

Issue Date: 04-20-2017
Revision Date: 01-01-2018
Renewal Date: 01-01-2019

DIVISION: 07 – THERMAL AND MOISTURE PROTECTION
Section: 07 21 00 – Thermal Insulation

REPORT HOLDER:

General Coatings Manufacturing Corp.
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REPORT SUBJECT:

Ultra-Thane 230 Wall Foam Spray-applied Polyurethane Foam Plastic Insulation

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2015 and 2012 *International Building Code*® (IBC)
- 2015 and 2012 *International Residential Code*® (IRC)
- 2015 and 2012 *International Energy Conservation Code*® (IECC)

NOTE: This report references 2015 Code sections with [2012] Code sections shown in brackets where they differ.

1.2 Ultra-Thane 230 Wall Foam has been evaluated for the following properties (see Table 1):

- Physical properties
- Surface-burning characteristics
- Thermal resistance

1.3 Ultra-Thane 230 Wall Foam has been evaluated for the following uses (see Table 1):

- Use as nonstructural thermal insulating material on or in interior and exterior walls, floors, ceilings, and roofs
- Alternative to thermal barriers
- Alternative to ignition barriers
- Use in Type V construction (IBC) and buildings regulated under the IRC

2.0 STATEMENT OF COMPLIANCE

Ultra-Thane 230 Wall Foam insulation complies with the Codes listed in Section 1.1, for the properties stated in

Section 1.2, and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.

3.0 DESCRIPTION

3.1 Ultra-Thane 230 Wall Foam: The insulation is a two-component, closed cell, spray-applied polyurethane foam plastic having a nominal in-place density of 2.0 pcf. The insulation is produced in the field by combining a polymeric isocyanate (A component) with a resin (B component). The insulation liquid components are supplied in 55-gallon drums and must be stored at temperatures between 40°F and 75°F. The resin (B component) must be protected from freezing temperatures. The A and B components have a shelf life of six months when stored in factory-sealed containers at these temperatures.

3.2 DC315 Intumescent Coating: DC315 intumescent coating, manufactured by International Fireproof Technology, Inc., is a water-based coating supplied in 5-gallon pails and 55-gallon drums. The coating material has a shelf life of 24 months when stored in factory-sealed containers at a temperature between 41°F to 95°F. DC315 complies with ICC-ES AC456 and is recognized in Intertek CCRR-1076.

4.0 PERFORMANCE CHARACTERISTICS

4.1 Surface-burning Characteristics: The insulation, at a maximum thickness of 4 inches and a nominal density of 2.0 pcf, 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. When the insulation is separated from the interior occupied space of the building with minimum 1/2 inch thick gypsum board, the maximum thickness of insulation is not limited. Under the 2015 IRC, a thermal barrier of minimum 23/32 inch thick wood structural panel is also permitted and the thickness is not limited.

4.2 Thermal Resistance: The insulation has thermal resistance (R-value) at a mean temperature of 75°F as shown in Table 2.



5.0 INSTALLATION

5.1 General: Ultra-Thane 230 Wall Foam insulation must be installed in accordance with the manufacturer's published installation instructions, the applicable Code, and this Research Report. A copy of the manufacturer's instructions must be available on the jobsite during installation.

5.2 Application: The insulation is spray-applied on the jobsite using a volumetric positive displacement pump as identified in the General Coatings application instructions. The insulations must be applied when the ambient temperature is greater than 32°F. The insulation must not be used in areas that have a maximum in-service temperature greater than 200°F. The insulation must not be used in electrical outlet or junction boxes or in contact with water, rain, or soil. The insulation 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. The insulation is applied in passes a minimum of 1/2 inch and a maximum of 2 inches.

5.3 Thermal Barrier:

5.3.1 Application with a Prescriptive Thermal Barrier: Ultra-Thane 230 Wall Foam insulation must be separated from the interior occupied space of the building by an approved thermal barrier of 1/2 inch thick 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. Exceptions are provided in Sections 5.3.2 and 5.4.

When the insulation is separated from the interior occupied space of the building with minimum 1/2 inch thick gypsum board, the maximum thickness of insulation is not limited. Under the 2015 IRC, a thermal barrier of minimum 23/32 inch thick wood structural panel is also permitted and the thickness is not limited.

5.3.2 Application without a Prescriptive Thermal Barrier:

5.3.2.1 DC315 Intumescent Coating: The insulation may be installed without the 15 minute thermal barrier prescribed in IBC Section 2603.4 and IRC Section R316.4, when installed as described in this section. The thickness of the insulation applied to the underside of the roof decks,

ceilings, or floors must not exceed 7-1/2 inches, and applied to vertical wall surfaces must not exceed 5-1/2 inches. The insulation must be covered on all exposed surfaces with Sherwin Williams DTM Bonding Primer at an application rate of 0.3 gallon per 100 sq. ft. to achieve 4 wet mils (3 dry mils), followed by DC315 intumescent coating at an application rate of 1.1 gallon per 100 sq. ft. to achieve a nominal thickness of 18 wet mils (12 dry mils). The coating is applied over the insulation with low-pressure airless spray equipment 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 the adhesion of the coating.

5.4 Attics and Crawl Spaces: Ultra-Thane 230 Wall Foam insulation may be applied in attics and crawl spaces as described in Section 5.4.1, 5.4.2, and 5.4.3. When foam insulation is installed in an attic or crawl space in accordance with this section, a thermal barrier, as described in Section 5.3.1, is not required between the foam plastic insulation and the attic or crawl space but is required between the insulation and the interior occupied space. Attics and crawl spaces must be ventilated in accordance with the applicable Code.

5.4.1 Application with a Prescriptive Ignition Barrier: When the insulation is installed in attics and crawl spaces where entry is made only for service of utilities, the ignition barrier must be installed in accordance with IBC Section 2603.4.1.6 or IRC Section R316.5.3 or 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 in a manner so the foam plastic insulation is not exposed.

5.4.2 Application without a Prescriptive Ignition Barrier: The insulation may be installed in attics and crawl spaces without the ignition barrier prescribed in IBC Section 2603.4.1.6 and IRC Sections R316.5.3 and R316.5.4, subject to the following conditions:

- 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 when required by IBC Section 1203.4 [1203.3] or IRC Section R408.1, as applicable.





- e. 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 IBC Section 1203.3 [not applicable under the 2012 IBC] or IRC Section R806.5.
- f. Combustion air is provided in accordance with International Mechanical Code Section 701.

The insulation may be spray-applied to the underside of the roof sheathing and/or rafters in attics; the underside of wood floors in crawl spaces; and to vertical surfaces in both attics and crawl spaces, as described in this section. The thickness of the insulation applied to the underside of the top of the space must not exceed 11-1/2 inches, and to vertical surfaces must not exceed 7-1/2 inches. The insulation must be covered on all exposed surfaces with the DC315 intumescent coating at a nominal thickness of 4 wet mils (3 dry mils) applied at a rate of 0.25 gal/100 ft². The coating is applied with low-pressure airless spray equipment 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 the adhesion of the coating.

5.4.3 Use on Attic Floors: The insulation may be applied between and over the joists in attic floors to a maximum thickness of 7-1/2 inches and must be covered with DC315 intumescent coating as described in Section 5.4.2.

The insulation must be separated from the interior occupied space by an approved thermal barrier.

6.0 CONDITIONS OF USE

6.1 Installation must comply with this Research Report, the manufacturer's published installation instructions, and the applicable Code. In the event of a conflict, this report governs.

6.2 The insulation must be separated from the interior occupied space of the building by a thermal barrier as described in Section 5.3, except as described in Sections 5.3.2 and 5.4.

6.3 The insulation must not exceed the thicknesses noted in Sections 4.1, 5.3, and 5.4, as applicable.

6.4 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 IBC Section 2603.8 [2603.9], as applicable.

6.5 Jobsite certification and labeling of the insulation must comply with IRC Section N1101.10 [N1101.12] and IECC Sections C303.1 or R303.1, as applicable.

6.6 The Ultra-Thane 230 Wall Foam insulation is manufactured in Fresno, CA under a quality control program with inspections by Intertek Testing Services NA, Inc. (AA-647).

7.0 SUPPORTING EVIDENCE

7.1 Reports of tests in accordance with ASTM C518 and ASTM E84.

7.2 Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation (AC377), dated April 2016, including reports of tests in accordance with Appendix X.

7.3 Research Reports for evaluation of data in accordance with ICC-ES Acceptance Criteria for Fire-protective Coatings Applied to Spray-applied Foam Plastic Insulation Installed without a Code-prescribed Thermal Barrier (AC456), dated October 2015.

7.4 Intertek Listing Report "General Coatings Ultra-Thane 230 Wall Foam Insulation", on the [Intertek Directory of Building Products](#).

8.0 IDENTIFICATION

The Ultra-Thane 230 Wall Foam insulation is identified with the manufacturer's name (General Coatings Manufacturing Corp.), address and telephone number, the product name, use instructions, the flame-spread and smoke-development indices, the lot number, the Intertek Mark as shown below, and the Code Compliance Research Report number (CCRR-1085).





9.0 OTHER CODES

This section is not applicable.

10.0 CODE COMPLIANCE RESEARCH REPORT USE

10.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

10.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

10.3 Reference to the <https://bpdirectory.intertek.com> is recommended to ascertain the current version and status of this report.

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TABLE 1 – PROPERTIES EVALUATED

PROPERTY	IBC SECTION ¹	IRC SECTION ¹	IECC SECTION ¹
Physical properties	Not required	Not required	Not required
Surface-burning characteristics	2603.3	R316.3	Not applicable
Thermal barrier/ignition barrier	2603.4	R316.4	Not applicable
Thermal resistance	1301	N1101.10 N1102 [N1101.1, N1101.12]	C303.1.1 C303.1.4 R303.1.1 R30301.4 [303.1.1 and 303.1.2]

¹ Section numbers in parentheses refer to the 2012 codes.

TABLE 2 – THERMAL RESISTANCE (R Values)^{1,2,3}

THICKNESSES (inches)	R-VALUE (°F.ft ² .h/Btu)
1	5.9
3-1/2	22
4	26
5-1/2	36
7-1/2	49
9-1/2	62
11-1/2	75

¹ R-values are calculated based on tested K-values at 1 inch and 4 inch thicknesses.

² R-values greater than 10 are rounded to the nearest whole number.

³ To determine R values for thickness not listed:

- a. between 1 inch and 4 inch are determined through linear interpolation; or,
- b. greater than 4 inches are calculated based on R = 6.5/inch