



CARLISLE SPRAY FOAM INSULATION
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SealTite™ PRO Open Cell

CSI Section:

07 21 00 Thermal Insulation

1.0 RECOGNITION

SealTite™ PRO Open Cell described in this report has been evaluated for use as thermal insulation and for use in Types I through V construction. The physical properties, thermal resistance, surface burning characteristics, air permeability, fire-resistance-rating, attic and crawl space installations were evaluated for compliance with the following codes and regulations:

- 2018, 2015, 2012 2009, and 2006 International Building Code® (IBC)
- 2018, 2015, 2012 2009, and 2006 International Residential Code® (IRC)
- 2018, 2015, 2012 2009, and 2006 International Energy Conservation Code® (IECC)

2.0 LIMITATIONS

Use of SealTite™ PRO Open Cell recognized in this report is subject to the following limitations:

2.1 The insulation shall be installed in accordance with the manufacturer’s published installation instructions, this evaluation report and the applicable code. If there are any conflicts between the manufacturer’s published installation instructions and this report, the more restrictive shall govern.

2.2 In accordance with Sections 4.6.1 and 4.6.2 of this report, the insulation shall be separated from the interior of the building by a code-complying thermal barrier or ignition barrier as appropriate.

2.3 The insulation shall not exceed the nominal density and thickness for the installation conditions described in this report.

2.4 During application, the insulation shall be protected from exposure to weather.

2.5 The insulation shall be installed by professional spray polyurethane foam installers approved by Carlisle Spray Foam Insulation, or by the Spray Polyurethane Foam Alliance (SPFA).

2.6 Use of the insulation in areas of “very heavy” termite infestation probability shall be in accordance with 2018 and 2015 IBC Section 2603.8, 2012 IBC Section 2603.9, 2009 or 2006 IBC Section 2603.8, or 2018, 2015, 2012 and 2009 IRC Section R318.4, or 2006 IRC Section R320.5, as applicable.

2.7 When required by the applicable code, a vapor retarder shall be installed.

2.8 Labeling and jobsite certification of the insulation and coatings shall comply with the following code sections as applicable:

- 2018, 2015, 2012, 2009 or 2006 IBC Section 2603.2
- 2018, 2015, 2012 or 2009 IRC Section R316.2
- 2018, 2015 IRC Section N1101.10.1.1
- 2012 IRC Section N1101.12.1.1
- 2009 IRC Section N1101.4.1
- 2018, 2015 or 2012 IECC Sections C303.1.1.1 or R303.1.1.1
- 2009 IECC Section 303.1.1.1

2.9 Foam Plastic used in plenums as interior finish or interior trim under the 2018 edition IBC shall comply with Section 2603.7.

2.10 The insulation shall be produced by Carlisle Spray Foam Insulation in Cartersville, Georgia.

3.0 PRODUCT USE

SealTite™ PRO Open Cell complies with IBC Section 2603, IRC Section R316, 2012 IECC Sections C303, C402, R303, and R402, 2009 IECC Sections 303 and 402, and 2006 IECC Section 402. When installed in accordance with Section 4.0 of this report, the foam plastic insulation may be used in wall cavities, floor assemblies or ceiling assemblies, and/or in attics and crawl spaces as nonstructural thermal insulation material. SealTite™ PRO Open Cell insulation is used in Type V construction under the IBC and in one- and two-family dwellings under the IRC.

SealTite™ PRO Open Cell insulation may also be used in Types I, II, III or IV construction when installed in accordance with Section 4.6.3 of this report.

SealTite™ PRO Open Cell may be used as air impermeable insulation when installed in accordance with Section 4.4 of this report.

4.0 PRODUCT DESCRIPTION

4.1 Properties: SealTite™ PRO Open Cell is open cell, spray-applied polyurethane foam plastic insulation in accordance with Section 3.1.1 and Table 1 of AC377. The insulation has a nominal in-place density of 0.5 pcf (8 kg/m³).

The product described in this Uniform Evaluation Service (UES) Report has been evaluated as an alternative material, design or method of construction in order to satisfy and comply with the intent of the provision of the code, as noted in this report, and for at least equivalence to that prescribed in the code in quality, strength, effectiveness, fire resistance, durability and safety, as applicable, in accordance with IBC Section 104.11. This document shall only be reproduced in its entirety.





The two-component spray foam plastic is produced in the field by combining a polymeric isocyanate (A component) and a polymeric resin (B component). The liquid components shall be stored in 55-gallon (208 L) drums at temperatures between 65°F and 85°F (18°C and 29°C). When Component A and Component B are stored in factory-sealed containers at the recommended temperatures, the maximum shelf life is six months.

4.2 Thermal Resistance (R-Values): SealTite™ PRO Open Cell has thermal resistance (R-Value) at a mean temperature of 75°F (24°C) as shown in Table 1 of this report.

Thickness (inch)	R-Value (°F·ft ² ·h/Btu)
1	3.7
2	7.3
3	11
3.5	13
4	15
5	18
5.5	20
6	22
7	26
7.5	27
8	29
9	33
9.5	35
10	37
11.5	42
12	44
16	59

For SI: 1 inch = 25.4 mm, 1°F·ft²·h/Btu = 0.176 110 K·m²/W.
¹R-Values are calculated based on tested K values at 1-inch and 3.5-inch thicknesses.

4.3 Surface Burning Characteristics: At a maximum thickness of 4 inches (102 mm) and a nominal density of 0.5 pcf (8.0 kg/m³), the SealTite™ PRO Open Cell insulation yields a flame spread index of 25 or less and smoke-developed index of 450 or less when tested in accordance with ASTM E84. Greater thicknesses, depending on the end use, are recognized when installed in accordance with this report.

4.4 Air Permeability: SealTite™ PRO Open Cell insulation is classified as air-impermeable insulation when tested in accordance with ASTM E283 at a minimum thickness of 3-inches (76 mm), in accordance with 2018 IBC Section 1202.3, 2015 IBC Section 1203.3, 2018, 2015 and 2012 IRC Section R806.5 and 2009 and 2006 IRC Section R806.4.

4.5 Fire- Protective Coatings and Coverings: Fire protective coatings, for use as alternative thermal barriers or ignition barriers, shall be in accordance with Tables 2 and 3 of this report, as applicable, and installed in accordance with Section 4.6 of this report.

4.6 Installation: SealTite™ PRO Open Cell shall comply with one of the following requirements:

- 2018, 2015, 2012 IECC Sections C402.1 (prescriptive)
- 2018, 2015, 2012 IECC Section R402.1 (prescriptive)
- 2009 IECC Sections 402, 405, 502 or 506 as appropriate.

The manufacturer’s published installation instructions for SealTite™ PRO Open Cell insulation and this report shall be available on the jobsite during installation.

SealTite™ PRO Open Cell insulation shall be spray-applied on the jobsite using equipment specified in the manufacturer’s published installation instructions. The insulation is applied in multiple passes having a maximum thickness of 6 inches (152 mm) per pass up to the maximum insulation thickness specified in this report. The spray-applied foam plastic insulation shall be allowed to fully expand and cure for a minimum of 15 minutes prior to application of additional passes. The maximum in-service temperature for all areas shall not exceed the maximum temperature stated in the manufacturer’s published installation instructions. The insulation shall be sprayed onto a substrate that is protected and clean from any debris or weather-related conditions during and after application and shall not be used in electrical outlets or junction boxes or in contact with rain, water, or soil.

4.6.1 Thermal Barrier

4.6.1.1 Application With a Prescriptive Thermal Barrier: SealTite™ PRO Open Cell, at any thickness, in ceiling cavities and in wall cavities shall be separated from the interior by an approved thermal barrier of minimum ½ inch thick (12.7 mm) gypsum wallboard or equivalent 15-minute thermal barrier. The thermal barrier shall comply with, and be installed in accordance with the 2018, 2015, 2012 and 2006 IBC Section 2603.4, or the 2018, 2015, 2012 and 2009 IRC Section R316.4 or 2006 IRC Section 314.4, as applicable.

4.6.1.2 Alternative Thermal Barrier Assemblies: SealTite™ PRO Open Cell may be installed without a prescriptive thermal barrier as defined in Section 4.6.1.1 of this report when installed in accordance with Table 2 of this report.

4.6.2 Installation in Attics or Crawl Spaces: SealTite™ PRO Open Cell may be installed in attics or crawl spaces when installed in accordance with this section (Section 4.6.2). The insulation may be installed in unvented attics and unvented enclosed rafter spaces for use as air-impermeable insulation described in Section 4.4 of this report.

When installed in attics or crawl spaces where entry is made only for the service of utilities, SealTite™ PRO Open Cell insulation may be installed in accordance with this section. SealTite™ PRO Open Cell insulation need not be surfaced



with a thermal barrier, however, such attic and crawl space areas shall be separated from the interior of the building by a thermal barrier in accordance with Section 4.6.1 of this report.

4.6.2.1 Installation Using a Prescriptive Ignition Barrier:

When installed within attics or crawl spaces where entry is made only for the service of utilities, SealTite™ PRO Open Cell spray-applied polyurethane foam plastic insulation, at maximum of 4 inches (102 mm) thick shall be covered with a prescriptive ignition barrier in accordance with 2018, 2015, 2012, 2009 or 2006 IBC Section 2603.4.1.6, or 2018, 2015, 2012 or 2009 IRC Sections R316.5.3 and R316.5.4 or 2006 IRC Sections R314.5.3 and R314.5.4, as applicable.

Exception: The prescriptive ignition barrier may be omitted when installed in accordance with Section 4.6.2.2 or Section 4.6.2.3 of this report.

4.6.2.2 Installation Using an Alternative Ignition Barrier Assembly: SealTite™ PRO Open Cell may be installed in attics and crawl spaces using an alternative ignition barrier assembly provided:

- a. Entry is only to service utilities in the attic or crawl space and no storage is permitted.
- b. Attic or crawl space areas cannot be interconnected.
- c. Air from the attic or crawl space cannot be circulated to other parts of the building.
- d. Attic ventilation is provided as required by the 2018 IBC Section 1202 or 2018 edition IRC Section R806 except where air-impermeable insulation is permitted in unvented attics and shall comply with the following code sections as applicable:

For Unvented Attics:

- 2018 IBC Section 1202.3
- 2015 IBC Section 1203.3
- 2018, 2015 and 2012 IRC Section R806.5
- 2009 IRC Section R806.4

Crawl space ventilation is provided as required by the following code sections as applicable:

- 2018 IBC Section 1202.4
- 2015 IBC Section 1203.4
- 2012, 2009 and 2006 IBC Section 1203.3
- 2018, 2015, 2012, 2009 and 2006 IRC Section R408.1

- e. The foam plastic insulation is limited to the maximum thickness and density tested.
- f. In accordance with IMC (International Mechanical Code®) Section 701, [2006 IMC Sections 701 and 703], combustion air is provided.
- g. The installed coverage rate or thickness of coatings shall be equal to or greater than described in Section 4.6.2.3 of this report.

4.6.2.3 Installation Using an Alternative Ignition Barrier with Application of Fire-Protective Coatings: SealTite™ PRO Open Cell

may be spray-applied in attics to the underside of roof sheathing or roof rafters, and vertical surfaces; and may be spray-applied in crawl spaces to the underside of floors and vertical surfaces as described in this section. Coating thickness shall be in accordance with Table 3 of this report.

The coating shall be applied over the insulation using airless spray equipment, roller, or a brush in accordance with the coating manufacturer's published installation instructions and this report. The ambient and substrate temperatures shall be minimum 50°F (10°C), and the surface shall be dry, clean, free of dirt and loose debris, and any other substance that could interfere with adhesion of the coating.

4.6.3 Exterior Walls of Types I, II, III or IV Construction (IBC)

4.6.3.1 General: When SealTite™ PRO Open Cell insulation is used in exterior walls of Types I, II, III or IV construction of any height, the insulation shall comply with IBC Section 2603.5 and this section.

4.6.3.2 Complying Exterior Wall Assemblies: Wall assemblies that comply with Section 2603.5 of the IBC and this Section of this report (Section 4.6.3.2) may be used in non-loadbearing exterior walls of buildings of Type I, II, III or IV construction of any height. The wall assembly shall consist 3⁵/₈-inch (92 mm) wide, No. 20 gage steel studs, spaced maximum of 24 inches (610 mm) on center. Openings, for windows, doors, etc., shall be framed with minimum No. 20 gage steel framing. The exterior of the wall, and openings, shall be covered with ⁵/₈-inch (15.9 mm) thick Type X water-resistant-core glass mat gypsum substrate sheathing complying with ASTM C1177 fastened with 1¹/₄-inch (32 mm) long self-tapping screws spaced 8 inches (203 mm) around the perimeter and 12 inches (305 mm) in the field. SealTite™ PRO Open Cell insulation is spray applied to the full depth of the studs, maximum of 3⁵/₈ inch (92 mm) thick. A layer of ⁵/₈-inch (15.9 mm) thick Type X gypsum wallboard complying with ASTM C1396 is installed on the interior surface and fastened with 1¹/₄ inch (32 mm) long self-tapping screws spaced 8 inches (203 mm) around the perimeter and 12 inch (305 mm) in the field.

4.7 Non-Loadbearing One-Hour Fire-Resistance-Rated Wall Assemblies:

SealTite™ PRO Open Cell may be used in non-loadbearing one-hour fire-resistance-rated wall assemblies in accordance with this section. Steel studs shall be nominally 5¹/₂ inch (140 mm) deep, minimum No. 20 gauge, spaced a maximum of 24 inches (610 mm) on-center. The interior of the wall assembly shall be covered with minimum ⁵/₈ inch (15.9 mm) thick Type X gypsum wallboard complying with ASTM C1396 fastened with No. 6, 1¹/₄ inch (32 mm) long self-drilling drywall screws spaced 8 inches (203 mm) on-center around the perimeter and 12 inches (305 mm) on-center in the field. The foam plastic insulation shall



be spray-applied into the stud cavities to a maximum nominal thickness of 4-inches (102 mm). The exterior of the wall assembly shall be covered with minimum $\frac{5}{8}$ inch (15.9 mm) thick Type X exterior gypsum sheathing complying with ASTM C1396 fastened with No. 6, $1\frac{1}{4}$ inch (32 mm) long self-drilling drywall screws spaced 8 inches (203 mm) on-center around the perimeter and 12 inches (305 mm) on-center in the field. A layer of DuPont Tyvek HomeWrap water-resistive barrier shall be attached over the Type X exterior gypsum sheathing. The water-resistive barrier shall be covered with $\frac{5}{16}$ -inch (7.9 mm) thick HardiPanel[®] cement board fastened with screws spaced 6 inches (152 mm) on-center around the perimeter and 12 inches (305 mm) on-center in the field.

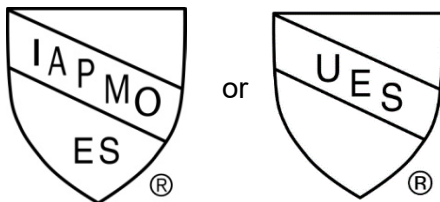
4.8 Load Bearing One-Hour Fire-Resistant-Rated Wall Assembly: SealTite[™] PRO Open Cell spray-applied polyurethane foam plastic insulation may be used in loadbearing one-hour fire-resistance-rated wall assemblies in accordance with this section. As described in the Gypsum Association-600-2012 Fire Resistance Design Manual WP 3510. Wood studs are 2 x 4 nominal installed at 24 inches on center. $\frac{5}{8}$ -inch Type X gypsum wallboard applied parallel or at right angles to studs on each side with joints staggered 24 inches on opposite sides. Fasteners are 6d coated nails, minimum 1-7/8-inch long, 0.0915-inch shank diameter at 7 inches on center. Fastener heads shall be $\frac{1}{4}$ -inch.

5.0 IDENTIFICATION

The spray foam insulation is identified with the following:

- a. Manufacturer's name (Carlisle Spray Foam Insulation)
- b. address and telephone number,
- c. the product trade name (SealTite[™] PRO Open Cell)
- d. use instructions
- e. density, flame-spread and smoke-development indices
- f. date of manufacture or batch/run number
- g. thermal resistance values
- h. the evaluation report number (ER-624)
- i. the name or logo of the inspection agency

Either mark of conformity may be used as shown below:



IAPMO UES ER-624

6.0 SUBSTANTIATING DATA

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation, AC377, dated April 2016, including Appendix X. (Editorially Revised in April 2018).

6.2 Reports of room corner fire testing in accordance with NFPA 286.

6.3 Report of Fire Tests of Building Construction in accordance with ASTM E119.

6.4 Report of air permeance testing in accordance with ASTM E283.

6.5 Report of room corner fire testing in accordance with UL 1715.

7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research carried out by IAPMO Uniform Evaluation Service on SealTite[™] PRO Open Cell to assess its conformance to the codes and standards shown in Section 1.0 of this report and documents the product's certification. Products are manufactured at location noted in Section 2.10 of this report under a quality control program with periodic inspections under the supervision of IAPMO UES.

For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org



FIRE-PROTECTIVE COATING/COVERING ¹			MAXIMUM SPF THICKNESS (inch)	
TYPE	MINIMUM THICKNESS (mils)	THEORETICAL APPLICATION RATE	WALLS AND VERTICAL SURFACES	CEILING AND OVERHEAD SURFACES
DC315 ³	14 WFT 9 DFT	115 ft ² /gal.	8.5	14
Fireshell® BMS TC ⁴	20 WFT (12 DFT)	83 ft ² /gal.	7.5	9.5
Plus ThB ⁵	14 WFT (9 DFT)	115 ft ² /gal.	8.5	14

For SI: 1 inch = 25.4 mm, 1 gallon = 3.785 L, 1 ft² = 0.0929 m²

¹ Fire-protective coatings and coverings shall be applied over all exposed SPF surfaces in accordance with the coating/covering manufacturer's instructions and this report.

² Potential Heat of SealTite PRO Open Cell is 11,717.96 BTU/lb.

³ International Fireproof Technology, Inc, recognized in [IAPMO UES ER-499](#).

⁴ TPR² Corporation

⁵ No-Burn®, Inc., recognized in IAPMO UES ER-305

FIRE-PROTECTIVE COATING/COVERAGE ¹			MAXIMUM SPF THICKNESS (inch)	
TYPE	MINIMUM THICKNESS (mils)	THEORETICAL APPLICATION RATE	WALLS AND VERTICAL SURFACES	CEILINGS AND OVERHEAD SURFACES
No Burn Plus XD ²	6 WFT (4 DFT)	267 ft ² /gal.	11.25	16
Flame Seal FS-IB™ ³	7.5 WFT (4 DFT)	200 ft ² /gal.	12	16
Fireshell IB 4 ⁴	5 WFT (3.5 DFT)	83 ft ² /gal.	7.5	9.5
Fireshell® BMS IC ⁴	7 WFT (4 DFT)	230 ft ² /gal.	7.0	9.5
DC 315 ⁵	4 WFT (3 DFT)	400 ft ² /gal	7.5	11.5

For SI: 1 inch = 25.4 mm, 1 gallon = 3.785 L, 1 ft² = 0.0929 m²

¹ Fire-protective coatings and coverings must be applied over all exposed SPF surfaces in accordance with the coating/covering manufacturer's instructions and this report.

² No-Burn, Inc., recognized in [IAPMO UES ER-305](#).

³ Flame Seal Products, Inc.

⁴ TPR² Corporation.

⁵ International Fireproof Technology, Inc, recognized in [IAPMO UES ER-499](#).