

# ICC-ES Evaluation Report

**ESR-2580**

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*This report is subject to re-examination in one year.*

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**DIVISION: 07—THERMAL AND MOISTURE PROTECTION**  
**Section: 07210—Building Insulation**

**REPORT HOLDER:**

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**EVALUATION SUBJECT:**

**BPL SPRAY-APPLIED POLYURETHANE FOAM PLASTIC INSULATION (ALSO KNOWN AS FOAMETIX® SPRAY-APPLIED POLYURETHANE INSULATION)**

**1.0 EVALUATION SCOPE**

**Compliance with the following codes:**

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)
- 2006 *International Energy Conservation Code*® (IECC)

**Properties evaluated:**

- Surface-burning characteristics
- Physical properties
- Thermal resistance
- Attic and crawl space installation

**2.0 USES**

BPL spray-applied polyurethane foam plastic insulation (also known as Foametix® spray-applied polyurethane foam plastic insulation) is used as a nonstructural thermal insulating material in Type V-B construction under the IBC and in dwellings under the IRC. The insulation is for use in wall cavities, floor assemblies or ceiling assemblies and in attic and crawl space installations as described in Section 4.4.

**3.0 DESCRIPTION**

**3.1 General:**

BPL foam plastic insulation is a two-component, open-cell, low-density, spray-applied, cellular polyurethane foam plastic. The product is a water-blown foam with a nominal density of 0.5 pcf (8 kg/m<sup>3</sup>). The polyurethane foam is produced by combining a polymeric isocyanate (A component) and a resin (B component). The products have a shelf life of six months, when stored in factory-sealed containers at temperatures between 55°F and 85°F (13°C and 29°C).

**3.2 Surface-burning Characteristics:**

The insulation at a maximum thickness of 4 inches (102 mm) and a nominal density of 0.5 pcf (8 kg/m<sup>3</sup>) has a flame-spread index of less than 25 and smoke-developed index of less than 450 when tested in accordance with ASTM E 84. Greater thicknesses are recognized as described in Sections 4.3 and 4.4.

**3.3 Thermal Resistance (R-values):**

The insulation has thermal resistance (R-values), at a mean temperature of 75°F (24°C), as shown in Table 1.

**3.4 50-50 Foam Kote Intumescent Coating:**

50-50 Foam Kote, manufactured by Flame Control Coatings, LLC, is a water-based liquid coating with specific gravity of 1.3. 50-50 Foam Kote is supplied in 4-gallon (15 L) pails and has a shelf life of six months when stored in a factory-sealed container at temperatures of 50°F (10°C) or above.

**4.0 INSTALLATION**

**4.1 General:**

BPL spray-applied polyurethane foam plastic 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 a volumetric positive displacement pump as identified in the Burtin Polymer Laboratories application manual. The insulation can be installed in one pass to the maximum thicknesses specified in Sections 3.2, 4.3 and 4.4.2. The insulation must be used in areas where maximum ambient temperature is no greater than 140°F (60°C). The foam plastic must not be used in electrical outlet or junction boxes or in contact with rain, water, or soil. The foam plastic must not be sprayed onto a substrate that is wet, or covered with frost or ice, loose scales, rust, oil, or grease. The insulation must be protected from the weather during and after application.

**4.3 Thermal Barrier:**

BPL spray-applied polyurethane foam plastic 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 15-minute thermal barrier complying with, and installed in accordance with, IBC Section 2603.4 or IRC Section R314.4, as applicable, except when installation is in attics and crawl spaces as described in Section 4.4. Thicknesses of up to 7 inches (178 mm) for wall cavities and 11 inches (279 mm) for ceiling cavities are recognized based on room corner fire testing in accordance with UL 1715.

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#### 4.4 Attics and Crawl Spaces:

##### 4.4.1 Application with a Prescriptive Ignition Barrier:

When BPL 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 must be installed in accordance with IBC Section 2603.4.1.6 or IRC Sections R314.5.3 and R314.5.4, 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 a manner so the foam plastic insulation is not exposed. BPL spray-applied polyurethane foam plastic insulation as described in this section may be installed in unvented attics under the IRC, under the conditions noted in Section R806.4.

##### 4.4.2 Application without a Prescriptive Ignition Barrier:

Where BPL spray-applied polyurethane foam plastic insulation is installed without a prescriptive ignition barrier in attics and crawl spaces, in accordance with this section, the following conditions apply:

- Entry to the attic or crawl space is only to service utilities and no storage is permitted.
- There are no interconnected attic or crawl space areas.
- Air in the attic or crawl space is not circulated to other parts of the building.
- Under-floor (crawl space) ventilation is provided in accordance with IBC Section 1203.3 or IRC Section R408.1, as applicable.
- The foam plastic insulation is limited to a maximum thickness and density noted in this section.

BPL spray-applied polyurethane foam plastic insulation may be spray-applied to the underside of roof sheathing and/or rafters; and the underside of wood floors and/or floor joists in crawl spaces as described in this section. The thickness of the foam plastic applied to the underside of the wood floor and roof sheathing must not exceed 11 inches (279 mm). The spray foam insulation applied to vertical wall surfaces in attics and crawl spaces must not exceed 7 inches (178 mm) and must be covered with two coats of 50-50 Foam Kote. Foam Kote intumescent coating is described in Section 3.4, and must be applied over the insulation in accordance with the coating manufacturer's instructions and this report. Foam Kote 50-50 coating must be applied by airless sprayer, brush or roller at a rate of 1 gallon (3.78 L) per 100 square feet (9.3 m<sup>2</sup>) per coat for a wet film thickness (each coat) of 8 mils (0.2 mm) [3.8 mils (0.1 mm) dry film thickness]. The coating has a minimum two-hour curing time per coat. Surfaces to be coated must be dry, clean, and free of dirt, loose debris and any other substances that could interfere with adhesion of the coating. BPL spray-applied polyurethane foam plastic insulation, as described in this section, may be installed in unvented attics under the IRC under the conditions noted in Section R806.4.

##### 4.4.3 Use on Attic Floors:

BPL spray-applied polyurethane foam plastic insulation may be installed without a prescriptive ignition barrier and at a maximum thickness of 11 inches (279 mm) between and over the joists in attic floors as described in Section 4.4.2. The spray foam insulation must be covered with two coats of 50-50 Foam Kote intumescent coating as described in Section 4.2.2. The insulation must be separated from the interior of the building by an approved thermal barrier. The ignition barrier called for in IBC Section 2603.4 and IRC Section R314.5.3 may be omitted.

#### 5.0 CONDITIONS OF USE

The BPL spray-applied polyurethane foam plastic insulation (also known as Foametix<sup>®</sup> spray-applied polyurethane foam plastic 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 The insulation and 50-50 Foam Kote intumescent coating must be installed in accordance with the manufacturers' published installation instructions, this evaluation report and the applicable code. The instructions within this report govern if there are any conflicts between the manufacturers' published installation instructions and this report.
- 5.2 The insulation must be separated from the interior of the building by an approved 15-minute thermal barrier, except when installation is in attics and crawl spaces as described in Section 4.4.
- 5.3 The insulation must not exceed the nominal density and thicknesses noted in Sections 3.2, 4.3, 4.4.2 and 4.4.3 of this report.
- 5.4 The insulation must be protected from the weather during and after application.
- 5.5 The insulation must be applied by contractors certified by Burtin Polymer Laboratories, Inc.
- 5.6 Use of the insulation in areas where the probability of termite infestation is "very heavy" must be in accordance with IRC Section R320.5 or IBC Section 2603.8, as applicable.
- 5.7 The insulation has been evaluated only for use in Type V-B construction under the IBC and nonfire-resistance-rated assemblies in dwellings under the IRC.
- 5.8 Jobsite certification and labeling of the insulation must comply with IRC Sections N1101.4 and N1101.4.1 and IECC Sections 102.1.1 and 102.1.11, as applicable.
- 5.9 A vapor retarder must be installed when required by the applicable code.
- 5.10 The insulation is produced in Cartersville, Georgia, under a quality control program with inspections by PRI Construction Materials Technologies (AA-709).

#### 6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation (AC377), dated May 2008.
- 6.2 Reports of room corner tests in accordance with UL 1715.
- 6.3 Reports of crawl-space fire tests.

#### 7.0 IDENTIFICATION

Components for BPL spray-applied polyurethane foam plastic insulation are identified with the manufacturer's name (Burtin Polymer Laboratories, Inc.), address and telephone number; the product trade name (BPL spray-applied polyurethane foam plastic insulation or Foametix<sup>®</sup> spray-applied polyurethane foam plastic insulation); use instructions; the density; the flame-spread and smoke-development indices; the evaluation report number (ESR-2580); and the name of the inspection agency (PRI Construction Materials Technologies).

Each pail of 50-50 Foam Kote intumescent coating is labeled with the manufacturer's name (Flame Control Coatings, LLC) and address; the product name (50-50 Foam Kote); and use instructions.

TABLE 1— THERMAL RESISTANCE (R-VALUES)

THICKNESS (inch)	R-VALUE (°F.ft <sup>2</sup> .h/Btu)
<b>ASTM C 518 TESTED VALUES</b>	
1	3.85
4	14.40
<b>CALCULATED R-VALUES<sup>1</sup></b>	
3.5	12.5
5.5	19.6
6	21.4
7.5	26.7
8.75	31.2
10	35.6
11	39.2

For **SI**: 1 inch = 25.5 mm; 1°F.ft<sup>2</sup>.h/Btu = 0.176 110 °K.m<sup>2</sup>/W.

<sup>1</sup>Calculated R-values are based on tested K values at a 4-inch thickness.