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CROSSIN 450 OPEN CELL SPRAY FOAM INSULATION

CSI Section:
07 21 00 Thermal Insulation

1.0 RECOGNITION

Crossin 450 Open Cell Spray Foam Insulation described in this report has been evaluated for use as thermal insulation and for use in Type V construction. The physical properties, thermal resistance, surface burning characteristics, attic and crawl space installations were evaluated for compliance with the following codes and regulations:

- 2018, 2015, and 2012 International Building Code® (IBC)
- 2018, 2015, and 2012 International Residential Code® (IRC)
- 2018, 2015, and 2012 International Energy Conservation Code® (IECC)
- 2018 International Green Construction Code® (IGCC) (Section 4.4.1)

2.0 LIMITATIONS

Use of Crossin 450 Open Cell Spray Foam Insulation 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 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, or 2018, 2015, and 2012 IRC Section R318.4, 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, and 2012 IBC Section 2603.2
- 2018, 2015, and 2012 IRC Section R316.2
- 2018 and 2015 IRC Section N1101.10.1.1
- 2012 IRC Section N1101.12.1.1
- 2018, 2015, or 2012 IECC Sections C303.1.1.1 or R303.1.1.1

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 product recognized in this report is produced by PCC Prodex Sp. z o.o. in Brzeg Dolny, Poland.

3.0 PRODUCT USE

Crossin 450 Open Cell Spray Foam Insulation complies with IBC Section 2603, IRC Section R316, 2012 IECC Sections C303, C402, R303, and R402. 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. Crossin 450 Open Cell Spray Foam Insulation is used in Type V construction under the IBC and in one- and two-family dwellings under the IRC.

Crossin 450 Open Cell Spray Foam Insulation 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: Crossin 450 Open Cell Spray Foam Insulation is an open cell, low density, 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 two-component spray foam plastic is produced in the field by

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.

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combining a polymeric isocyanate (A component) and a polymeric resin (B component). The polymeric resin shall be stored in 55-gallon (208 L) drums at temperatures between 23°F and 77°F (-5°C and 25°C). When Component B is stored in factory-sealed containers at the recommended temperatures, the maximum shelf life is six months.

4.2 Thermal Resistance (R-Values): Crossin 450 Open Cell Spray Foam Insulation 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	4.0
2	7.5
3	11
3.5	13
4	15
5	18
5.5	20
6	22
7	26
7.5	28
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 5 inches (127 mm) and a nominal density of 0.5 pcf (8.0 kg/m³), the Crossin 450 Open Cell Spray Foam 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: Crossin 450 Open Cell Spray Foam Insulation is classified as air-impermeable insulation when tested in accordance with ASTM E2178 at a minimum thickness of 4½ inches (114 mm), in accordance with 2018 IBC 1202.3, 2015 IBC Section 1203.3 and 2018, 2015, and 2012 IRC Section R806.5.

4.4.1 Compliance with the International Green Construction Code: Crossin 450 Open Cell Spray Foam Insulation meets the requirements of Section 701.3.1.1 of the 2018 International Green Construction Code when tested in accordance with Section 4.4 of this report.

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: Crossin 450 Open Cell Spray Foam Insulation shall comply with one of the following requirements:

- 2018, 2015, 2012 IECC Sections C402.1 (prescriptive)
- 2018, 2015, 2012 IECC Section R402.1 (prescriptive)

The manufacturer’s published installation instructions for Crossin 450 Open Cell Spray Foam Insulation and this report shall be available on the jobsite during installation. Where conflicts occur, the most restrictive governs.

Crossin 450 Open Cell Spray Foam 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 2 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 UV, rain, water, or soil.

4.6.1 Thermal Barrier

4.6.1.1 Application with a Prescriptive Thermal Barrier: Crossin 450 Open Cell Spray Foam Insulation, 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, and 2012 IBC Section 2603.4, or the 2018, 2015, and 2012 IRC Section R316.4, as applicable.

4.6.1.2 Alternative Thermal Barrier Assemblies: Crossin 450 Open Cell Spray Foam Insulation 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: Crossin 450 Open Cell Spray Foam Insulation 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, Crossin 450 Open Cell Spray Foam Insulation may be installed in accordance with this section. Crossin 450 Open Cell Spray Foam 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 an ignition barrier in accordance with Section 4.6.2.1. 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, Crossin 450 Open Cell Spray Foam Insulation, at maximum of 5 inches (102 mm) thick shall be covered with a prescriptive ignition barrier in accordance with 2018, 2015, or 2012 IBC Section 2603.4.1.6, or 2018, 2015, or 2012 IRC Sections R316.5.3 and R316.5.4, 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:

Crossin 450 Open Cell Spray Foam Insulation 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 edition 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

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 IBC Section 1203.3
- 2018, 2015, and 2012 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, 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:

Crossin 450 Open Cell Spray Foam Insulation 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.

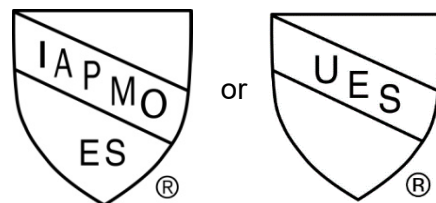
The coating shall be applied over the insulation using airless spray equipment, roller, or a brush in accordance with the coating manufacturer's published installation instructions and this report. The ambient and substrate temperatures shall be minimum 50°F (10°C), and the surface shall be dry, clean,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

5.0 IDENTIFICATION

The spray foam insulation is identified with the following:

- a. Manufacturer's name (PCC Prodex Sp.z o.o.)
- b. address and telephone number,
- c. the product trade name (Crossin 450 Open Cell Spray Foam Insulation)
- d. use instructions
- e. density, and flame spread and smoke-development indices
- f. date of manufacture or batch/run number
- g. thermal resistance values
- h. the evaluation report number (ER-785)

Either IAPMO Uniform Evaluation Service Mark of Conformity may also be used as shown below:



IAPMO UES ER-785

6.0 SUBSTANTIATING DATA

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation, AC377, dated February 2020, including Appendix X. Test reports are from Laboratories in conformance with ISO/IEC 17025.

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.

7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research completed by IAPMO Uniform Evaluation Service on Crossin 450 Open Cell Spray Foam Insulation 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

TABLE 2 - ALTERNATIVE THERMAL BARRIER ASSEMBLIES				
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 ²	18 WFT 12 DFT	89 ft ² /gal.	8	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 International Fireproof Technology, Inc, recognized in [IAPMO UES ER-499](#).

TABLE 3 ALTERNATIVE IGNITION BARRIER ASSEMBLIES				
FIRE-PROTECTIVE COATING/COVERAGE ¹			MAXIMUM SPF THICKNESS (inch)	
TYPE	MINIMUM THICKNESS (mils)	THEORETICAL APPLICATION RATE	WALLS AND VERTICAL SURFACES	CEILINGS AND OVERHEAD SURFACES
DC315 ²	4 WFT 3 DFT	400 ft ² /gal	8	14
FS-IB ³	5 WFT 3 DFT	320 ft ² /gal	8	14

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

³ Flame Seal Products, Inc., recognized in IAPMO UES-600.