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# ICC-ES Report

## ESR-3759

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**DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION**  
**SECTION: 07 21 00—THERMAL INSULATION**

**REPORT HOLDER:**

**CERTAINTED CORPORATION**

**750 EAST SWEDES FORD ROAD  
VALLEY FORGE, PENNSYLVANIA 19482**

**EVALUATION SUBJECT:**

**CERTASPRAY X OPEN-CELL SPRAY FOAM INSULATION**



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# ICC-ES Evaluation Report

**ESR-3759\***
*Issued February 2015*
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**DIVISION: 07 00 00—THERMAL AND MOISTURE  
PROTECTION**
**Section: 07 21 00—Thermal Insulation**
**REPORT HOLDER:**

**CERTAINTEE CORPORATION**  
750 EAST SWEDES FORD ROAD  
VALLEY FORGE, PENNSYLVANIA 19482  
(215) 274-2456  
[www.certainteed.com](http://www.certainteed.com)

**EVALUATION SUBJECT:**
**CERTASPRAY X OPEN-CELL SPRAY FOAM  
INSULATION**
**1.0 EVALUATION SCOPE**
**Compliance with the following codes:**

- 2015, 2012 and 2009 *International Building Code*® (IBC)
- 2015, 2012 and 2009 *International Residential Code*® (IRC)
- 2015, 2012 and 2009 *International Energy Conservation Code*® (IECC)
- Other Codes (see Section 8.0)

**Properties evaluated:**

- Surface-burning characteristics
- Thermal resistance (*R*-values)
- Attic and crawl space installation
- Physical properties
- Air permeability

**2.0 USES**

CertaSpray X Open Cell Spray Foam Insulation is used as a nonstructural thermal insulating material in Type VB construction under the IBC and dwellings under the IRC. The insulation is for use in wall cavities, floor assemblies, ceiling assemblies, and when installed in accordance with Section 4.4 in attics and crawl spaces. Under the IRC, the insulation may be used as air-impermeable insulation when installed in accordance with Section 4.2.

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

CertaSpray X Open Cell Spray Foam Insulation is a two-component, open-cell, spray-applied foam plastic

insulation with the applied insulation has a nominal density of 0.5 pcf. The applied insulation is produced by combining a polymeric Isocyanate Part A (CertaSpray Part A) and a resin-based Part B (CertaSpray X), on site during the spray application. The Part A and B components have a shelf life of six months when stored in factory-sealed containers at temperatures between 55°F and 80°F (13°C and 27°C).

**3.2 Surface Burning Characteristics:**

CertaSpray X Open Cell Spray Foam Insulation, at a maximum thickness of 4 inches (102 mm) and a nominal density of 0.5 pound per cubic foot, has a flame-spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84 (UL 723). There is no thickness limit when installation is behind a code-prescribed 15-minute thermal barrier.

**3.3 Thermal Resistance:**

CertaSpray X Open Cell Spray Foam Insulation has thermal resistances, *R*-values, at a mean temperature of 75°F (24°C) as shown in Table 1.

**3.4 Air Permeability:**

CertaSpray X Open Cell Spray Foam Insulation, at a minimum 3½ inch (89 mm) thickness, is considered air-impermeable insulation in accordance with 2015 and 2012 IRC Section R806.5 (2009 IRC Section R806.4) and 2015 IBC Section 1203.3, based on testing in accordance with ASTM E283.

**3.5 DC 315 Fireproof Paint:**

DC 315 Fireproof Paint, manufactured by International Fireproof Technology, Inc., is a water-based, intumescent coating supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums. The coating material has a shelf life of 24 months when stored in factory-sealed containers at temperatures between 41°F (5°C) and 95°F (35°C).

**4.0 DESIGN AND INSTALLATION**
**4.1 General:**

CertaSpray X Open Cell Spray Foam Insulation must be installed in accordance with the manufacturer's published installation instructions, the applicable code, and this report. A copy of the manufacturer's published installation instructions and this evaluation report must be available on the jobsite at all times during installation.

**4.2 Application:**

CertaSpray X Open Cell Spray Foam Insulation must be applied using a volumetric positive displacement pump to combine the Part A and Part B components in a one-to-one ratio, as specified in the manufacturer's installation

\*Revised July 2015

instructions. The insulation must not be used in areas having a maximum service temperature greater than 180°F (82°C), and must not be used in electrical outlet or junction boxes or in direct continuous contact with water. The surfaces to which the insulation is applied must be clean, dry, free of frost, ice, loose debris or contaminants that will interfere with adhesion of the spray foam insulation. Where the CertaSpray X Open Cell Spray Foam Insulation is used as an air-impermeable barrier, such as in unventilated attic spaces regulated by IRC Section R806, the insulation must be installed at a minimum thickness of 3<sup>1</sup>/<sub>2</sub> inches (89 mm). The insulation may be applied at a maximum of 6 inches (152 mm) per pass thickness to achieve the maximum installed thicknesses set forth in Section 3.2 and 4.4. The CertaSpray X Open Cell Spray Foam Insulation must be protected from the weather during and after application. CertaSpray X Open Cell Spray Foam Insulation must be installed by factory-certified applicators.

#### 4.3 Thermal Barrier:

##### 4.3.1 Application with a Prescriptive Thermal Barrier:

CertaSpray X Open Cell Spray Foam Insulation must be separated from the interior of the building by an approved thermal barrier of <sup>1</sup>/<sub>2</sub>-inch-thick (12.7 mm) gypsum board or an equivalent 15-minute thermal barrier complying with, and installed in accordance with, IBC Section 2603.4 or IRC Section R316.4, as applicable, except where the installation complies with the requirements set forth in Section 4.3.2. 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 installation is behind a code-prescribed thermal barrier, except as noted in Section 4.4.2.2.

**4.3.2 Application without a Prescriptive Thermal Barrier:** CertaSpray X Open Cell Spray Foam Insulation may be installed without the prescriptive thermal barrier described in Section 4.3.1 when installation is in accordance with the following requirements:

**4.3.2.1** The insulation must be covered on all surfaces with a fire protective coating at the minimum thickness set forth in Table 2.

**4.3.2.2** The maximum installed thickness of the insulation must not exceed the thicknesses set forth in Table 2.

**4.3.2.3** The coating must be applied over the insulation in accordance with the coating manufacturer's instructions and this report.

#### 4.4 Protection from Ignition (Ignition Barrier):

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

When CertaSpray X Open Cell Spray Foam 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 R316.5.3 or R316.5.4, as applicable, except where the installation complies with the requirements set forth in Section 4.4.2. 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 that the foam plastic insulation is not exposed. CertaSpray X Open Cell Spray Foam Insulation may be installed in unvented attics in accordance with 2015 and 2012 IRC Section R806.5 (2009 IRC Section R806.4) or 2015 IBC Section 1203.3.

**4.4.2 Application without a Prescriptive Ignition Barrier:** Where CertaSpray X Open Cell Spray Foam Insulation is installed in an attic or crawl space without a

prescriptive ignition barrier, in accordance with Sections 4.4.2.1 and 4.4.2.2, the following conditions apply:

1. Entry to the attic or crawl space is only for the service of utilities and no storage is permitted.
2. There are no interconnected crawl space, basement or attic areas.
3. Air in the attic or crawl space is not circulated to other parts of the building.
4. Combustion air is provided in accordance with IMC (*International Mechanical Code*<sup>®</sup>) Section 701.
5. Under-floor (crawl space) ventilation is provided when required by 2015 IBC Section 1203.4 (2012 and 2009 IBC Section 1203.3) or IRC Section R408.1, as applicable.
6. Attic ventilation is provided when required by IBC Section 1203.2 or IRC Section R806, except when air-impermeable insulation is permitted in unvented attics in accordance with IRC Section R806.4.

**4.4.2.1 Attics and Crawl Spaces:** In attics, the insulation may be spray-applied to the underside of roof sheathing or roof rafters, and/or vertical surfaces, and in crawl spaces the insulation may be spray-applied to the underside of floors and/or vertical surfaces as described in this section. The thickness of the foam plastic applied to the underside of the top of the space and/or vertical surfaces must not exceed 11<sup>1</sup>/<sub>2</sub> inches (292 mm). The foam plastic may be installed without a covering or coating. The insulation may be installed in unvented attics in accordance with 2015 and 2012 IRC Section R806.5 (2009 IRC Section 806.4). The ignition barrier in accordance with IBC Section 2603.4.1.6 or IRC Section R316.5.3 may be omitted.

**Optional:** It is permitted to cover all surfaces of the foam plastic with DC 315 Fireproof Paint, as described below and in Section 3.5. The coating must be applied over the CertaSpray X Open Cell Spray Foam Insulation in accordance with the coating manufacturer's instructions and this report. Surfaces to be coated must be dry, clean, and free of dirt, loose debris and other substances that could interfere with adhesion of the coating. The coating is applied in one coat with low-pressure airless spray equipment, and must be applied to a minimum wet film thickness of 4 mils (0.10 mm).

CertaSpray X Open Cell Spray Foam Insulation may be installed in unvented attics or crawl spaces as described in this section in accordance with 2012 IRC Section R806.5 (2009 IRC Section R806.4).

**4.4.2.2 Use on Attic Floors:** CertaSpray X Open Cell Spray Foam Insulation may be installed exposed at a maximum thickness of 11<sup>1</sup>/<sub>2</sub> inches (292 mm) between and over the joists in attic floors. The insulation must be separated from the interior of the building by an approved thermal barrier. The ignition barrier in accordance with the IBC Section 2603.4 and IRC Section R316.5.3 may be omitted and the insulation left exposed.

## 5.0 CONDITIONS OF USE

The CertaSpray X Open Cell Spray Foam 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** CertaSpray X Open Cell Spray Foam Insulation must 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, this report governs.

- 5.2 CertaSpray X Open Cell Spray Foam Insulation must be separated from the interior of the building by an approved 15-minute thermal barrier in accordance with IBC Section 2603.4 or IRC Section R316.4, unless allowed otherwise by the applicable code or when installation is in attics and crawl spaces as described in Section 4.4.2.
- 5.3 CertaSpray X Open Cell Spray Foam Insulation must not exceed the thicknesses noted in Sections 3.2, 4.3 and 4.4 of this report.
- 5.4 CertaSpray X Open Cell Spray Foam Insulation must be protected from the weather during and after application.
- 5.5 CertaSpray X Open Cell Spray Foam Insulation must be applied by contractors certified, accredited, authorized or approved by CertainTeed Corporation.
- 5.6 Use of the insulation in areas where the probability of termite infestation is "very heavy" must be in accordance with IRC Section R318.4 or 2015 or 2009 IBC Section 2603.8 (2012 IBC Section 2603.9), as applicable.
- 5.7 Jobsite certification and labeling of the insulation must comply with 2015 IRC Section N101.10.1 and N1101.10.1.1 (2012 IRC Section N1101.12.1 and N1101.12.1.1 or 2009 IRC Sections N1101.4 and 2015 and 2012 IECC Sections C303.1.1, C303.1.1.1, R303.1.1 and R303.1.1.1 (2009 N1101.4.1 and IECC Sections 303.1.1 and 303.1.1.1, as applicable.
- 5.8 The A and B components of the insulation are produced under a quality control program with inspections by ICC-ES.

## 6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation, (AC377), dated May 2015, including reports of tests in accordance with Appendix X of AC377.
- 6.2 Report of air permeance tests in accordance with ASTM E283.

## 7.0 IDENTIFICATION

The Part A and Part B components for CertaSpray X Open Cell Spray Foam Insulation are packaged in 55-gallon (208 L) drums bearing labels with the report holder's name (CertainTeed Corporation) and address; the date of manufacture and the lot number; the product trade name (CertaSpray A or CertaSpray X); the lot number; the installation instructions; the density; the flame-spread and smoke-developed indices; the shelf life and expiration date; and the evaluation report number (ESR-3759).

The intumescent coating is identified with the manufacturer's name and address, the product trade name and use instructions.

## 8.0 OTHER CODES

In addition to the codes referenced in Section 1.0, the products recognized in this report have also been evaluated for compliance with 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)

The CertaSpray X Open Cell Spray Foam Insulation complies with the above-mentioned codes as described in Sections 2.0 through 7.0 of this report, except as noted below:

- **Application with a Prescriptive Thermal Barrier:** See Section 4.3, except the approved thermal barrier must be installed in accordance with 2006 IRC Section R314.4.
- **Application without a Prescriptive Thermal Barrier:** See Section 4.3.2.
- **Application with a Prescriptive Ignition Barrier:** See Section 4.4.1, except attics must be vented in accordance with 2006 IBC Section 1203.2; and crawl space ventilation must be in accordance with 2006 IBC Section 1203.3 or 2006 IRC Section R408, as applicable. Additionally, an ignition barrier must be installed in accordance with 2006 IRC Section R314.5.3 or R314.5.4.
- **Application without a Prescriptive Ignition Barrier:** See Section 4.4.2, except attics must be vented in accordance with 2006 IBC Section 1203.2; and crawl space ventilation must be in accordance with 2006 IBC Section 1203.3 or 2006 IRC Section R408, as applicable. Combustion air must be provided in accordance with Sections 701 and 703 of the 2006 *International Mechanical Code*<sup>®</sup>.
- **Protection against Termites:** Replace Section 5.7 with the following: Use of the insulation in areas where the probability of termite infestation is "very heavy" must be in accordance with 2006 IRC Section R320.5 or 2006 IBC Section 2603.8.
- **Jobsite Certification and Labeling:** See Section 5.8, except jobsite certification and labeling must comply with 2006 IECC Sections 102.1.1 and 102.1.1.1, as applicable.

**TABLE 1—THERMAL RESISTANCE (R-VALUES)**

THICKNESS (inches)	R-VALUE (°F.ft².h/Btu)
1.0	3.6
1.5	5.4
2.0	7.2
2.5	9.0
3.0	11
3.5	13
4.0	14
4.5	16
5	18
5.5	20
6.0	21
7.0	25
8.0	29
9.0	32
10.0	36
11.0	39
12	43

For SI: 1 inch= 25.4 mm; 1°F.ft².h/Btu = 0.176110°K.m².h/W.

<sup>1</sup>R-values are calculated based on tested K-values at 1- and 3.5-inch thicknesses.

<sup>2</sup>R-values greater than 10 are rounded to the nearest whole number.

**TABLE 2—USE OF INSULATION WITHOUT A PRESCRIPTIVE THERMAL BARRIER**

INSULATION TYPE	Maximum Thickness (in) Wall and Vertical Surfaces	Maximum Thickness (in) Ceiling and Overhead Surfaces	Fire Protective Coating (Applied to all Foam Surfaces)		Test Submitted
			Type and Minimum Thickness	Minimum Application Rate	
CertaSpray X Open Cell Spray Foam Insulation	5 <sup>1</sup> / <sub>4</sub>	14	DC315 20 mils WFT (13 mils DFT)	1.25 gal/ 100 ft <sup>2</sup>	NFPA 286

For SI: 1 inch= 25.4 mm.

<sup>1</sup>WFT = Wet Film Thickness

DFT = Dry Film Thickness