

# ICC-ES Evaluation Report

**ESR-2717**

Issued July 1, 2010

*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:**
**FOMO PRODUCTS, INC.**  
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[www.fomo.com](http://www.fomo.com)
**EVALUATION SUBJECT:**
**HANDI-FOAM E-84 CLASS 1 SPRAY FOAM SYSTEM**
**1.0 EVALUATION SCOPE**
**Compliance with the following codes:**

- 2009 *International Building Code*® (IBC)
- 2009 *International Residential Code*® (IRC)
- 2009 *International Energy Conservation Code*® (IECC)
- Other Codes (see Section 8.0)

**Properties evaluated:**

- Physical properties
- Surface-burning characteristics
- Thermal resistance (*R*-values)

**2.0 USES**

The Handi-Foam E-84 Class 1 Spray Foam System is used as nonstructural thermal insulating material in Type V-B construction under the IBC and dwellings under the IRC. The insulation is for use in cavities of wall, floor, and ceiling assemblies, and in attics and crawl spaces when installed in accordance with Section 4.4.

**3.0 DESCRIPTION**
**3.1 General:**

The Handi-Foam E-84 Class 1 Spray Foam System is a two-component, closed-cell, low-pressure, semirigid, polyurethane plastic insulation. The two components, components A and B, are delivered in separate pressurized vessels and combined in the field, using a dispensing system specified by Fomo Products, Inc. Component A, a polymeric isocyanate, mixes and reacts with Component B, a polymeric resin blend, producing a foam insulation with a nominal density of 2.1 lb/ft<sup>3</sup> (34 kg/m<sup>3</sup>). The spray foam system is available in nonrefillable sizes II-105, II-205, and II-605, and in refillable sizes System 17, System 27, System 60, and System 100. The components in the nonrefillable vessels

have a shelf life of 12 months, and those in the refillable vessels have a shelf life of six months, when stored unopened at temperatures between 50°F (10°C) and 120°F (49°C). The A and B components for the II-105 and II-205 are packaged together. The components of the nonrefillable II-605 and the refillable System 17, System 27, System 60, and System 100 are packaged separately.

**3.2 Surface-burning Characteristics:**

The Handi-Foam E-84 Class 1 Spray Foam insulation has a flame-spread index of 25 or less, and a smoke developed index of 450 or less, when tested in accordance with ASTM E 84 at a maximum thickness of 2 inches (51 mm) and a nominal density of 2.1 pcf (34 kg/m<sup>3</sup>).

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

Handi-Foam E-84 Class 1 Spray Foam insulation has thermal resistance (*R*-values) at a mean temperature of 75°F (24°C) as shown in Table 1.

**4.0 INSTALLATION**
**4.1 General:**

The Handi-Foam E-84 Class 1 spray-applied insulation must be installed in accordance with the manufacturer's published installation instructions, the applicable code, and this report. The manufacturer's published installation instructions, which are provided with every system, must be available on the jobsite at all times during installation.

**4.2 Application:**

The insulation is applied in single or multiple passes having a minimum thickness of 1/2 inch (12.7 mm) and a maximum thickness of 2 inches (51 mm) per pass, and must not exceed a total thickness of 2 inches (51 mm) in wall, floor, or ceiling cavities. Each insulation pass must be allowed to fully expand and cure for a minimum of 15 minutes prior to the application of an additional pass. The maximum service temperature must not exceed that specified in the manufacturer's installation instructions. The foam plastic insulation must not be used in electric outlet or junction boxes or in contact with rain or water. The substrate must be free of moisture, frost or ice, loose scales, rust, oil, and grease. The insulation must be protected from the weather during and after application.

**4.3 Thermal Barrier:**

Handi-Foam E-84 Class 1 Spray Foam insulation must be separated from the interior of the building by an approved thermal barrier of 1/2-inch (12.7 mm) gypsum wallboard or an equivalent 15-minute thermal barrier complying with IBC Section 2603.4 or IRC Section R316.4, as applicable, except where installation is in an attic or crawl space as described in Section 4.4.

**4.4 Attics and Crawl Spaces:**

When the foam plastic insulation is installed within attics or crawl spaces, where entry is made only to service utilities, an ignition barrier must be installed in accordance with IBC Section 2603.4.1.6 or IRC Sections 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 so that the foam plastic insulation is not exposed. Ventilation in the attic and crawl space must be provided in accordance with the applicable code.

**5.0 CONDITIONS OF USE**

The Handi-Foam E-84 Class 1 Spray Foam System 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 Materials and methods of construction must comply with the manufacturer's published installation instructions, this report, and the applicable building code. In the event of a conflict between the installation instructions and this report, this report governs.
- 5.2 The foam plastic insulation must be applied by installers certified by Fomo Products, Inc.
- 5.3 The spray-applied foam plastic must not exceed the thicknesses recognized in Sections 3.2 and 4.2.
- 5.4 The foam plastic insulation must be separated from the interior of the building by an approved 15-minute thermal barrier, as described in Section 4.3. Where installation is in attic or crawl space applications as described in Section 4.4, an ignition barrier must be installed.
- 5.5 The foam plastic insulation must be protected from the weather during and after application.
- 5.6 Handi-Foam E-84 Class 1 Spray Foam insulation has been evaluated only for use in Type V-B construction under the IBC and dwellings under the IRC.
- 5.7 Use of the 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.
- 5.8 Jobsite certification and labeling of the insulation must comply with IRC Sections N1101.4 and N1101.4.1 and IECC Sections 303.1.1 and 303.1.2.
- 5.9 The Handi-Foam E-84 Class 1 Spray Foam System components are produced in Norton, Ohio, under a quality control program with inspections by Underwriters Laboratories Inc. (AA-668).

**6.0 EVIDENCE SUBMITTED**

Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation (AC377), dated November 2009.

**7.0 IDENTIFICATION**

Each container of the Handi-Foam E-84 Class 1 Spray Foam System is identified with the Fomo Products, Inc., name and address, the product name, the component type (A or B), the date of manufacture and the shelf life of the component. Additionally, the labeling includes the installed density, flame-spread and smoke-developed indices, the evaluation report number (ESR-2717), and the name of the inspection agency (Underwriters Laboratories Inc.). The combined packaging of the II-105 and II-205 products is identified with the manufacturer's name and address, the product name, date of manufacture, shelf life, installed density, flame-spread and smoke-developed indices, the evaluation report number (ESR-2717), and the name of the inspection agency ( Underwriters Laboratories Inc.).

**8.0 OTHER CODES**

In addition to the codes referenced in Section 1.0, the products described in this report were evaluated for compliance with the requirements of the following codes:

- 2006 *International Building Code*<sup>®</sup> (2006 IBC)
- 2006 *International Residential Code*<sup>®</sup> (2006 IRC)
- 2006 *International Energy Conservation Code*<sup>®</sup> (2006 IECC)
- 2003 *International Building Code*<sup>®</sup> (2003 IBC)
- 2003 *International Residential Code*<sup>®</sup> (2003 IRC)
- 2003 *International Energy Conservation Code*<sup>®</sup> (2003 IECC)

The products comply with the above-mentioned codes as described in Sections 2.0 through 7.0 of this report, with the revisions noted below:

**Application with a Prescriptive Thermal Barrier:**

See Section 4.3, except the approved thermal barrier must be installed in accordance with Section R314.4 of the 2006 IRC or Section R314.1.2 of the 2003 IRC, as applicable.

**Application with a Prescriptive Ignition Barrier:**

See Section 4.4, except attics must be vented in accordance with Section 1203.2 of the 2006 and 2003 IBC or Section R806 of the 2006 and 2003 IRC, and crawl space ventilation must be in accordance with Section 1203.3 of the 2006 and 2003 IBC or IRC Section R408, as applicable. Additionally, an ignition barrier must be installed in accordance with Section R314.5.3 or R314.5.4 of the 2006 IRC or Section R314.2.3 of the 2003 IRC, as applicable.

**Protection against Termites:**

See Section 5.7, except use of the insulation in areas where the probability of termite infestation is "very heavy" must be in accordance with Section R320.5 of the 2006 IRC or Section R320.4 of the 2003 IRC.

**Jobsite Certification and Labeling:**

See Section 5.8, except jobsite certification and labeling must comply with Sections 102.1.1 and 102.1.11, as applicable, of the 2006 IECC.

**TABLE 1—THERMAL RESISTANCE<sup>2</sup> (R-VALUES)**

THICKNESS <sup>3</sup> (inches)	R-VALUE (°F·ft <sup>2</sup> ·h/Btu)
1	6 <sup>1</sup>
2	12 <sup>1</sup>

For SI: 1 inch = 25.4 mm; 1 °F·ft<sup>2</sup>·h/Btu = 0.176 °K·m<sup>2</sup>/W.

<sup>1</sup>R-values are based on results of ASTM C 518 testing.

<sup>2</sup>Determined at a mean temperature of 75°F (24°C).

<sup>3</sup>Maximum recognized thickness for Handi-Foam E-84 Class 1 Spray Foam is 2 inches.