



ICC-ES Evaluation Report ESR-3244

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This report is subject to renewal August 2024.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

Section: 07 21 00—Thermal Insulation

REPORT HOLDER:

URETHANE TECHNOLOGY COMPANY, INC.

EVALUATION SUBJECT:

UTC 7040-0.5 AND 7041-0.5 ICC SPRAY-APPLIED FOAM PLASTIC INSULATION

1.0 EVALUATION SCOPE

1.1 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)
- 2013 *Abu Dhabi International Building Code* (ADIBC)[†]

[†]The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

- Other Codes (see Section 8.0)

Properties evaluated:

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

1.2 Evaluation to the following green standard:

- 2008 ICC 700 *National Green Building Standard*™ (ICC 700-2008)

Attributes verified:

- See Section 3.1

2.0 USES

UTC 7040-0.5 and 7041-0.5 ICC spray foams are used as nonstructural thermal insulating materials in buildings of

Type V-B construction under the IBC and dwellings under the IRC. The insulation is for use in wall cavities, floor assemblies, ceiling assemblies, or attics and crawl spaces when installed in accordance with Section 4.4. Under the IRC and 2015 IBC, the insulation may be used as air-impermeable insulation when installed in accordance with Section 3.4.

3.0 DESCRIPTION

3.1 UTC 7040-0.5 and 7041-0.5 ICC Insulation:

UTC 7040-0.5 and 7041-0.5 ICC foam plastic insulations are a two-component, open-cell, spray-applied foam plastics with a nominal density of 0.50 pcf (8 kg/m³). The polyurethane foam is produced by combining a polymeric isocyanate (the A component) and a proprietary resin (the B component) in a 1:1 volumetric ratio. The polymeric isocyanate (the A component) has a shelf life of one year when stored in factory-sealed containers at temperatures between 60°F and 100°F (15.6°C and 37.7°C). The proprietary resin (the B component) has a shelf life of six months when stored in factory-sealed containers at temperatures between 60°F and 80°F (15.6°C and 26.7°C).

The attributes of the insulation have been verified as conforming to the provisions of ICC 700-2008 Section 703.2.1.1.1(c) as an air impermeable insulation. Note that decisions on compliance for those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. These codes or standards often provide supplemental information as guidance.

3.2 Surface Burning Characteristics:

The UTC 7040-0.5 and 7041-0.5 ICC insulation, at a maximum thickness of 5.8 inches (147 mm) and a nominal density of 0.5 pound per cubic foot (8 kg/m³), 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 separated from the interior of the building by a code-prescribed 15-minute thermal barrier.

3.3 Thermal Resistance:

UTC 7040-0.5 and 7041-0.5 ICC insulation has a thermal resistance, R-value, at a mean temperature of 75°F (24°C) as shown in Table 1.

3.4 Air Permeability:

UTC 7040-0.5 and 7041-0.5 ICC insulation, at a minimum 3.5-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 UTC 7030-FS1 Intumescent Coating:

UTC 7030-FS1 intumescent coating, manufactured by Urethane Technology Company, Inc., is a water-based, single-component coating supplied in 5-gallon (19L) pails and 55-gallon (208L) drums. The coating material has a shelf life of 12 months when stored in factory-sealed containers at temperatures between 60°F (15.6°C) and 80°F (26.7°C).

3.6 DC 315 Coating:

DC 315 Coating, manufactured by International Fireproof Technology Inc./ Paint to Protect Inc. ([ESR-3702](#)), is a single-component, water-based, liquid-applied intumescent coating. The coating is supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums and has a shelf life of 24 months when stored in factory-sealed containers at temperatures between 50°F (10°C) and 80°F (27°C).

4.0 INSTALLATION

4.1 General:

The manufacturer's published installation instructions and this report must be strictly adhered to, and a copy of the instructions and this evaluation report must be available on the jobsite at all times during installation.

4.2 Application:

UTC 7040-0.5 and 7041-0.5 ICC insulation must be applied using spray equipment specified by Urethane Technology Company, Inc. The insulations must not be used in areas having a maximum service temperature greater than 180°F (82°C), must not be used in electrical outlet or junction boxes or in contact with rain or water, and must be protected from the weather during and after application. Where the UTC 7040-0.5 or 7041-0.5 ICC insulation is used as an air-impermeable barrier, such as in unventilated attic spaces regulated by 2015 and 2012 IRC Section R806.5 (2009 IRC Section R806.4) or 2015 IBC Section 1203.3, the insulation must be installed at a minimum thickness of 3.5 inches (89 mm). The insulation can be installed at a maximum per pass thickness equal to the installed thickness. The insulation must be installed only by factory-certified applicators.

4.3 Thermal Barrier:

4.3.1 Application with a Prescriptive Thermal Barrier:

UTC 7040-0.5 and 7041-0.5 ICC spray foam insulations must be separated from the interior of the building by an approved thermal barrier of 1/2-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 when the installation complies with the requirements of 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 separated from the interior of the building by a code-prescribed 15-minute thermal barrier.

4.3.2 Application without a Prescriptive Thermal Barrier: UTC 7040-0.5 and 7041-0.5 ICC spray foam insulation may be installed without the prescriptive

15-minute thermal barrier described in Section 4.3.1, when the installation is in accordance with the following requirements:

4.3.2.1 All surfaces of the foam plastic insulation must be covered by an intumescent coating as set forth in Table 2.

4.3.2.2 The foam plastic insulation thickness must not exceed thicknesses set forth in Table 2.

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

4.4 Ignition Barrier – Attics and Crawl Spaces:

4.4.1 Application with a Prescriptive Ignition Barrier:

When UTC 7040-0.5 and 7041-0.5 ICC 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 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 in a manner so the foam plastic insulation is not exposed. UTC 7040-0.5 and 7041-0.5 ICC insulation may be installed in unvented attics in accordance with 2015 and 2012 IRC Section R806.5 (2009 IRC Section R806.4) or 2105 IBC Section 1203.3.

4.4.2 Application without a Prescriptive Ignition Barrier:

Where UTC 7040-0.5 and 7041-0.5 ICC spray foam is installed in an attic or crawl space without a prescriptive ignition barrier, in accordance with this section, 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 attic or crawl space 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®) Section 701.
5. 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 2015 IBC Section 1203.3 or 2015 and 2012 IRC Section R806.5 (2009 IRC Section R806.4).
6. 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.
7. If hot work is to be performed, all necessary procedures, precautions and limitations must be observed in accordance with OSHA 1926 Subpart J Standard 1926.352 requirements for hot work (welding / cutting) performed in the vicinity of combustible materials.
8. An installation certificate with the following information must be posted at each entrance:
 - Product name and installation thickness.
 - Manufacturer name, address and contact information.
 - Installation contractor name, address and contact information.
 - Attestation that the product(s) have been installed in accordance with the manufacturer's installation instructions and the requirements of the evaluation report.

- A notice that the certificate is not to be removed or altered.
- A list of limitations for the space including the following:
 - o Entry to the space is only to service utilities, and no storage is permitted.
 - o FIRE SAFETY WARNING: If hot work is to be performed, all necessary procedures, precautions and limitations must be observed in accordance with OSHA 1926 Subpart J Standard 1926.352 requirements for hot work (welding / cutting) performed in the vicinity of combustible materials.

In attics and crawl spaces, UTC 7040-0.5 and 7041-0.5 ICC insulation may be spray-applied to the underside of the roof sheathing and/or rafters, and to the vertical walls and the underside of floors as described in this section, when the installation is in accordance with the following requirements:

4.4.2.1 All surfaces of the foam plastic insulation must be covered by an intumescent coating as set forth in Table 3.

4.4.2.2 The foam plastic insulation thickness must not exceed thicknesses set forth in Table 3.

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

UTC 7040-0.5 and 7041-0.5 ICC insulation may be installed in unvented attics as described in this section in accordance with 2015 and 2012 IRC Section R806.5 (2009 IRC Section R806.4) and 2015 IBC Section 1203.3.

4.4.3 Use on Attic Floors: UTC 7040-0.5 and 7041-0.5 ICC insulation may be installed between and over the joists in attic floors without an ignition barrier as prescribed in IBC Section 2603.4 and IRC Section R316.5.3, when the installation is in accordance with the following requirements:

4.4.3.1 All surfaces of the foam plastic insulation must be covered by an intumescent coating as set forth in Table 3.

4.4.3.2 The foam plastic insulation thickness must not exceed thicknesses set forth in Table 3.

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

5.0 CONDITIONS OF USE

The UTC 7040-0.5 and 7041-0.5 ICC 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** The product must be installed in accordance with the manufacturer's published installation instructions, this evaluation report and the applicable code. The instructions within this report govern if there are any conflicts between the manufacturer's 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 in accordance with IBC Section 2603.4, except when installation is as described in Section 4.3.2 or in attics and crawl spaces as described in Section 4.4.2 or Section 4.4.3.
- 5.3** The insulation must not exceed the thickness noted in Sections 3.2, 3.4, 4.3, 4.4 and Table 2 or 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 installers certified by Urethane Technology Company, 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 R318.4 or 2015 and 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 N1101.10, 2012 IRC Section N1101.14, 2015 or 2012 IECC Sections C303.1, R303.1 and R401.3 [2009 IECC Section 303.1 and 401.3], as applicable.

5.8 When installed in accordance with Section 4.4.2 of this report, the associated installation certificate(s) containing the required information referenced in Section 4.4.2 must be installed at each entrance to the crawlspace or attic, as applicable. The certificate(s) must be red in color and constructed of durable materials, such as metal, plastic, or laminated paper.

5.9 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 June 2023, including reports of tests in accordance with Appendix X of AC377.

6.2 Report of room corner testing in accordance with NFPA 286.

6.3 Report of air permeance tests in accordance with ASTM E283.

7.0 IDENTIFICATION

7.1 Containers of UTC 7040-0.5 and 7041-0.5 ICC components are identified with a label bearing the Urethane Technology Inc., name and address; the product trade name (UTC 7040-0.5 ICC or 7041-0.5); the lot number; the shelf life and the expiration date; the evaluation report number (ESR-3244).

International Fireproof Technology, Inc. / Paint to Protect Inc., DC 315 coating is labeled with the manufacturer's name and address; the product name; the date of manufacture, the shelf life or expiration date; the manufacturer's instructions for application, and evaluation report number ([ESR-3702](#)).

Intumescent coatings described in Section 3.5 is identified with the manufacturer's name and address, the product trade name and use instructions.

7.2 The report holder's contact information is the following:

URETHANE TECHNOLOGY COMPANY, INC.
59-77 TEMPLE AVENUE
NEWBURGH, NEW YORK 12550
(845) 561-5500
www.urethanetechnology.com

8.0 OTHER CODES

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

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

- 2006 *International Energy Conservation Code*® (2006 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 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*®.

- **Protection against Termites:** Replace the wording in Section 5.6 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 5.7, except jobsite certification and labeling must comply with 2006 IECC Sections 102.1.1 and 102.11, as applicable.

TABLE 1—THERMAL RESISTANCE (R-VALUES)^{1,2}

THICKNESS (inches)	R-VALUE (°F.ft ² .h/Btu)
1.0	4.2
3.5	14
4.0	16
5.8	24
6.0	24
7.0	29
8.0	33
9.0	37
10.0	41
11.25	46

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

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

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

TABLE 2—USE OF INSULATION WITHOUT A PRESCRIPTIVE THERMAL BARRIER¹

INSULATION TYPE	MAXIMUM THICKNESS (in.)		FIRE PROTECTIVE COATING (Applied to all Exposed Foam Surfaces) ²		TESTS SUBMITTED (AC377)
	(Wall Cavities and Vertical Surfaces)	(Underside of Roof Sheathing/Rafters and floors)	MINIMUM THICKNESS AND TYPE	MINIMUM APPLICATION RATE	
UTC 7040-0.5 and 7041-0.5	5½	14¾	DC315 20 wet mils (14 mils dry)	1.3 gal / 100 ft ²	NFPA 286

For SI: 1 inch = 25.4 mm; 1 mil = 0.0254 mm; 1 gallon = 3.38 L; 1 ft² = 0.093 m².

¹See Section 4.3.2.

²See Section 3.6.

TABLE 3—USE OF INSULATION IN ATTICS AND CRAWL SPACES WITHOUT A PRESCRIPTIVE IGNITION BARRIER

INSULATION TYPE	MAXIMUM THICKNESS (in.)		FIRE PROTECTIVE COATING (Applied to all Exposed Foam Surfaces)		TESTS SUBMITTED (AC377)
	(Wall Cavities and Vertical Surfaces)	(Underside of Roof Sheathing/Rafters and floors)	MINIMUM THICKNESS AND TYPE	MINIMUM THICKNESS AND TYPE	
UTC 7040-0.5 and 7041-0.5	5½	14¾	DC315 4 mils wet (3 mils dry)	0.28 gal / 100 ft ²	Appendix X
	11¼	11¼	UTC 7030-FS1 8 mils wet (4.75 mils dry)	0.5 gal / 100 ft ²	Appendix X

For SI: 1 inch = 25.4 mm; 1 mil = 0.0254 mm; 1 gallon = 3.38 L; 1 ft² = 0.093 m².

¹See Section 4.4.2.

²See Section 3.5 and 3.6.