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PROSEAL

CSI Section:
07 21 00 Thermal Insulation

1.0 RECOGNITION

Profoam Corporations' PROSEAL closed cell spray-applied polyurethane foam plastic insulation recognized in this report has been evaluated for use as non-structural thermal insulation material. The surface burning characteristics and physical and thermal properties comply with the intent of the provisions of the following codes and regulations:

- 2021, 2018, and 2015 International Building Code® (IBC)
- 2021, 2018, and 2015 International Residential Code® (IRC)
- 2021, 2018, and 2015 International Energy Conservation Code® (IECC)

2.0 LIMITATIONS

Use of PROSEAL closed cell spray-applied polyurethane foam plastic insulation recognized in this report is subject to the following limitations:

2.1 The insulation shall be installed in accordance with the applicable code, the manufacturer's published installation instructions, and this report. Where there is a conflict, the most restrictive requirements shall govern.

2.2 PROSEAL closed cell spray-applied polyurethane foam plastic insulation shall be installed by applicators approved by Profoam Corporation. Alternatively, applicators who have a current SPFA PCP certification may be authorized to install.

2.3 PROSEAL closed cell spray-applied polyurethane foam plastic insulation when used in areas where, in the likelihood termite infestation is "very heavy", shall be installed in accordance with IBC Section 2603.8 or IRC Section R318.4, as applicable.

2.4 Jobsite labeling and certification of the insulation shall comply with the IRC Sections N1101.10 and N1101.10.1.1 and IECC Sections C303.1.1 and C303.1.2, as applicable.

2.5 Where applicable, PROSEAL closed cell spray-applied polyurethane foam plastic insulation shall be installed with a vapor retarder in accordance with the applicable code.

2.6 Except as indicated in Section 3.3.3.2 of this report or by the applicable code, the insulation shall be separated from the interior of the building by a code approved thermal barrier.

2.7 During installation, the insulation and the surfaces to which they are applied shall be protected from exposure to weather.

3.0 PRODUCT USE

3.1 General: PROSEAL closed cell insulation is used as nonstructural thermal insulating material in Types I - V construction under the IBC and dwellings under the IRC. The insulation complies with IBC Section 2603; IRC Section R316; and IECC Sections C303, C402, R303; and R402.

3.2 Design:

3.2.1 Surface Burning Characteristics: Polyurethane foam plastic insulation, at a maximum thickness of 4 inches (102 mm) and a nominal density of 2.0 pcf (32 kg/m^3), has a flame spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84.

3.2.2 Thermal Resistance: For uses in accordance with the IECC or other codes, PROSEAL closed cell spray-applied polyurethane foam plastic insulation has a thermal resistance, R-value, at a mean temperature of 75°F (24°C) as shown in Table 1 of this report.

TABLE 1— PROSEAL Closed Cell Thermal Resistance (R-Values)[1]

Thickness (inch)	**PROSEAL R-Value** (°F•ft^2•hr/Btu)
1.0	7.2
2.0	14
3.5	25
4.0	27
5.5	38
7.5	51
9.5	65
11.5	78

SI: 1 inch = 25.4 mm; 1 °F•ft^2•hr/Btu = 0.176 °K•m^2•hr/W
[1] R-values are calculated based on tested k-factors at 1- and 3.5-inch thicknesses.

3.3 Installation:

3.3.1 Installation General: PROSEAL closed cell spray-applied polyurethane foam plastic insulation shall be installed in accordance with the manufacturer's published installation instructions and this report. A copy of these

instructions and this evaluation report shall be available on the job site at all times during installation.

3.3.2 Application: PROSEAL closed cell spray-applied polyurethane foam plastic insulation shall be applied using spray equipment specified by Profoam Corporation.

3.3.3 Thermal Barrier:

3.3.3.1 Application with a Prescriptive Thermal Barrier: PROSEAL closed cell spray-applied polyurethane foam plastic insulation shall be separated from the interior of the building by an approved thermal barrier of $^1/_2$-inch-thick (12.7 mm) gypsum wallboard or an equivalent 15-minute thermal barrier complying with and installed in accordance with the applicable code.

3.3.3.2 Application with an Alternative Thermal Barrier Assembly: PROSEAL closed cell spray-applied polyurethane foam plastic insulation may be installed without a thermal barrier as defined in Section 3.3.3.1 of this report when installed with a fire-protective coating as described in Table 2 of this report based on testing in accordance with NFPA 286.

3.3.4 Attics and Crawl Spaces:

3.3.4.1 Application with a Prescriptive Ignition Barrier: When PROSEAL closed cell spray-applied polyurethane foam plastic insulation is installed within attics or crawl spaces where entry is made only for service of utilities, an ignition barrier shall be installed in accordance with IBC Section 2603.4.1.6 and IRC Sections R316.5.3 and R316.5.4, as applicable. The ignition barrier shall be consistent with the requirements for the type of construction required by the applicable code and shall be installed in a manner so that the foam plastic insulation is not exposed. PROSEAL closed cell spray-applied polyurethane foam plastic insulation, as described in this section, may be installed in unvented attics in accordance with IRC Section R806.4. The attic or crawl space area shall be separated from the interior of the building by an approved 15-minute thermal barrier as described in Section 3.3.3 of this report.

3.3.4.2 Application with an Alternative Ignition Barrier Assembly: Where the spray-applied insulation is installed in accordance with the following conditions apply, the prescriptive ignition barrier as required in Section 3.3.4.1 is not required:

a) Entry to the attic or crawl space is to service utilities, and no storage is permitted.
b) There are no interconnected attic or crawl space areas.
c) Air in the attic or crawl space is not circulated to other parts of the building.
d) Attic ventilation is provided when required by IBC Section 1203.2 or IRC Section R806, except when air impermeable insulation is permitted in unvented attics in accordance with the IRC Section R806.5. Under-floor (crawl space) ventilation is provided when required by IBC Section 1203.3 or IRC Section R408.1, as applicable.
e) Combustion air is provided in accordance with International Mechanical Code® Section 701.
f) Alternative ignition barrier assembly is provided as required in Section 3.3.4.2.1.

3.3.4.2.1 Alternative Ignition Barrier Assembly: PROSEAL closed cell spray-applied polyurethane foam plastic insulation may be applied at a nominal density of 2.0 pcf (32 kg/m^3) to the underside of roof sheathing or roof rafters and vertical surfaces of attics and in crawl spaces without a prescriptive ignition barrier or fire-protective coating. When applied to the underside of the top of the space, the thickness of PROSEAL closed cell spray-applied polyurethane foam plastic insulation shall not exceed 10 inches (254 mm), and when applied to vertical surfaces or floor, the maximum thickness shall not exceed 6 inches (152 mm).

3.4 Air Permeability: PROSEAL closed cell spray-applied polyurethane foam plastic insulation is classified as air-impermeable insulation when tested in accordance with ASTM E2178 at a minimum thickness of $1^1/_2$ inches (38 mm) in accordance with 2021 and 2018 IBC Section 1202.3, 2015 IBC Section 1203.3, and IRC Section R806.5.

3.5 Water Vapor Transmission: PROSEAL closed cell spray-applied polyurethane foam plastic insulation, when tested in accordance with the ASTM E96 desiccant method, has a permeance of less than 1.0 perms (57.4 x 10^9 g/Pa·s·m), at a minimum thickness of 1 inch (25.4 mm) and qualifies as a Class II vapor retarder in accordance with IBC Section 202 and IRC Section R202.

4.0 PRODUCT DESCRIPTION

PROSEAL closed cell two-part medium-density spray-applied, closed-cell polyurethane foam plastic insulation has a nominal density of 2.0 pcf (32 kg/m^3). The two components of the insulation are polymeric isocyanate (A-Component) and proprietary resin (B-Component).

5.0 IDENTIFICATION

PROSEAL closed cell is identified by the Profoam Corporation name and trademark, product name, and evaluation report number (ER-1017). The IAPMO Uniform Evaluation Service Mark of Conformity may also be used as shown below:

IAPMO UES ER-1017

6.0 SUBSTANTIATING DATA

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation, AC377, dated April 2020 (Editorially Revised July 2020), including Appendix X.

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

6.3 Reports of air permeance testing in accordance with ASTM E2178.

6.4 Reports of testing for water vapor transmission with ASTM E96, desiccant method.

6.5 Test reports are from laboratories in compliance with ISO/IEC 17025.

7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research completed by IAPMO Uniform Evaluation Service on Profoam Corporation's PROSEAL closed cell to assess conformance to the codes shown in Section 1.0 of this report and serves as documentation of the product certification. Products are manufactured under a quality control program with periodic inspection 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

TABLE 2 – ALTERNATIVE THERMAL BARRIER ASSEMBLY – PROSEAL CLOSED CELL

FIRE-PROTECTIVE COATING/COVERING[1]			MAXIMUM SPF THICKNESS (inch)	
TYPE	MINIMUM THICKNESS (mils)	THEORETICAL APPLICATION RATE (COATINGS ONLY)	WALLS AND VERTICAL SURFACES	CEILING AND OVERHEAD SURFACES
DC315[2]	18 WFT (12 DFT)	1.1 gal/100 ft^2	7.25	7.25
Plus ThB[3]	14 WFT (9 DFT)	0.87 gal/100 ft^2	8	10
Flame Control[4] 60/60A	14 WFT (9 DFT)	0.87 gal/100 ft^2	8	10

For **SI:** 1 inch = 25.4 mm, 1 gallon = 3.785 L, 1 ft^2 = 0.0929 m^2

[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] International Fireproof Technology, Inc, recognized in IAPMO UES ER-499 and tested to the requirements of NFPA 286.
[3] No-Burn, Inc., recognized in IAPMO UES ER-305 and tested to the requirements of NFPA 286.
[4] Flame Control Coatings, recognized in IAPMO UES ER-596 and tested to the requirements of NFPA 286.