ICC-ES Evaluation Report

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This report also contains:

- FL Supplement

Subject to renewal May 2027

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION Section: 07 21 00—Thermal Insulation	REPORT HOLDER: AMBIT POLYURETHANE LLC	EVALUATION SUBJECT: AMBI-TITE 204 (HFO) SPRAY-APPLIED INSULATION	

1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2021 and 2018 *International Building Code®* (IBC)
- 2021 and 2018 *International Residential Code®* (IRC)
- 2021 and 2018 *International Energy Conservation Code®* (IECC)

Properties evaluated:

- Surface-burning characteristics
- Physical properties
- Thermal resistance
- Attic and crawl space installation
- Air permeability
- Water vapor transmission

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

Ambi-Tite 204 (HFO) is a closed cell spray foam insulation used as a nonstructural thermal insulating material in Type V construction (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 the IBC the insulation may be used as air-impermeable insulation when installed in accordance with Section 3.5.

3.0 DESCRIPTION

3.1 General:

Ambi-Tite 204 (HFO) is a rigid, medium-density, spray-applied cellular polyurethane foam plastic insulation installed as a component of wall assemblies, ceilings, floors, crawlspaces and cavities of roofs. The foam plastic insulation is a two-component, closed-cell, one-to-one by volume spray foam system with a nominal density of 2.0 pcf (32.0 kg/m^3). The insulation is produced in the field by combining a polymeric isocyanate

4.3 Thermal Barrier:

4.3.1 Application with a Prescriptive Thermal Barrier: The Ambi-Tite 204 (HFO) must be separated from the interior of the building by an approved thermal barrier of 1/2-inch-thick (12.7 mm) gypsum wallboard or an equivalent thermal barrier complying with and installed in accordance with the applicable code. 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 installed behind a code-prescribed thermal barrier.

4.3.2 Application without a Prescriptive Thermal Barrier: The prescriptive 15-minute thermal barrier or ignition barrier may be omitted when installation is in accordance with this section (Section 4.3.2) and Table 2. The insulation and intumescent coating may be spray-applied to the interior facing of walls, the underside of the roof sheathing or roof rafter, and in crawl spaces, and may be left exposed as an interior finish without a prescribed 15-minute thermal barrier or ignition barrier. The thickness of the foam plastic and coating must be as described in Table 2. The foam plastic must be covered on all surfaces with one of the coatings as described in Table 2. The coating must be applied over the insulation in accordance with the coating manufacturer's instructions and this report. The Fireshell® F10E coating must be applied over the insulation in accordance with the coating manufacturer's instructions, ESR-3997 and this report or the DC315 Intumescent Coating must be applied over the insulation in accordance with the coating manufacturer's instructions, ESR-3702 and this report. The foam plastic 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.

4.4 Ignition Barrier—Attics and Crawl Spaces:

4.4.1 Application with a Prescriptive Ignition Barrier: When Ambi-Tite 204 (HFO) 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 and 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 that the foam plastic insulation is not exposed. The attic or crawl space area must be separated from the interior of the building by an approved thermal barrier as described in Section 4.3.1.

The insulation, as described in this section, may be installed in unvented attics in accordance with IBC Section 1202.3 or IRC Section R806.5.

4.4.2 Application without a Prescriptive Ignition Barrier:

General: AmbiTite 204 (HFO) insulation may be installed in attics and crawl spaces as described in this section without the ignition barriers required by IBC Section 2603.4.1.6 and IRC Sections R316.5.3 and R316.5.4, subject to the following conditions:

a. Entry to the attic or crawl space is only to service utilities, and no storage is permitted.

b. There are no interconnected attic or crawl space areas.

c. Air in the attic or crawl space is not circulated to other parts of the building.

d. Under-floor (crawl space) ventilation is provided when required by 2021 and 2018 IBC Section 1202.4 [2015 IBC Section 1203.4 (2012 and 2009 IBC Section 1203.3)] or IRC Section R408.1, as applicable.

e. Attic ventilation is provided when required by 2021 and 2018 IBC Section 1202.2.1 or IRC Section R806, except when air-impermeable insulation is permitted in unvented attics in accordance with 2021 and 2018 IBC Section 1202.3 or 2021 or 2018 IRC Section R806.5.

f. Combustion air is provided in accordance with IMC Section 701.

4.4.2.1 Attics and Crawl Spaces: In attics and crawl spaces, the insulation may be spray-applied to the underside of the roof sheathing and/or rafters, to the underside of wood floors, and to vertical surfaces as described in this section. The thickness of the foam plastic applied to the underside of the top of the space must not exceed 12 inches (305 mm), and the thickness when applied to vertical surfaces must not exceed 8 inches (203 mm).

4.4.2.2 Use on Attic Floors: The spray-applied foam insulation may be installed at a maximum thickness of 8 inches (203 mm) between and over the joists in attic floors.

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

THICKNESS (inches)	*R*-VALUE (°F.ft².h/Btu)
1	6.8
2	13
3.5	23
4	26
5	33
6	39
7	46
8	52
9	59
10	65
11	72
12	78

For **SI:** 1 inch = 25.4 mm; 1°F.ft².hr/Btu = 0.176 110 k.m²/W.

[1]Calculated *R*-values are based on tested K-values at 1- and 3.5-inch thicknesses.
*R-values greater than 10 are rounded to the nearest whole number.

TABLE 2—USE OF INSULATION WITHOUT A PRESCRIPTIVE THERMAL BARRIER[1]

INSULATION TYPE	MAXIMUM THICKNESS (in.) (Walls & Vertical Surfaces)	MAXIMUM THICKNESS (in.) (Ceilings, Underside of Roof Sheathing/Rafters & Floors)	FIRE-PROTECTIVE COATING MINIMUM THICKNESS & TYPE (Applied to all Foam Surfaces)[2]	MINIMUM APPLICATION RATE OF FIRE-PROTECTIVE COATING	TESTS SUBMITTED
Ambi-Tite 204 (HFO)	8	12	Fireshell® F10E 18 wet mils / 12 dry mils	1.20 gal / 100 ft²	NFPA 286
	8	12	DC 315 14 wet mils / 9 dry mils	0.88 gal / 100 ft²	NFPA 286

For **SI:** 1 inch = 25.4 mm; 1 mil = 0.0254 mm; 1 gallon = 3.38 L; 1 ft² = 0.93 m².
[1]See Section 4.3.2.
[2]See Section 3.6 and 3.7