



Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

Report No: 2212-03



Issue Date: March 9, 2023

Revision Date: March 20, 2026

Subject to Renewal: April 1, 2027

Use of Enverge EasySeal® Ultra™ Spray Foam Insulation as Interior Finish and in Attics and Crawlspace

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CSI Designations:

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

Section: 07 21 29 - Sprayed Insulation

Section: 07 26 00 - Vapor Retarders

Section: 07 27 36 - Sprayed Foam Air Barrier

1 Innovative Product Evaluated¹

1.1 Enverge EasySeal Ultra Spray Foam Insulation

2 Product Description and Materials

2.1 The innovative product evaluated in this report is shown in **Figure 1** and **Figure 2**.



Figure 1. Enverge EasySeal Ultra Spray Foam Insulation Isocyanate (A-Side) and Resin (B-Side)



Figure 2. Application of Enverge EasySeal Ultra Spray Foam Insulation in an Unvented Attic

- 2.2 Enverge EasySeal Ultra Spray Foam Insulation is a two-component (Isocyanate or A-side and Resin or B-side), low-density, open-cell, Spray Polyurethane Foam (SPF) insulation product.
- 2.3 Enverge EasySeal Ultra Spray Foam Insulation has a nominal density of 0.4 pounds per cubic foot, hereinafter referred to as pcf, (6.4 kg/m³).
- 2.4 *DC315 Intumescent Coating*
- 2.4.1 DC315 is a single-component, water-based, liquid-applied, intumescent coating available in white, ice gray, dark gray, and charcoal black.
- 2.4.2 The coating is supplied in 5-gallon (19 L) pails, in addition to, 55-gallon (208 L) drums. The coating has a shelf life of one year when stored in factory-sealed containers at temperatures between 50° F and 80° F (10° C and 27° C).
- 2.5 *No-Burn® Plus ThB Intumescent Coating*
- 2.5.1 No-Burn Plus ThB is a white, water-based, latex liquid that exhibits intumescent properties when exposed to elevated temperatures and flame. No-Burn Plus ThB is packaged in 5-gallon (19 L) pails and 55-gallon (208 L) drums.
- 2.5.2 No-Burn Plus ThB has a shelf life of eighteen (18) months when stored in unopened containers between 40° F and 90° F (4.4° C and 32.2° C). No-Burn Plus ThB shall be mixed with a power mixing wand, or equivalent, at or between 500-1500 RPM for a mixing time of five (5) minutes per container.
- 2.6 *Flame Seal FS-IB™ Intumescent Coating*
- 2.6.1 Flame Seal FS-IB is a white, water-based, latex liquid that exhibits intumescent properties when exposed to elevated temperatures and flame. Flame Seal FS-IB is packaged in 5-gallon (19 L) pails and 55-gallon (208 L) drums.
- 2.6.2 Flame Seal FS-IB has a shelf life of six (6) months when stored in unopened containers between 40° F and 80° F (4.4° C and 26.7° C).
- 2.6.3 Flame Seal FS-IB shall be thoroughly mixed using a high-speed drill mixer before application.
- 2.7 As needed, review material properties for design in **Section 6** and the regulatory evaluation in **Section 8**.



3 Definitions²

- 3.1 New Materials³ are defined as building materials, equipment, appliances, systems, or methods of construction, not provided for by prescriptive and/or legislatively adopted regulations, known as alternative materials.⁴ The design strength and permissible stresses shall be established by tests⁵ and/or engineering analysis.⁶
- 3.2 Duly authenticated reports⁷ and research reports⁸ are test reports and related engineering evaluations that are written by an approved agency⁹ and/or an approved source.¹⁰
 - 3.2.1 This report utilizes intellectual property and/or trade secrets to create public domain material properties for commercial end-use.
 - 3.2.1.1 This report protects confidential Intellectual Property and trade secrets under the regulation, 18.U.S.Code.90, also known as Defend Trade Secrets Act of 2016 (DTSA).¹¹
- 3.3 An approved agency is “approved” when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is accredited and listed in the ANAB directory.
- 3.4 An approved source is “approved” when a professional engineer (i.e., Registered Design Professional, hereinafter RDP) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.¹²
- 3.5 Testing and/or inspections conducted for this duly authenticated report were performed by an ISO/IEC 17025 accredited testing laboratory, an ISO/IEC 17020 accredited inspection body, and/or a licensed RDP.
 - 3.5.1 The Center for Building Innovation (CBI) is ANAB¹³ ISO/IEC 17025 and ISO/IEC 17020 accredited.
- 3.6 The regulatory authority shall enforce¹⁴ the specific provisions of each legislatively adopted regulation. If there is a non-conformance, the specific regulatory section and language of the non-conformance shall be provided in writing¹⁵ stating the nonconformance and the path to its cure.
- 3.7 The regulatory authority shall accept duly authenticated reports from an approved agency and/or an approved source with respect to the quality and manner of use of new materials or assemblies as provided for in regulations regarding the use of alternative materials, designs, or methods of construction.¹⁶
- 3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory. Therefore, recognition of certificates and validation statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope shall be approved.¹⁷ Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent,¹⁸ and can be used in any country that is an MLA signatory found at this link: <https://iaf.nu/en/recognised-abs/>
- 3.9 Approval equity is a fundamental commercial and legal principle.¹⁹

4 Applicable Local, State, and Federal Approvals; Standards; Regulations²⁰

- 4.1 *Local, State, and Federal*
 - 4.1.1 Approved in all local jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured local jurisdictions: Austin, Baltimore, Broward County, Chicago, Clark County, Dade County, Dallas, Detroit, Denver, DuPage County, Fort Worth, Houston, Kansas City, King County, Knoxville, Las Vegas, Los Angeles City, Los Angeles County, Miami, Nashville, New York City, Omaha, Philadelphia, Phoenix, Portland, San Antonio, San Diego, San Jose, San Francisco, Seattle, Sioux Falls, South Holland, St. Louis County, Texas Department of Insurance, and Wichita.²¹
 - 4.1.2 Approved in all state jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured states: California, Florida, New Jersey, Oregon, New York, Texas, Washington, and Wisconsin.²²



4.1.3 Approved by the Code of Federal Regulations Manufactured Home Construction: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14²³ and Part 3280²⁴ pursuant to the use of ISO/IEC 17065 duly authenticated reports.

4.1.4 Approved means complying with the requirements of local, state, or federal legislation.

4.2 Regulations

4.2.1 *IBC – 18, 21, 24: International Building Code®*

4.2.2 *IRC – 18, 21, 24: International Residential Code®*

4.2.3 *IECC – 18, 21, 24: International Energy Conservation Code®*

4.2.4 *FBC-B – 20, 23: Florida Building Code – Building*

4.3 Standards

4.3.1 *ASTM C518: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus*

4.3.2 *ASTM D1622: Standard Test Method for Apparent Density of Rigid Cellular Plastics*

4.3.3 *ASTM D1623: Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics*

4.3.4 *ASTM D2126: Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging*

4.3.5 *ASTM D6226: Standard Test Method for Open Cell Content of Rigid Cellular Plastics*

4.3.6 *ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials*

4.3.7 *ASTM E96: Standard Test Method for Water Vapor Transmission of Materials*

4.3.8 *ASTM E2178: Standard Test Method for Air Permeance of Building Materials*

4.3.9 *NFPA 286: Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth*

5 Listed²⁵

5.1 Equipment, materials, products, or services included in a List published by a nationally recognized testing laboratory (e.g., CBI), an approved agency (e.g., CBI and DrJ), and/or and approved source (e.g., DrJ), or other organization(s) concerned with product evaluation (e.g., DrJ), that maintains periodic inspection (e.g., CBI) of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner.

6 Tabulated Properties Generated from Nationally Recognized Standards

6.1 General

6.1.1 Enverge EasySeal Ultra Spray Foam Insulation is used in the following applications:

6.1.1.1 Thermal insulation in buildings constructed in accordance with the IBC, IRC, or IECC

6.1.1.2 Sealant for penetrations as part of an air barrier system

6.1.2 When Enverge EasySeal Ultra Spray Foam Insulation is used in fire-rated construction, refer to manufacturer instructions for specific details.



6.2 Air Permeability

6.2.1 Enverge EasySeal Ultra Spray Foam Insulation meets the requirements of IRC Section N1101.10.5, IECC Section R303.1.5, and IECC Section C402.6.2.3.1²⁶ for use as an air barrier material when installed in accordance with the manufacturer installation instructions and this report.

6.2.1.1 Enverge EasySeal Ultra Spray Foam Insulation may be used as prescribed in IRC Section R806.5, IRC Section N1102.5,²⁷ IECC Section C402.6,²⁸ and IECC Section R402.5.²⁹

6.2.1.2 Air permeability characteristics of Enverge EasySeal Ultra Spray Foam Insulation is given in **Table 1**.

Table 1. Enverge EasySeal Ultra Spray Foam Insulation Air Barrier Properties

Product	Air Barrier Properties ³
Enverge EasySeal Ultra Spray Foam Insulation	< 0.02 [L/(s•m ²)]
Imperial: 1[L/(s•m ²)] = 0.197 cfm/ft ²	
1. Sprayed to a minimum thickness of 3.5".	
2. Tested in accordance with ASTM E2178.	
3. Liter per second per square meter when tested at a pressure differential of 75 Pa.	

6.3 Thermal Resistance

6.3.1 Enverge EasySeal Ultra Spray Foam Insulation has the thermal resistance as defined in **Table 2**.

Table 2. Enverge EasySeal Ultra Spray Foam Insulation Thermal Resistance Values

Product	Thickness (in)	Thermal Resistance, R-Values ^{2,3} [(hr•ft ² •°F)/Btu]	Thermal Resistance, U-Values [Btu/(hr•ft ² •°F)] per inch of thickness
Enverge EasySeal Ultra Spray Foam Insulation ¹	1.0	3.8	0.26
	2.0	7.1	0.28
	3.0	11.0	0.28
	3.5	13.0	0.28
	4.0	14.0	0.28
	5.0	18.0	0.28
	5.5	20.0	0.28
	6.0	21.0	0.28
	7.0	25.0	0.28
	7.5	27.0	0.28
	8.0	29.0	0.28
	9.0	32.0	0.28
10.0	36.0	0.28	



Table 2. Enverge EasySeal Ultra Spray Foam Insulation Thermal Resistance Values

Product	Thickness (in)	Thermal Resistance, R-Values ^{2,3} [(hr•ft ² •°F)/Btu]	Thermal Resistance, U-Values [Btu/(hr•ft ² •°F)] per inch of thickness
Enverge EasySeal Ultra Spray Foam Insulation Continued	11.5	41.0	0.28
	12.0	43.0	0.28
	13.0	46.0	0.28
	14.0	50.0	0.28
	15.0	54.0	0.28
	16.0	57.0	0.28

SI: 1 in = 25.4 mm, 1 [(hr•ft²•°F)/Btu] = 0.176 [(K•m²)/W], 1 [Btu/(hr•ft²•°F)] = 5.678 [W/(K•m²)]
1. One-inch (1") product tested after 90-day aging. Three and one half inch samples tested after 180-day aging.
2. Tested at a mean temperature of 75° F and fifty percent (50%) relative humidity (RH) in accordance with ASTM C518.
3. R-values are calculated from testing at 1" and 3.5". Calculated values over 10 are rounded to the nearest integer

6.4 Surface Burning Characteristics

6.4.1 Enverge EasySeal Ultra Spray Foam Insulation has been tested in accordance with ASTM E84, and has the surface burning characteristics as shown in **Table 3**.

Table 3. Flame Spread and Smoke Developed Indexes of Enverge EasySeal Ultra Spray Foam Insulation

Product	Flame Spread	Smoke Developed	Classification
Enverge EasySeal Ultra Spray Foam Insulation ¹	< 25	< 450	Class A

1. Tested in accordance with ASTM E84 at a nominal thickness of 4".

6.4.2 Insulation thicknesses in walls and ceilings are not limited when covered by a code-prescribed thermal barrier or as described in **Section 6.5**, **Section 6.6**, and **Section 6.7** of this report.

6.5 Installation as an Interior Finish Without a Code Prescribed Thermal Barrier

6.5.1 The code prescribed thermal barrier required by IBC Section 2603.4 or IRC Section R303.4³⁰ may be omitted when all of the following apply:

6.5.1.1 The thickness of the Enverge EasySeal Ultra Spray Foam Insulation shall not exceed the amounts listed in **Table 4**.

6.5.1.2 The Enverge EasySeal Ultra Spray Foam Insulation shall be coated with an intumescent coating as described in **Table 4**.

6.5.2 The coating shall be applied in accordance with the coating manufacturer instructions and this report. Surfaces to be coated shall be dry, clean, free of dirt, loose debris, and other contaminants that could affect adhesion of the coating.



Table 4. Alternative Thermal Barriers

Insulation Product	Ceiling (Horizontal) Thickness (Maximum)	Wall (Vertical) Thickness (Maximum)	Intumescent Coating	Wet Film Thickness (Minimum)	Coverage Rate (Minimum)
Enverge EasySeal Ultra Spray Foam Insulation	14"	8.5"	DC315	14 mils	114 ft ² /gal
SI: 1 in = 25.4 mm, 1 mil = 0.0254 mm, 1 ft ² /gal = 0.245 m ² /L 1. Tested in accordance with NFPA 286.					

6.6 Installation in Attics and Crawlspace With a Prescriptive Ignition Barrier

- 6.6.1 Where entry is made only for the service of utilities, Enverge EasySeal Ultra Spray Foam Insulation may be installed within attics or crawlspaces provided an ignition barrier be installed in accordance to IBC Section 2603.4.1.6, or IRC Section R303.5.3³¹ and IRC Section R303.5.4,³² as applicable.
- 6.6.2 The ignition barrier shall be installed in a manner so that the foam plastic insulation is not exposed and is consistent with the requirements of the type of construction required by the applicable code.

6.7 Installation in Attics and Crawlspace With an Alternative Ignition Barrier Assembly

- 6.7.1 When installation is in accordance with this section, the prescriptive ignition barrier specified by IBC Section 2603.4.1.6, or IRC Section R303.5.3³³ and IRC Section R303.5.4,³⁴ as applicable, may be omitted when the following conditions apply:
 - 6.7.1.1 Enverge EasySeal Ultra Spray Foam Insulation may be spray-applied in attics to the underside of roof sheathing, roof rafters, vertical surfaces, and in crawlspaces to the underside of floors and vertical surfaces as described in this section.
 - 6.7.1.2 The thickness of the foam plastic insulation applied shall not exceed the thickness as specified in **Table 5**.
 - 6.7.1.3 Entry is only to service utilities in the attic or crawlspace and no storage is permitted.
 - 6.7.1.4 Attic or crawlspace areas cannot be interconnected.
 - 6.7.1.5 Air from the attic or crawlspace cannot be circulated to other parts of the building.
 - 6.7.1.6 Attic ventilation is provided in accordance with IBC Section 1202.2 or IRC Section R806, as applicable.
 - 6.7.1.7 Crawlspace ventilation is provided in accordance with IBC Section 1202.4 or IRC Section R408.1, as applicable.
 - 6.7.1.8 Combustion air is provided where required in accordance with International Mechanical Code®, IMC Section 701.
 - 6.7.1.9 Enverge EasySeal Ultra Spray Foam Insulation must be coated with an intumescent coating as described in **Table 5**.



Table 5. Ignition Barrier Coverage Rates

Insulation	Horizontal (Ceiling) Thickness (Maximum)	Vertical (Wall) Thickness (Maximum)	Intumescent Coating	Wet Film Thickness (Minimum)	Coverage Rate (Minimum)
Enverge EasySeal Ultra Spray Foam Insulation	16.5"	11"	DC315	4 mils	400 ft ² /gal
	16.5"	11"	Flame Seal FS-IB	6 mils	266 ft ² /gal
	16.0"	10"	No-Burn Plus ThB	6 mils	271 ft ² /gal

SI: 1 in = 25.4 mm, 1 mil = 0.0254 mm, 1 ft²/gal = 0.245 m²/L

6.8 Unvented Attic and Unvented Enclosed Rafter Assemblies

- 6.8.1 Amrize Building Envelope, LLC has conducted end-use configuration testing and analysis per IBC Section 2603.9 and IRC Section R303.6,³⁵ to qualify the use of Enverge EasySeal Ultra Spray Foam Insulation without a prescriptive ignition barrier or intumescent coating in unvented attics conforming with IBC Section 1202.3 or IRC Section R806.5 (unvented attics were not addressed in the 2012 and earlier versions of the IBC).
- 6.8.2 When Enverge EasySeal Ultra Spray Foam Insulation is applied in unvented attics conforming to IBC Section 1202.3 or IRC Section R806.5, the insulation may be applied to the underside of roof sheathing and/or rafters and to vertical surfaces to a minimum thickness of 3 1/2". Maximum thickness on the underside of roof sheathing or on vertical wall surfaces is 16". The insulation may be left exposed to the attic without a prescriptive ignition barrier or an intumescent coating.
- 6.8.3 EZ-U Spray Foam Insulation may be installed in unvented attic assemblies and unvented enclosed rafter assemblies in accordance with IBC Section 1202.3 or IRC Section R806.5. A vapor retarder shall be installed in direct contact with the insulation as required in IBC Section 1202.3 in Climate Zones 4M, 5, 6, 7, and 8.
- 6.8.4 The perimeter of penetrating items (annular space) does not require fire caulking. However, for penetrating items not needing full coverage, the perimeter (annular space) of the items must be covered with SPF at a minimum 3 1/2" thickness.
- 6.8.5 Roof rafter or truss top chord member edges may be left exposed.
- 6.8.6 Wall stud edges may be left exposed.
- 6.8.7 Penetration through the attic floor or soffit not conveying air, such as canned lights, electrical wiring, potable water, HVAC condensation lines, etc., do not need to be covered with foam or air sealed to the perimeter of the penetration (annular space).
- 6.8.8 Skylights penetrating through the attic floor, soffit, gable, or roof deck where the tubular daylighting pathway is constructed of gypsum, steel, or other noncombustible material (with melting temperature greater than steel) do not need full coverage of foam.

6.9 For All Attic Volumes

- 6.9.1 Rigid or flexible HVAC ducts penetrating only the attic floor including all plastic materials, rigid, or semi-rigid/flexible aluminum, any ducts wrapped in fiberglass and steel or copper components may be left uncovered by foam.
- 6.9.2 The attic space must be separated from the interior of the building by a 15-minute code prescribed thermal barrier such as 1/2" gypsum wallboard.
- 6.9.3 Attics shall have access complying with IRC Section R807, horizontally placed in the floor as shown in **Figure 3**, and shall feature one of the following:
 - 6.9.3.1 A downward-opening hatch
 - 6.9.3.2 A pull down stair
 - 6.9.3.3 Access opening in accordance with IRC Section R807 using Rockfon® Pacific™ 201 Square Edge Ceiling Tile to cover the opening.
 - 6.9.3.4 An attic access opening of 22 1/2" x 30", or the baseline standard IRC size, was used to evaluate performance. The Rockfon Pacific 201 Square Edge Ceiling Tile was set on 1" x 2" trim, and installed around the opening. The typical installation is installing trim around the opening, where one-half of the trim width extends into the opening to support the panel. This allows fastening of the trim to the rough framing, where it is expected that there will be a 1" lip around the opening for Rockfon Pacific 201 Square Edge Ceiling Tile bearing.
 - 6.9.3.5 The Rockfon Pacific 201 Square Edge Ceiling Tile shall have a maximum density of 8-pcf, a maximum binder content of three percent (3%), and shall be listed as a Class A product in accordance with ASTM E1264.

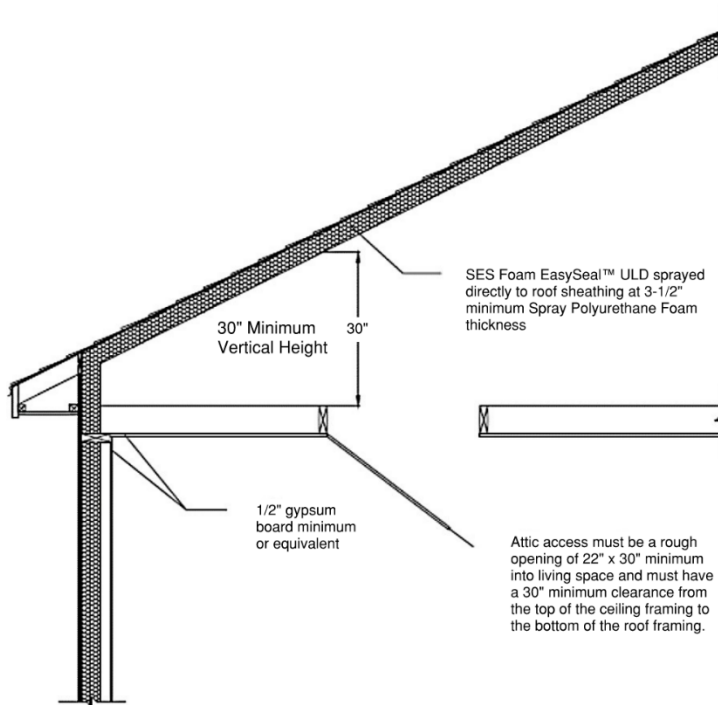


Figure 3. Attic Access



6.10 For Attics Up to 46,080 Cubic Feet

- 6.10.1 Any schedule 40 (minimum) ABS or PVC vent pipe does not need to be covered in SPF.
- 6.10.2 Rigid or flexible vent ducts/pipes that only penetrate the attic floor and/or soffit, including rigid or semi-rigid/flexible aluminum, any ducts wrapped in fiberglass, any ducts with higher melting/softening points than aluminum, and steel or copper do not need to be protected with SPF. Additionally, where exhaust fans with capacity of 60 cubic feet per minute (cfm) or less are installed, plastic materials thinner than schedule 40 do not need to be protected with SPF.
- 6.10.3 Rigid or flexible vent ducts/pipes that only penetrate the roof deck and/or gable, including rigid or semi-rigid/flexible aluminum, any ducts wrapped in fiberglass, any ducts with higher melting/softening points than aluminum, and steel or copper do not need to be protected with SPF. Additionally, where exhaust fans with capacity of 60 cfm or less AND the total area of penetrations from this section do not exceed 36 square inches, any plastic materials, any rigid or semi-rigid/flexible aluminum, any ducts wrapped in fiberglass, and vinyl or other plastic with lower melting/softening points than aluminum do not need to be protected by SPF.

6.11 For Attics Greater Than 46,080 Cubic Feet

- 6.11.1 Rigid or flexible vent ducts/pipes that only penetrate the attic floor and/or soffit, including any materials with higher melting/softening points than aluminum, steel, or copper do not need to be protected with SPF. Additionally, where exhaust fans with capacity of 60 cfm or less are installed, any plastic materials, rigid or semi-rigid/flexible aluminum, ducts wrapped in fiberglass, and vinyl or other plastic with lower melting/softening points than aluminum do not need to be protected by SPF.
- 6.11.2 Rigid or flexible vent ducts/pipes that only penetrate the roof deck and/or gable, including any materials with higher melting/softening points than aluminum, steel or copper, do not need to be protected with SPF. Additionally, where exhaust fans with capacity of 60 cfm or less AND the total area of penetrations from this section do not exceed 36 square inches, any plastic materials, rigid or semi-rigid/flexible aluminum, ducts wrapped in fiberglass, and vinyl or other plastic with lower melting/softening points than aluminum do not need to be protected by SPF.
- 6.11.3 Other items penetrating the roof deck or gable not specifically named above (other than steel or copper) need to be covered in SPF at a minimum 3¹/₂".

6.12 Alternative techniques shall be permitted in accordance with accepted engineering practice and experience. These provisions for the use of alternative materials, designs, and methods of construction are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed herein. This includes, but is not limited to, the following areas of engineering: mechanics of materials, structures, building science, and fire science.

7 Certified Performance³⁶

- 7.1 All construction methods shall conform to accepted engineering practices to ensure durable, livable, and safe construction and shall demonstrate acceptable workmanship reflecting journeyman quality of work of the various trades.³⁷
- 7.2 The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur.³⁸



8 Regulatory Evaluation and Accepted Engineering Practice

- 8.1 Enverge EasySeal Ultra Spray Foam Insulation complies with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:
- 8.1.1 Physical properties of the product in accordance with the standards listed in **Section 4** of this report.
 - 8.1.2 Air permeability in accordance with IRC Section N1101.10.5, IECC Section R303.1.5, and IECC Section C402.6.2.3.1.³⁹
 - 8.1.3 Thermal performance (R-values) complying with the provisions of IRC Section N1102, IECC Section C402, and IECC Section R402.
 - 8.1.4 Surface burning characteristics complying with the provisions of IBC Section 2603.3 and IRC Section R303.3.⁴⁰
 - 8.1.5 Use in unvented attic spaces and crawlspaces without a thermal barrier or ignition barrier in accordance with IBC Section 2603.9, IRC Section R303.4,⁴¹ and IRC Section R303.6,⁴² subject to conditions listed in **Section 6.8** through **Section 6.11** of this report.
 - 8.1.6 Use in vented attic spaces and crawlspaces without an ignition barrier in accordance with IBC Section 2603.9, IRC Section R303.5.3,⁴³ IRC Section R303.5.4,⁴⁴ and IRC Section R303.6,⁴⁵ when used with DC315 (International Fireproof Technology, Inc.) or Flame Seal FS-IB (Flame Seal Products Inc.) or No-Burn Plus ThB (No-Burn, Inc.).
 - 8.1.7 Use without a thermal barrier in accordance with IBC Section 2603.4 and IRC Section R303.4,⁴⁶ when used with DC315 (International Fireproof Technology, Inc.).
- 8.2 Any building code, regulation and/or accepted engineering evaluations (i.e., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ, which is an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP or approved sources. DrJ is qualified⁴⁷ to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,⁴⁸ respectively.
- 8.3 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise, which is also its areas of professional engineering competence.

9 Installation

- 9.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.
- 9.2 In the event of a conflict between the manufacturer installation instructions and this report, contact the manufacturer for counsel on the proper installation method.
- 9.3 *Installation Procedure*
- 9.3.1 The insulation shall be applied by certified and trained contractors of Amrize Building Envelope, LLC.
 - 9.3.2 A copy of manufacturer installation instructions shall be available at all times.
 - 9.3.3 Enverge EasySeal Ultra Spray Foam Insulation shall be applied using two-component spray equipment and shall be applied using a 1.5:1 ratio of Component A (isocyanate), and Component B (resin).
 - 9.3.4 The substrate shall be dry and free of frost, ice, rust, oil, grease, dirt, or any other substances that may prevent adhesion of the SPF to the substrate.
 - 9.3.5 Enverge EasySeal Ultra Spray Foam Insulation is intended for interior use only and shall not to be used where the product could come in contact with water.
 - 9.3.5.1 Protection from weather during and after installation shall be provided.
 - 9.3.6 Where used as an air barrier in unventilated attics, the insulation shall be installed to a minimum thickness of 3¹/₂" and shall be installed in accordance with the provisions of IRC Section R806.



- 9.3.7 Enverge EasySeal Ultra Spray Foam Insulation may be installed to the required thickness with one pass of the spray equipment. If installation using multiple passes is desired, no cure time is required between passes.
- 9.3.8 Enverge EasySeal Ultra Spray Foam Insulation shall not be used inside of electrical or junction boxes.
- 9.3.9 Enverge EasySeal Ultra Spray Foam Insulation shall be installed only when the air temperature is at or above 30° F (-1° C).
- 9.3.10 Insulation shall not be installed in areas where the service temperature is greater than 180° F (82° C).
- 9.3.11 For general SPF installation guidelines, see the American Chemistry Council's, Guidance on Best Practices for the Installation of Spray Polyurethane Foam.

10 Substantiating Data

- 10.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:
 - 10.1.1 Testing and data in accordance with NFPA 286 with DC315 for interior finish applications performed by ICC-NTA.
 - 10.1.2 Testing and data in accordance with NFPA 286 modified for unventilated attics performed by QAI.
 - 10.1.3 Testing and data in accordance with NFPA 286 modified for unventilated attics performed by ICC-NTA.
 - 10.1.4 Engineering analysis for use of Enverge EasySeal Ultra Spray Foam Insulation in unvented attics performed by Priest & Associates.
- 10.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies, approved sources, and/or an RDP. Accuracy of external test data and resulting analysis is relied upon.
- 10.3 Where applicable, testing and/or engineering analysis are based upon provisions that have been codified into law through state or local adoption of regulations and standards. The developers of these regulations and standards are responsible for the reliability of published content. DrJ's engineering practice may use a regulation-adopted provision as the control. A regulation-endorsed control versus a simulation of the conditions of application to occur establishes a new material as being equivalent to the regulatory provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.
- 10.4 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, or duly authenticated reports from approved agencies and/or approved sources provided by the supplier. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this duly authenticated report, may be dependent upon published design properties by others.
- 10.5 *Testing and Engineering Analysis*
 - 10.5.1 The strength, rigidity, and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.⁴⁹
- 10.6 Where additional condition of use and/or regulatory compliance information is required, please search for Enverge EasySeal Ultra Spray Foam Insulation on the DrJ Certification website.



11 Findings

- 11.1 As outlined in **Section 6**, Enverge EasySeal Ultra Spray Foam Insulation has performance characteristics that were tested and/or meet applicable regulations. In addition, they are suitable for use pursuant to its specified purpose.
- 11.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, Enverge EasySeal Ultra Spray Foam Insulation shall be approved for the following applications:
- 11.2.1 Use as thermal insulation in buildings constructed in accordance with the IBC or IRC.
- 11.2.2 Use in unvented attic spaces and crawlspaces without a thermal barrier or ignition barrier in accordance with IBC Section 2603.9, IRC Section R303.4,⁵⁰ and IRC Section R303.6,⁵¹
- 11.3 Unless exempt by state statute, when Enverge EasySeal Ultra Spray Foam Insulation is to be used as a structural and/or building envelope component in the design of a specific building, the design shall be performed by an RDP.
- 11.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Amrize Building Envelope, LLC.
- 11.5 IBC Section 104.2.3⁵² (IRC Section R104.2.2⁵³ and IFC Section 104.2.3⁵⁴ are similar) in pertinent part state:
- 104.2.3 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 is not specifically prohibited by this code and has been approved.
- 11.6 **Approved:**⁵⁵ Building regulations require that the building official shall accept duly authenticated reports.⁵⁶
- 11.6.1 An approved agency is “*approved*” when it is ANAB ISO/IEC 17065 accredited.
- 11.6.2 An approved source is “*approved*” when an RDP is properly licensed to transact engineering commerce.
- 11.6.3 Federal law, Title 18 US Code Section 242, requires that, where the alternative product, material, service, design, assembly, and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved. Denial without written reason deprives a protected right to free and fair competition in the marketplace.
- 11.7 DrJ is a licensed engineering company, employs licensed RDPs and is an ANAB Accredited Product Certification Body – Accreditation #1131.
- 11.8 Through the IAF Multilateral Arrangement (MLA), this duly authenticated report can be used to obtain product approval in any jurisdiction or country because all ANAB ISO/IEC 17065 duly authenticated reports are equivalent.⁵⁷

12 Conditions of Use

- 12.1 As defined in **Section 6**, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.
- 12.2 As listed herein, Enverge EasySeal Ultra Spray Foam Insulation shall:
- 12.2.1 Be separated from the interior of the building by an approved 15-minute thermal barrier, except as noted in this report.
- 12.2.2 Meet the minimum thicknesses and densities noted in this report.
- 12.2.3 Be protected from the weather during and after application.
- 12.2.4 Be applied by licensed dealers and installers certified by Amrize Building Envelope, LLC.
- 12.3 The manufacturer installation instructions and this report shall be available on the jobsite for inspection.



- 12.4 Use of the SPF insulation in areas where the probability of termite infestation is “*very heavy*” shall be in accordance with IBC Section 2603.8 and IRC Section R305.4⁵⁸ per IRC Section R303.7,⁵⁹ as applicable.
- 12.5 Jobsite certification and labeling of the SPF insulation shall comply with IRC Section N1101.10.1, IRC Section R1101.10.1.1, IECC Section C303.1.1, and IECC Section C303.1.1.1.
- 12.6 A vapor retarder shall be installed in accordance with the applicable code.
- 12.7 The resin used to produce Enverge EasySeal Ultra Spray Foam Insulation is manufactured in Spring, Texas and Saint Louis, Missouri, under a quality control program with inspections in accordance with IBC Section 2603.2 and IRC Section R303.2.⁶⁰
- 12.8 When required by adopted legislation and enforced by the building official, also known as the Authority Having Jurisdiction (AHJ) in which the project is to be constructed:
 - 12.8.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an approved source, shall be approved when signed and sealed.
 - 12.8.2 This report and the installation instructions shall be submitted at the time of permit application.
 - 12.8.3 This innovative product has an internal quality control program and a third-party quality assurance program.
 - 12.8.4 At a minimum, this innovative product shall be installed per **Section 9**.
 - 12.8.5 The review of this report by the AHJ shall comply with IBC Section 104.2.3.2 and IBC Section 105.3.1.
 - 12.8.6 This innovative product has an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.7.2, IBC Section 110.4, IBC Section 1703, IRC Section R104.7.2, and IRC Section R109.2.
 - 12.8.7 The application of this innovative product in the context of this report is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspection as required by IBC Section 110.3, IRC Section R109.2, and any other regulatory requirements that may apply.
- 12.9 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, “*the building official shall make, or cause to be made, the necessary tests and investigations; or the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in Section 104.2.3”, all of IBC Section 104, and IBC Section 105.3.*
- 12.10 Design loads shall be determined in accordance with the regulations adopted by the jurisdiction in which the project is to be constructed and/or by the building designer (i.e., owner or RDP).
- 12.11 The actual design, suitability, and use of this report for any particular building, is the responsibility of the owner or the authorized agent of the owner.

13 Identification

- 13.1 Enverge EasySeal Ultra Spray Foam Insulation, as listed in **Section 1.1**, is identified by a label on the board or packaging material bearing the manufacturer name, product name, this report number, and other information to confirm code compliance.
- 13.2 Additional technical information can be found at www.envergesprayfoam.com.

14 Review Schedule

- 14.1 This report is subject to periodic review and revision. For the latest version, visit www.drjcertification.org.
- 14.2 For information on the status of this report, please contact DrJ Certification.



34 [2021 IRC Section R316.5.4](#)

35 [2021 IRC Section R316.6](#)

36 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4>

37 <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#:~:text=All%20construction%20methods%20shall%20be%20in%20conformance%20with%20accepted%20engineering%20practices%20to%20insure%20durable%2C%20livable%2C%20and%20safe%20housing%20and%20shall%20demonstrate%20acceptable%20workmanship%20reflecting%20journeyman%20quality%20of%20work%20of%20the%20various%20trades>

38 <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#:~:text=The%20strength%20and%20rigidity%20of%20the%20component%20parts%20and/or%20the%20integrated%20structure%20shall%20be%20determined%20by%20engineering%20analysis%20or%20by%20suitable%20load%20tests%20to%20simulate%20the%20actual%20loads%20and%20conditions%20of%20application%20that%20occur>

39 [2021 IECC Section C402.5.1.3 AND 2018 IECC Section C402.5.1.2.1](#)

40 [2021 IRC Section R316.3](#)

41 [2021 IRC Section R316.4](#)

42 [2021 IRC Section R316.6](#)

43 [2021 IRC Section R316.5.3](#)

44 [2021 IRC Section R316.5.4](#)

45 [2021 IRC Section R316.6](#)

46 [2021 IRC Section R316.4](#)

47 Qualification is performed by a legislatively defined Accreditation Body. ANSI National Accreditation Board (ANAB) is the largest independent accreditation body in North America and provides services in more than 75 countries. Dr.J is an ANAB accredited product certification body.

48 <https://anabpd.ansi.org/Accreditation/product-certification/AllDirectoryDetails?prgID=1&orgID=2125&statusID=4#:~:text=Bill%20Payment%20Date-.Accredited%20Scopes,-13%20ENVIRONMENT.%20HEALTH>

49 See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition: <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>

50 [2021 IRC Section R316.4](#)

51 [2021 IRC Section R316.6](#)

52 [2021 IBC Section 104.11](#)

53 [2021 IRC Section R104.11](#)

54 **2018:** <https://up.codes/viewer/wyoming/ifc-2018/chapter/1/scope-and-administration#104.9> **AND 2021:** <https://up.codes/viewer/wyoming/ibc-2021/chapter/1/scope-and-administration#104.11>

55 **Approved** is an adjective that modifies the noun after it. For example, **Approved Agency** means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC [Section 201.4](#) (<https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#201.4>) where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

56 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1>

57 **Multilateral approval** is true for all ANAB accredited product evaluation agencies and all International Trade Agreements.

58 [2021 IRC Section R318.4](#)

59 [2021 IRC Section R316.7](#)

60 [2021 IRC Section R316.2](#)