EVALUATION REPORT Number: 394

Originally Issued: 04/17/2015 Valid Through: 04/30/2016

EVALUATION SUBJECT:
Foamsulate 50-NIB Spray-Applied Polyurethane Foam Plastic Insulation

REPORT HOLDER:
Premium Spray Products
1255 Kennestone Circle, Suite 200
Marietta, Georgia 30066
www.premiumspray.com

CSI Division: 07 THERMAL AND MOISTURE PROTECTION
CSI Section: 072100 Thermal Insulation

1.0 SCOPE OF EVALUATION

1.1 Compliance to the following codes & regulations:
- 2012 International Building Code® (2012 IBC)
- 2009 International Building Code® (2009 IBC)
- 2006 International Building Code® (2006 IBC)
- 2012 International Residential Code® (2012 IRC)
- 2009 International Residential Code® (2009 IRC)
- 2006 International Residential Code® (2006 IRC)
- 2012 International Energy Conservation Code® (2012 IECC)
- 2009 International Energy Conservation Code® (2009 IECC)
- 2006 International Energy Conservation Code® (2006 IECC)

1.2 Evaluated in accordance with:
- ICC-ES AC377, approved November 2012 (editorially corrected April 2013)

1.3 Properties assessed:
- Physical Properties
- Thermal Resistance (R-Values)
- Surface Burning Characteristics
- Air Permeability
- Attic and crawl space installations

2.0 PRODUCT USE

Foamsulate 50-NIB spray-applied polyurethane foam plastic insulation 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, Foamsulate 50-NIB spray-applied polyurethane foam plastic insulation can be used in wall cavities, floor assemblies or ceiling assemblies, or in attic and crawl spaces as nonstructural thermal insulation material. The spray-applied foam plastic insulation is used in Type V-B construction under the IBC and in dwellings under the IRC.

3.0 PRODUCT DESCRIPTION

3.1 Properties: Foamsulate 50-NIB spray-applied foam plastic insulation is an open-cell, spray-applied, polyurethane foam plastic and complies as low-density insulation in accordance with Section 3.1.1 of AC377. The insulation is a two-component spray foam plastic with a nominal in-place density of 0.5 PCF (8 kg/m^3).

The spray-applied insulation is mixed 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 45°F and 90°F (7°C and 32°C). When Component A and Component B are stored in factory-sealed containers at the recommended temperatures, the maximum shelf life is one year.

3.2 Thermal Resistance (R-Values): For uses in accordance with the IECC and other codes, Foamsulate 50-NIB spray-applied foam plastic insulation has a thermal resistance (R-Value) at a mean temperature of 75°F (24°C) as shown in Table 1.

3.3 Surface Burning Characteristics: At a maximum thickness of $5^5/_8$ inches (143 mm) and a nominal density of 0.5 PCF (8 kg/m^3), the Foamsulate 50-NIB spray-applied foam plastic 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.

3.4 Air Permeability: When tested in accordance with ASTM E283 at a minimum thickness of 1 inch (25.4 mm), Foamsulate 50-NIB spray-applied foam plastic insulation is classified as air-impermeable insulation in accordance with 2012 IRC Section 806.5 and 2009 and 2006 IRC Section R806.4.

3.5 Foam Kote FC 50-50A: Foam Kote FC 50-50A is a water-based intumescent fire retardant coating, manufactured expressly for the thermal protection of polyurethane foam plastic insulation. Foam Kote FC 50-50A is manufactured by Flame Control Coatings, LLC and is supplied in 1-gallon (4 L) and 5-gallon (19 L) pails. When Foam Kote FC 50-50A is stored in factory-sealed containers at temperatures between 50°F and 90°F (10°C and 32°C), the maximum shelf life is nine (9) months.

3.6 DC-315 Fireproof Paint: DC-315 fireproof paint is a water-based, latex intumescent coating manufactured by International Fireproof Technology, Inc. and is supplied in 5 gallon (19L) pails and 55-gallon (208L) drums. When stored in factory-sealed containers at temperatures between 40°F (4°C) and 90°F (32°C), the coating has a shelf life of 24 months.

4.0 DESIGN AND INSTALLATION

4.1 Design: Foamsulate 50-NIB spray-applied foam plastic insulation shall comply with requirements in 2012 IECC Sections C402.1 and R402, and 2009 and 2006 IECC Section 402. The manufacturer's published installation instructions for Foamsulate 50-NIB spray-applied foam plastic insulation and this report shall be available and strictly adhered to at all times on the jobsite during installation. Where conflicts occur, the most restrictive governs.

4.2 Installation: As referred to in the Premium Spray Products published installation instructions, the insulation is spray-applied on the jobsite using a volumetric positive displacement pump. The applied insulation is sprayed 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 maximum in-service temperature for all areas shall not exceed 180°F (82°C). The spray-applied foam plastic insulation shall not be used in electrical outlets or junction boxes or in contact with rain, water, or soil. The spray-applied foam plastic insulation shall be sprayed onto a substrate that is protected and clean from any debris or weather-related conditions during and after application.

4.3 Installation With a Prescriptive Thermal Barrier: Foamsulate 50-NIB spray-applied foam plastic insulation shall be separated from the interior by a code-complying prescriptive thermal barrier of minimum ½ inch thick (12.7 mm) gypsum wallboard or an equivalent thermal barrier. The thermal barrier shall comply with, and be installed in accordance with IBC Section 2603.4, 2012 or 2009 IRC Section R316.4, or 2006 IRC Section 314.4, as applicable. Based on testing in accordance with NFPA 286 (with the acceptance criteria of 2012 and 2009 IBC Section 803.1.2.1 and 2006 IBC Section 803.2.1), Foamsulate 50-NIB spray-applied foam plastic insulation at thicknesses up to 8 inches (203 mm) for wall cavities and 10 inches (254 mm) for floor/ceiling cavities is recognized for use with a thermal barrier complying with and installed in accordance with the IBC or IRC. Within an attic or crawl space, installation shall be in accordance with Section 4.4 of this report.

4.4 Installation for Attics and Crawl Spaces

4.4.1 Installation With a Prescriptive Ignition Barrier: Where entry is made only for the service of utilities, Foamsulate 50-NIB spray-applied foam plastic insulation shall be installed within attics or crawl spaces with an ignition barrier in accordance with IBC Section 2603.4.1.6, 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. The ignition barrier shall be installed in a manner such that the foam plastic insulation is not exposed, and is consistent with the requirements of the type of construction required by the applicable code. Foamsulate 50-NIB insulation as described in this section may be installed in unvented attics and unvented enclosed rafter spaces in accordance with 2012 IRC Section R806.5, or 2009 or 2006 IRC Section R806.4, as applicable.

4.4.2 Installation Without a Prescriptive Ignition Barrier

4.4.2.1 General: In accordance with Sections 4.4.2.2 and 4.4.2.3, when Foamsulate 50-NIB spray-applied foam plastic insulation is installed in attics and crawl spaces without a prescriptive ignition barrier, the following conditions apply:

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. In accordance with IBC Section 1203.3 or IRC Section R408.1, under-floor (crawl-space) ventilation is provided, as applicable.
e. In accordance with IBC Section 1203.2 or IRC Section R806, attic ventilation is provided, as applicable.
f. In accordance with 2012 and 2009 IMC (International Mechanical Code®) Section 701, or 2006 IMC Sections 701 and 703, combustion air is provided.
g. The foam plastic insulation is limited to the maximum thickness and density tested, as described in Section 4.4.2.2, 4.4.2.3 or 4.4.2.4 of this report.
h. The installed coverage rate or thickness of coatings, if part of the insulation system, shall be equal to or greater than that described in Sections 4.4.2.2 or 4.4.2.3 of this report.

4.4.2.2 Installation for the Application of Foam Kote FC 50-50A Intumescent Coating: Foamsulate 50-NIB spray-applied foam plastic 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. When applied to the underside of the top of the space, the thickness of the Foamsulate 50-NIB foam plastic shall not exceed 12 inches (305 mm), and when applied to vertical surfaces the thickness shall not exceed 8 inches (203 mm). Foamsulate 50-NIB spray-applied foam plastic insulation shall be separated from the interior of the building by a thermal barrier complying with and installed in accordance with the IBC or IRC, and from the attic space with Foam Kote FC 50-50A coating installed as described in Section 4.4.2.2.1. When installations comply with this section, the ignition barrier specified in IBC Section 2603.4.1.6, 2012 and 2009 IRC Section R316.5.3, and 2006 IRC Section R314.5.3, as applicable, may be omitted.

4.4.2.2.1 Foam Kote FC 50-50A Intumescent Coating Application and Curing: Foamsulate 50-NIB spray-applied foam plastic insulation shall be covered with a required minimum thickness of 10-mil (0.25 mm) wet film [7.5 mils (0.19 mm) dry film] thickness of the Foam Kote FC 50-50A as described in Section 3.5, and applied over the insulation in accordance with the coating manufacturer's published installation instructions and this report. The coating shall be applied in one or two coats by an airless sprayer, brush or roller at a rate of either 1 gallon per 100 square feet (0.42 L/m^2) in one coat, or ½ gallon per 100 square feet (0.21 L/m^2) per coat in two coats, to obtain the required minimum thickness of 10-mil (0.25 mm) wet film [7.5 mils (0.19 mm) dry film]. The coating has a minimum four-hour curing time per coat, and shall be applied to surfaces that are dry, clean, and free of dirt or any loose debris that could interfere with adhesion of the coating, and when ambient and substrate temperatures are within a range of 50°F (10°C) to 90°F (32°C).

4.4.2.3 Installation for the Application of DC-315 Fireproof Paint: Foamsulate 50-NIB spray-applied foam plastic insulation may be spray-applied in attics to the underside of roof sheathing, roof rafters and/or vertical surfaces, and in crawl spaces to the underside of floors and/or vertical surfaces as described in this section. When applied to the underside of the top of the space, the thickness of the Foamsulate 50-NIB foam plastic shall not exceed 12 inches (305 mm), and when applied to vertical surfaces the thickness shall not exceed 8 inches (203 mm). The Foamsulate 50-NIB spray-applied foam insulation shall be separated from the interior of the building by a thermal barrier complying with and installed in accordance with the IBC or IRC, or from the attic space with DC-315 Fireproof Paint installed in accordance with Section 4.4.2.3.1. When installation complies with this section, the ignition barrier specified in IBC Section 2603.4.1.6, 2012 and 2009 IRC Section R316.5.3, and 2006 IRC Section R314.5.3, as applicable, may be omitted.

4.4.2.3.1 DC-315 Fireproof Paint Application and Curing: Foamsulate 50-NIB spray-applied foam plastic insulation shall be covered with a required minimum thickness of 21-mil (0.53 mm) wet film [14 mils (0.36 mm) dry film] of the DC-315 Fireproof Paint described in Section 3.6, and applied over the insulation in accordance with the coating manufacturer's published installation instructions and this report. The coating shall be applied in one coat by an airless sprayer, brush or roller at a rate of 1 gallon (3.79 L) per 73 square feet (6.8 square meters), to obtain the required minimum thickness of 21-mil (0.53 mm) wet film [14 mils (0.36 mm) dry film]. The coating has a minimum 24-hour curing time, and shall be applied to surfaces that are dry, clean, and free of dirt or any loose debris that could interfere with adhesion of the coating, and when ambient and substrate temperatures are within a range of 50°F (10°C) to 90°F (32°C).

4.4.2.4 Application Without Intumescent Coating or Fireproof Paint: Foamsulate 50-NIB spray-applied foam plastic insulation may be spray-applied without a coating as described in Section 4.4.2.2 or 4.4.2.3 to the underside of roof sheathing or roof rafters and vertical surfaces of attics and in crawl spaces. When applied to the underside of the top of the space, the thickness of the Foamsulate 50-NIB foam plastic shall not exceed 10 inches (254 mm), and when applied to vertical surfaces the thickness shall not exceed 8 inches (203 mm). The insulation may be installed in unvented attics as described in this section in accordance with 2012 IRC Section R806.5, and 2009 or 2006 IRC Section R806.4, as applicable.

5.0 LIMITATIONS

The Foamsulate 50-NIB spray-applied foam insulation described in this report complies with those codes listed in Section 1.0 of this report or are considered suitable alternatives to what is specified, subject to the following conditions:

5.1 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 governs.

5.2 In accordance with Section 4.3, the insulation shall be separated from the interior of the building by a code complying thermal barrier.

5.3 As noted in Sections 3.3, 4.2, 4.3 and 4.4 of this report, the insulation shall not exceed the nominal density and maximum thickness.

5.4 During and after installation, the insulation shall be protected from exposure to weather and site conditions.

5.5 Installers shall be certified by Premium Spray Products.

5.6 Use of the insulation in areas of "very heavy" termite infestation probability shall be in accordance with 2012 IBC Section 2603.9, 2009 or 2006 IBC Section 2603.8, 2012 or 2009 IRC Section 318.4, or 2006 IRC Section 320.5, as applicable.

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

5.8 Labeling and jobsite certification of the insulation and coatings shall comply with IRC Sections N1101.4 and N1101.4.1, 2012 or 2009 IECC Sections 303.1.1 and 303.1.2, or 2006 IECC Sections 102.1.1 and 102.1.1.1, as applicable.

5.9 The insulation is produced in West Chicago, Illinois, under a quality control program with inspections by

Quality Control Consultants, LLC (AA-727).

6.0 SUBSTANTIATING DATA

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation, AC377, dated November 2012, including reports of tests in accordance with Appendix X of AC377.

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

7.0 IDENTIFICATION

The spray foam insulation is identified with the following:

a. Report holder's name (Premium Spray Products)
b. address and telephone number,
c. the product trade name (Foamsulate 50-NIB)
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-0394)
i. the name or logo of the inspection agency (Quality Control Consultants, LLC)

Each container of the Foam Kote FC 50-50A intumescent coating is labeled with the manufacturer's name (Flame Control Coatings, LLC), the product name, and use instructions. Each container of the DC-315 Fireproof paint is labeled with the manufacturer's name (International Fireproof Technology, Inc.), the product name, and use instructions.

or

IAPMO ER #394

Brian Gerber, P.E., S.E.
Vice President, Technical Operations
Uniform Evaluation Service

Richard Beck, PE, CBO, MCP
Vice President, Uniform Evaluation Service

GP Russ Chaney
CEO, The IAPMO Group

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

Table 1 – Thermal Resistance (R-Values)[1]

Thickness (inch)	Foamsulate 50-NIB R-Value (°f•ft²•h/Btu)
1	3.7
2	7.5
3.5	13
4	15
5	19
5.5	20
6	22
7	26
7.5	28
8	30
9	33
9.5	35
10	37
11.5	43
12	44

For **SI:** 1 inch = 25.4 mm, 1°F·ft²·h/Btu = 0.176 110 K·m²/W.

[1]R-Values are calculated based on tested K values at 1-inch and 4-inch thicknesses for Foamsulate 50-NIB.