ICC-ES Evaluation Report

ESR-5170

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Subject to renewal October 2025

DIVISION: 07 00 00—THERMAL AND MOISTURE Section: 07 21 00—Thermal Insulation	REPORT HOLDER: BPI SYNERGY CHEMICAL, LLC	EVALUATION SUBJECT: PURESEAL 2.0 CLOSED CELL	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 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)

Properties evaluated:

- Physical Properties
- Surface-Burning Characteristics
- Thermal Resistance (R-values)

2.0 USES

Pureseal 2.0 Closed Cell insulation is a closed cell spray foam insulation used as a nonstructural thermal insulating material for Type V Construction under the IBC and dwellings under the IRC. The insulation is for use in wall cavities, floor assemblies, ceiling assemblies or attics and crawl spaces when installed in accordance with Section 4.4.

3.0 DESCRIPTION

3.1 Pureseal 2.0 Closed Cell:

Pureseal 2.0 Closed Cell insulation is a medium density rigid spray-applied cellular polyurethane foam plastic insulation. It is a two component, closed-cell, one-to-one volume spray foam system with a nominal density of 2.0 pcf (32 kg/m^3). The foam is produced by combining a polymeric isocyanate (A component) and a polymeric resin (B component). The components have a shelf life of 9 months when stored in factory-sealed containers at temperatures between 60°F and 80°F (16°C and 27°C).

3.2 Surface-Burning Characteristics:

Pureseal 2.0 Closed Cell insulation, at a maximum thickness of 4 inches (102 mm) and normal density of 2.0 pcf (32 kg/m^3), has a flame spread index of 25 or less and smoke-developed index of 450 or less when tested in accordance with ASTM E84 (UL 723). There are not any thickness limitations when insulation is covered by a code-prescribed thermal barrier.

3.3 Thermal Resistance (*R*-values):

Pureseal 2.0 Closed Cell insulation has a thermal resistance, *R*-value, as a mean temperature of 75°F (24°C), as shown in Table 1.

3.4 DC315 Coating:

DC315 Intumescent Coating, described in ESR-3702 and manufactured by International Fireproof Technology, Inc., is a single-component, water-based, liquid applied intumescent coating. The coating is supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums and has a shelf life of one (1) year when stored in factory-sealed containers at temperatures between 50°F (10°C) and 80°F (27°C).

4.0 DESIGN AND INSTALLATION

4.1 General:

The Pureseal 2.0 Closed Cell insulation must be installed in accordance with the manufacturer's published installation instructions and this report. A copy of the manufacturer's published installation instructions must be available at all times on the jobsite during installation.

4.2 Application:

The insulation is spray-applied on the jobsite using equipment identified in the manufacturer's published installation instructions. The Pureseal 2.0 Closed Cell insulation must be applied with the ambient and substrate temperatures is between 25°F (-4°C) and 110°F (43°C). The insulation must not be used in areas that have a maximum service temperature greater than 180°F (82°C). The foam plastic insulation must not be used in electrical outlets or junction boxes, or in continuous contact with rain or water. The substrate must be free of moisture, frost or ice, loose scales, rust, oil and grease, or contaminants that will interfere with adhesion of the spray foam insulation. The Pureseal 2.0 Closed Cell insulation is applied in passes having a maximum thickness of 2 inches (51 mm) per pass. When multiple passes are required, applicators should wait, a minimum of 15 minutes, until the core temperature of the foam has dropped below 100°F (37.8°C) before subsequent passes can be sprayed.

4.3 Thermal Barrier

4.3.1 Application with a Prescriptive Thermal Barrier

Pureseal 2.0 Closed Cell insulation must 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 thermal barrier complying with and installed in accordance IBC Section 2603.4 or IRC Section R316.4, as applicable. When installation is within an attic or crawl space as described in Section 4.4, a thermal barrier is not required between the foam plastic and the attic or crawl space but is required between the insulation and the interior of the building. There is no thickness limit when installed behind a code-prescribed thermal barrier.

4.3.2 **Application without a Prescriptive Thermal Barrier:** Pureseal 2.0 Closed Cell insulation may be installed without a thermal barrier prescribed in IBC Section 2603.4 and IRC Section R316.4, when installation is in accordance with this section. The insulation and coating may be spray-applied to the interior facing of the walls, the underside or roof sheathing or roof rafters, and in crawl spaces, and may be left exposed as an interior finish without a prescriptive thermal barrier. The thickness of the insulation applied to the underside of ceilings or roof sheathing must not exceed 4 inches (102 mm). The thickness of the insulation applied to vertical wall surfaces must not exceed 4 inches (102 mm). The insulation must be covered on all surfaces with DC315 (ESR-3702) at a minimum wet film thickness of 15 mils {[0.015-inch (0.381 mm)] [10 dry mils [0.010-inch (0.254 mm)]}, at a rate of 0.94 gallon (3.6 L) per 100 square feet (9.2 m^2). The substrate must be dry, clean, and free of dirt and loose debris or other substances that could interfere with the adhesion of the coating. The coating must be applied in accordance with the coating manufacturer's installation instructions when the ambient or surface temperature is below 50°F (10°C) or above 80°F (27°C) and relative humidity of more than 85%.

4.4 Ignition Barrier— Attics and Crawl Spaces —Application with a Prescriptive Ignition Barrier

When Pureseal 2.0 Closed Cell insulation is installed within the attics or crawl spaces where entry is made only for service of utilities, an ignition barrier must be installed in accordance with IBC Section 2603.4.1.6 and IRC Section R316.5.3 and R316.5.4, as applicable. The ignition barrier must be consistent with the requirements for the type of construction required by the applicable code, and must be installed in the manner so that the foam plastic insulation is not exposed. The attic or crawl space area must be separated from the interior of the building by an approved thermal barrier as described in Section 4.3.1.

5.0 CONDITIONS OF USE:

The Pureseal 2.0 Closed Cell insulation described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Application must comply with This report, the manufacturer's published installation instructions, and the applicable code. A copy of the installation instructions must be on the job site during application of the coating. In the event of conflict between the manufacturer's published installation instructions and this

report, this report governs. evaluation report and the manufacturer's published installation instructions, when required by the code official, must be submitted at the time of permit application.

5.2 Pureseal 2.0 Closed Cell insulation must be separated from the interior of the building by an approved thermal barrier, as described in Section 4.3.1. In attics and crawlspaces, the insulation must be separated from the interior of the attic or crawlspace by an ignition barrier, as described in Section 4.4.

5.3 Pureseal 2.0 Closed Cell insulation must be protected from the weather during application.

5.4 Pureseal 2.0 Closed Cell insulation must be applied by installers approved by BPI Synergy Chemical, LLC.

5.5 Use of Pureseal 2.0 Closed Cell insulation in areas where the probability of termite infestation is "very heavy" must be in accordance with IBC Section 2603.8 or IRC Section R318.4, as applicable.

5.6 Jobsite certification and labelling of the insulation must comply with IRC Sections N11011.10.1 and N1101.10.1.1 and IECC Sections C303.1.1, C303.1.1.1, R303.1.1 and R303.1.1.1, as applicable.

5.7 Pureseal 2.0 Closed Cell insulation is produced under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation (AC377), dated June 2023.

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-5170) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, components for Pureseal 2.0 Closed Cell insulation are identified with the manufacturer's name (BPI Synergy Chemical, LLC), address and telephone number; the product trade name (Pureseal 2.0 Closed Cell); the product type (A or B component); use instructions; the density; the flame-spread and smoke-developed indices; the evaluation report number (ESR-5170).

The International Fireproof Technology Inc. DC315 intumescent coating is identified with the manufacturer's name; the product trade name; date of manufacture, shelf life or expiration date; manufacturer's instructions for application and evaluation report number (ESR-3702).

7.3 The report holder's contact information is the following:

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Table 1- THERMAL RESISTANCE (*R*-VALUES)[1]

THICKNESS (inches)	*R*-VALUE (°F.ft^2.h/Btu)
1	6.8
2	14
3.5	24
4	27
5	34
6	41
7	48
8	55
9	62
10	69
11	76
12	82

For **SI**: 1 inch = 25.4 mm; 1°F.ft^2.hr/Btu = 0.176 110 k.m^2/W.

[1]Calculated *R*-values are based on tested K-values at 1- and 3.5-inch thicknesses.

[2]R-vlaues greater than 10 are rounded to the nearest whole number.