ICC-ES Evaluation Report

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

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EVALUATION SUBJECT

TOUCH N' SEAL CLASS I FR SPRAY FOAM SYSTEM AND TOUCH N' FOAM PROFESSIONAL CLASS I FR SPRAY FOAM SYSTEM

1.0 EVALUATION SCOPE

Compliance with the following codes:

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

Properties evaluated:

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

2.0 USES

The Touch N' Seal Class I FR Spray Foam System (also sold as the Touch N' Foam Professional Class I FR Spray Foam System) is used as a nonstructural thermal insulating material 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, and ceiling assemblies, and in attics and crawl spaces, sill plates, band joists and headers when installed in accordance with this report. Under the IRC, the insulation may be used as air-impermeable insulation when installed in accordance with Section 3.4; to seal the joints in site-fabricated metallic air ducts when installed as described in Section 4.5; and in any type of construction as an air barrier material when installed as described in Section 4.6. The insulation may be used on sill plates, band joists and headers as described in Section 4.7, and in attics and crawlspaces as described in Section 4.4.

3.0 DESCRIPTION

3.1 Touch N' Seal® Class I FR Spray Foam System:

The Touch N' Seal® Class I FR Spray Foam System is identical to the Touch N' Foam Professional Class I FR Foam System. The product is a two-component, closed-cell, low-pressure, spray-applied, polyurethane foam plastic with a nominal density of 2.2 pcf. The polyurethane foam is produced in the field by combining an MDI-based isocyanate (polymeric diphenylmethane disocyanate) (A component) and a resin (B component) in a 50:50 volumetric ratio. The products have a shelf life of fifteen months when stored in factory-sealed containers at temperatures between 50°F and 120°F (10°C and 48°C). The spray foam system is available in disposable containers of the following sizes: FK-200FR-ICC: 3-gallon (11 L), FK-600FR-ICC: 9-gallon (34 L), CPDS-750FR-ICC: 11-gallon (42 L). The spray foam system is available in refillable containers in the following sizes: RF-17-ICC: 17-gallon (64 L), RF-60-ICC: 60-gallon (227 L) and RF-120-ICC: 120-gallon (454 L). The A and B components for the FK-200FR are packaged together. The components of the FK-600FR-ICC, CPDS-750FR-ICC, RF-17-ICC, RF-60-ICC and RF-120-ICC are packaged separately.

3.2 Surface-burning Characteristics:

The Touch N' Seal Class I FR Spray Foam System, at a maximum thickness of 2 inches (51 mm) and a nominal density of 2.2 pounds 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.

3.3 Thermal Resistance:

The Touch N' Seal Class I FR Spray Foam System has a thermal resistance, *R*-value, at a mean temperature of 75°F (24°C) as shown in Table 1.

3.4 Air Permeability:

The Touch N' Seal Class I FR Spray Foam System, at a minimum 1-inch (25.4 mm) thickness, is considered air-impermeable insulation in accordance with 2012 IRC Section R806.5 and 2009 IRC Section R806.4, based on testing in accordance with ASTM E283.

3.5 Vapor Retarder:

The Touch N' Seal Class I FR Spray Foam has a vapor permeance of 1 perm or less when tested in accordance

with ASTM E96 (desiccant method), and qualifies as a Class II vapor retarder when installed at minimum thickness of 2 inches (51 mm).

3.6 Intumescent Coatings:

3.6.1 Touch N' Seal Ignition Barrier Coating: Touch N' Seal Ignition Barrier Coating is a latex-based intumescent coating supplied in 1-gallon (4 L) and 5-gallon (19 L) pails and in 55-gallon (208 L) drums. The coating material has a shelf life of 36 months when stored in factory-sealed containers at temperatures between 40°F (4.4°C) and 90°F (32°C).

3.6.2 Flame Seal TB™ Intumescent Coating: Flame Seal TB™ is a two-component, four-to-one by volume, liquid-applied, water-based polymer intumescent coating. The coating is supplied in 6-gallon (23 L) pails and 55-gallon (208 L) drums, and has a shelf life of six months when stored in factory-sealed containers at temperatures between 40°F (4.4°C) and 90°F (32°C).

3.6.3 No Burn Plus XD: No Burn Plus XD is a latex-based intumescent coating supplied in 1-gallon (4 L) and 5-gallon (19 L) pails and 55-gallon (208 L) drums. The coating material has a shelf life of 36 months when stored in factory-sealed containers at temperatures between 40°F (4.4°C) and 90°F (32°C).

4.0 INSTALLATION

4.1 General:

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

4.2 Application:

The insulation system must be applied using a dispensing system provided by Convenience Products, a Division of Clayton Corporation. The insulation is applied in single or multiple passes. The minimum thickness per pass is $^1/_2$ inch (12.7 mm) and the maximum thickness per pass is 2 inches (51 mm). The insulation must not exceed a total thickness of 2 inches (51 mm) in wall, floor, or ceiling cavities. Each pass must be allowed to fully expand and cure prior to the application of an additional pass. The substrate must be free of moisture, frost or ice, dirt, loose debris, oil or grease. The foam plastic insulation must not be used inside electrical outlets or junction boxes or in contact with rain or water, and must be protected from the weather during and after application. The maximum service temperature must not exceed that specified in the manufacturer's installation instructions. Where the foam plastic 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 1 inch (25.4 mm).

4.3 Thermal Barrier:

4.3.1 Application with a Prescriptive Thermal Barrier: The Touch N' Seal Class I FR Spray Foam System is installed at a maximum thickness of 2 inches (51 mm) and 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. 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 as described in Section 4.4, but is required between the insulation and the interior of the building.

4.4 Attics and Crawl Spaces:

4.4.1 Application with a Prescriptive Ignition Barrier: When the Touch N' Seal Class I FR Spray Foam System is installed at a density of 2.2 pcf (35.2 kg/m^3) 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. The insulation may be installed in unvented attics in accordance with 2009 IRC Section R806.5 and 2006 IRC Section R806.4.

4.4.2 Application without a Prescriptive Ignition Barrier: When the Touch N' Seal Class I FR Spray Foam System 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 attic, crawl space or basement 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 2009 IRC Section R806.5 and 2006 IRC Section R806.4.
6. Under-floor (crawl space) ventilation is provided when required by IBC Section 1203.3 or IRC Section R408.1, as applicable.

4.4.2.1 Attics and Crawl Spaces: In attics, the foam plastic may be spray-applied at a density of 2.2 pcf (35.2 kg/m^3) to vertical surfaces and the underside of roof sheathing or roof rafters, and in crawl spaces to the underside of floors, as described in this section. The thickness of the insulation applied to wall surfaces must not exceed 2 inches (51 mm). The foam plastic must be covered on all surfaces with one of the coatings described in Section 3.6. The coating must be applied over the foam plastic 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 coatings must be applied over the foam plastic as follows:

- Touch N' Seal Ignition Barrier Coating at a minimum application rate of 8 wet mils thickness (1 gallon per 201 ft^2) [3.79 liters per 18.7 m^2]
- No Burn Plus XD at a minimum application rate of 8 wet mils thickness (1 gallon per 201 ft^2) [3.79 liters per 18.7 m^2]
- Flame Seal TB at a minimum application rate of 8 wet mils thickness (1 gallon per 201 ft^2) [3.79 liters per 18.7m^2]

The insulation may be installed in unvented attics or crawl spaces in accordance with 2012 IRC Section R806.5 and 2009 IRC Section R806.4.

4.4.2.2 Use on Attic Floors: The Touch N' Seal Class I FR Spray Foam System and the Touch N' Foam

Professional Class I FR Spray Foam System may be installed at a maximum thickness of 2 inches (51 mm) between joists in attic floors when the exposed surfaces of the foam plastic insulation are covered with one of the intumescent coatings described in Section 4.4.2.1 of this report. The intumescent coatings must be applied in accordance with the coating manufacturer's instructions and this report. The insulation must be separated from the interior of the building by an approved thermal barrier.

4.5 Joint Sealant on Metallic Air Ducts:

The insulation, installed at a maximum thickness of 2 inches (51 mm) and width of 6 inches (152 mm), may be used to seal the joints of non-factory-made (non-listed) air ducts, in accordance with Section M1601.4.1 of the IRC. (See Figure 1.)

4.6 Applications as Air Barrier Material:

The Touch N' Seal Class I FR Spray Foam System may be used in any type of construction as an air barrier material for wall/floor and roof/wall junctions in the exterior building envelope when installed at a maximum thickness of 2 inches (51 mm) and maximum width of 6 inches (152 mm) with unlimited length. (See Figures 2 and 3.)

In wall/floor junctions, the foam plastic may be applied over a fire-resistant joint without affecting the fire resistance rating provided the foam plastic installation is limited to 2 inches by 2 inches (51 mm by 51 mm) and unlimited length.

4.7 Use on sill Plates, Band Joists and Headers:

The Touch N' Seal Class I FR Spray Foam System with a maximum thickness of 2 inches (51 mm) at 2.2 pcf (35.2 kg/m^3) may be applied to sill plates, band joists and headers without a thermal barrier or ignition barrier in Type V construction in accordance with IBC Section 2603.4.1.13 and IRC Section R316.5.11.

5.0 CONDITIONS OF USE

The Touch N' Seal Class I FR Spray Foam System and the Touch N' Foam Professional Class I FR Spray Foam System described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The 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 The insulation must be separated from the interior of the building by an approved 15-minute thermal barrier as described in Section 4.3, except when installed as described in Sections 4.4, 4.5, 4.6 and 4.7.

5.3 The insulation must not exceed the thicknesses noted in Sections 3.2, 4.3, 4.4, 4.5, 4.6 and 4.7 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 Convenience Products, a Division of Clayton Corporation.

5.6 Use of the insulation in areas where the probability of termite infestation is "very heavy" must be in accordance with 2012 IBC Section 2603.9, 2009 IBC Section 2603.8 or IRC Section R318.4 as applicable.

5.7 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, as applicable.

5.8 A vapor retarder must be installed in accordance with the applicable code.

5.9 The Touch N' Seal Class I FR Spray Foam System and the Touch N' Foam Professional Class I FR Spray Foam System must not be used as a component of a fire-resistant joint system. The integrity of all fire-resistant joints must be inspected and verified. The insulation may be applied over the top of a fire-resistant joint system, as described in Section 4.6.

5.10 The A and B components of the insulation are produced in Pacific, Missouri, under a quality control program with inspections by Intertek Testing Services NA, Inc. (AA-690).

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation (AC377), dated November 2012 (editorially corrected April 2013) including reports of tests in accordance with Appendix X of AC377 and of air leakage rate tests in accordance with ASTM E283.

6.2 Report of test in accordance with NFPA 286.

6.3 Report of test for water vapor transmission in accordance with ASTM E96 desiccant method.

6.4 Engineering analysis addressing use as an air barrier material and duct joint sealant.

7.0 IDENTIFICATION

Containers of the A and B components of the Touch N' Seal Class I FR Spray Foam System and the Touch N' Foam Professional Class I FR Spray Foam System are identified with a label bearing the Convenience Products, a Division of Clayton Corporation, name and address; the product name; the flame spread and smoke-developed indices; the lot number; mixing instructions; the shelf life and the expiration date; the evaluation report number (ESR-3052); and the name of the inspection agency (Intertek Testing Services NA, Inc.).

Intumescent coatings are identified with the manufacturer's name and address, the product name and use instructions.

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 4.3.1, except the approved thermal barrier must be installed in accordance with 2006 IRC Section R314.4.
- **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 of 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 IBC Section 2603.8 or 2006 IRC Section R320.5.
- **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)

THICKNESS (inches)	*R*-VALUE (°F.ft².h/Btu)
1.0	5.4
2.0	11.0

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

[1]*R*-values are based on tested K-values at 1- and 2-inch thicknesses.

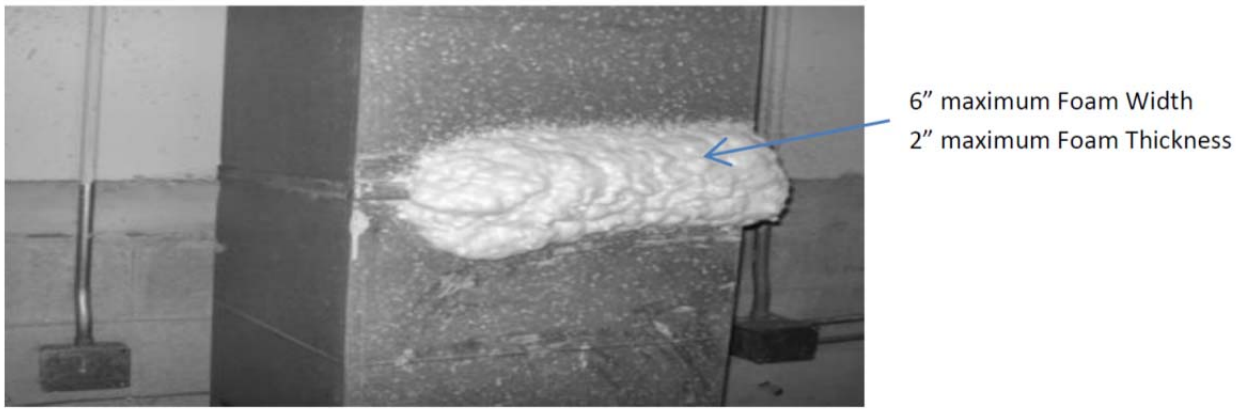

Figure 1-example of duct joint sealing application

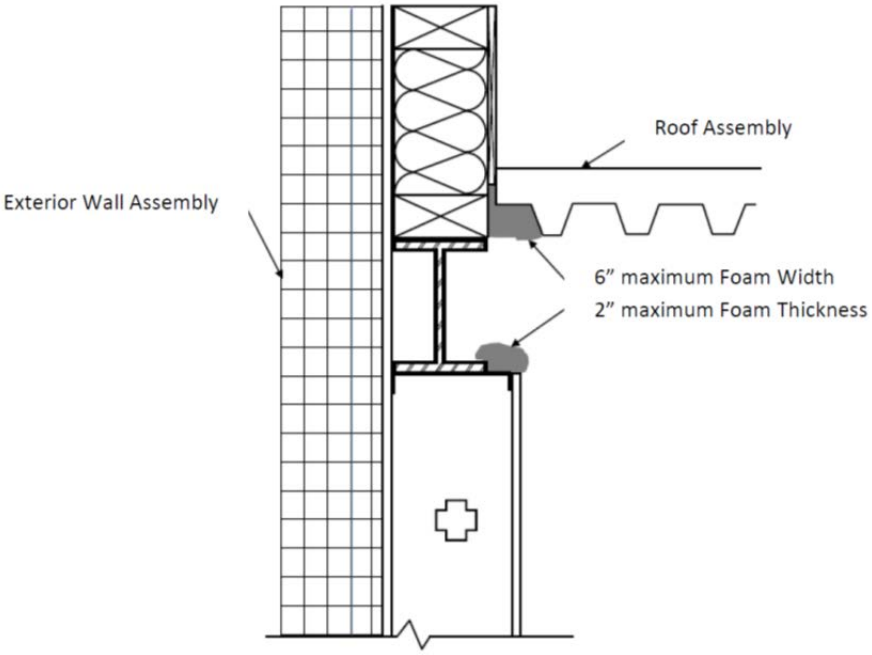

Figure 2-Example of Roof/Wall Junction Foam Insulation Use

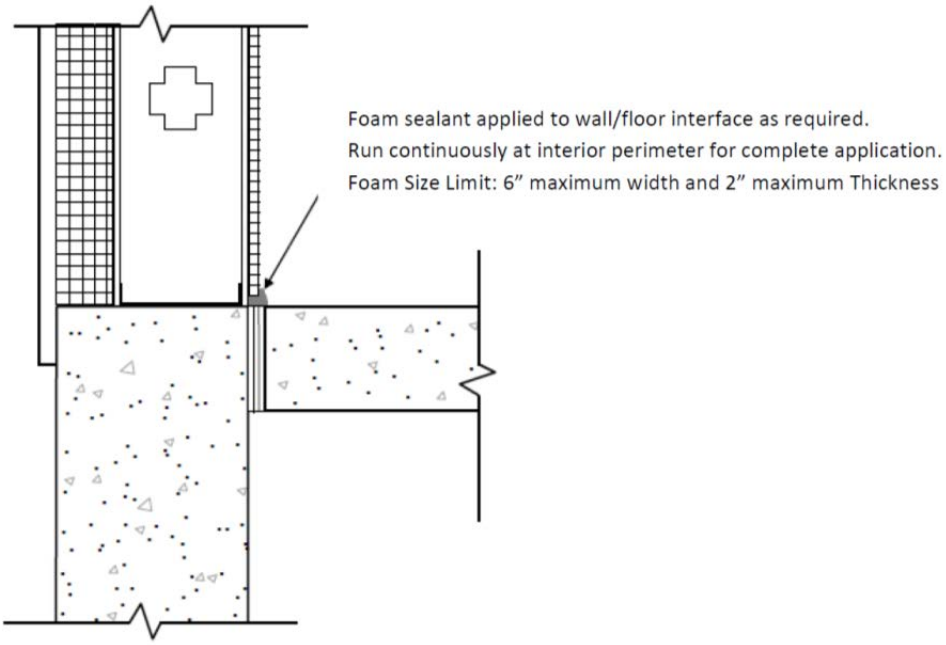

Figure 3-Example of Wall/Floor Juncture