnergyShield® Pro and EnergyShield® Pro2 are approved for use in both interior and exterior walls.
- 9.2 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 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.



- 9.4 This product shall not be used as a structural nailing base for claddings.
- 9.5 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.
- 9.6 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.
- 9.7 Where required by the building official, also known as 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.
- 9.8 Any generally accepted engineering calculations needed to show compliance with this TER shall be submitted to the AHJ for review and approval.
- 9.9 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 or registered design professional).
- 9.10 At a minimum, this product shall be installed per Section 6 of this TER.
- 9.11 This product is manufactured under a third-party quality control program in accordance with IBC Section 104.4 and 110.4 and IRC Section R104.4 and R109.2.
- 9.12 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. Therefore, the TER shall be reviewed for code compliance by the building official for acceptance.
- 9.13 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 product(s) listed in Section 1.1 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.