

ICC-ES Evaluation Report

ESR-1154

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This report is subject to re-examination in one year.

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DIVISION: 07—THERMAL AND MOISTURE PROTECTION
Section: 07210—Building Insulation

REPORT HOLDER:

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EVALUATION SUBJECT:

**SEALITE™ SPRAY APPLIED POLYURETHANE
 INSULATION**

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)
- 2006 *International Energy Conservation Code*® (IECC)
- BOCA® *National Building Code*/1999 (BNBC)
- 1999 *Standard Building Code*® (SBC)
- 1997 *Uniform Building Code*™ (UBC)

Properties evaluated:

- Surface-burning characteristics
- Physical properties
- Thermal transmission
- Attic and crawl space installation

2.0 USES

The Sealite™ insulation is used as a nonstructural thermal insulating material in Type V-B construction (IBC), dwellings under the IRC, and Type 5-B under the BNBC, Type VI under the SBC and Type V under the UBC.

3.0 DESCRIPTION

3.1 General:

Sealite™ insulation is a spray-applied cellular polyurethane foam plastic that is installed as a nonstructural foam component in cavities of roofs, ceilings, floors and stud wall assemblies. The foam plastic is a two-component, open-cell, one-to-one by volume spray foam system with a nominal density of 0.5 pcf (8 kg/m³).

3.2 Surface-burning Characteristics:

The insulation, at a maximum thickness of 4½ inches (114 mm) and a nominal density of 0.5 pcf (8 kg/m³), has a flame-spread index of less than 25 and a smoke-developed index of less than 450 when tested in accordance with ASTM E 84 (UBC Standard 8-1). Thicknesses of up to 8 inches (203 mm) for wall cavities and 12 inches (305 mm) for ceiling cavities are recognized based on room corner fire testing in accordance with UBC Standard 26-3.

3.3 Thermal Transmission R-values:

The insulation has thermal resistance R-values, at a mean temperature of 75°F (24°C), as shown in Table 1.

3.4 Aldocoat® 757 Intumescent Coating:

Aldocoat® 757 intumescent ignition barrier coating manufactured by Aldo Products Company is a water-based latex coating with specific gravity of 1.4. Aldocoat® 757 is supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums and has a shelf life of 6 months when stored in a factory-sealed container at temperatures between 40°F (4.5°C) and 90°F (32°C).

4.0 INSTALLATION

4.1 General:

The Sealite™ insulation must be installed in accordance with the manufacturer's published installation instructions and this report.

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

The Sealite™ insulation, with a maximum nominal thickness of 8 inches (203 mm) for wall cavities and 12 inches (305 mm) for ceiling cavities, must be separated from the interior of the building by an approved thermal barrier of 0.5-inch (12.7 mm) gypsum wallboard or an equivalent 15-minute thermal barrier complying with and installed in accordance with the applicable code. Exception: within an attic or crawl space, installation must be in accordance with Section 4.2.

4.1.1 Application: The Sealite™ insulation is spray-applied on the jobsite using a volumetric positive displacement pump as identified in the NCFI Polyurethanes application manual. The insulation can be installed at a maximum per pass thickness of up to 12 inches (305 mm). The Sealite™ insulation passes must be allowed to fully expand and be cured for a minimum of 10

minutes prior to applying an additional pass. The Sealite™ insulation components must not be stored at temperatures below 65°F (18°C) or above 100°F (38°C) before installation. Sealite™ must not be used in areas that have a maximum service temperature greater than 180°F (82°C). The foam plastic must not be used in electrical outlet or junction boxes or in contact with rain, water, or soil. The substrate must be free of moisture, frost or ice, and loose scales, rust, oil, and grease. The insulation must be protected from the weather during and after application.

4.2 Attics and Crawl Spaces:

4.2.1 Application With a Prescriptive Ignition Barrier:

When Sealite™ 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, IRC Section R314.5.3 or R314.5.4, BNBC Section 2603.4.1.4, SBC Section 2603.5.1.6, and UBC Section 2602.4, 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. Sealite™ insulation as described in this section may be installed in unvented attics in accordance with IRC Section R806.4.

4.2.2 Application without a Prescriptive Ignition Barrier: Where Sealite™ insulation is installed in accordance with Sections 4.2.2.1 and 4.2.2.2, the following conditions apply:

- Entry to the attic or crawl space is only to service utilities, and no storage is permitted.
- There are no interconnected basement or attic areas.
- Air in the attic or crawl space is not circulated to other parts of the building.
- Ventilation of the attic or crawl space is provided in accordance with the applicable code, except when insulation is permitted in unvented attics in accordance with Section R806.4 of IRC.
- Combustion air is provided in accordance with IMC Sections 701 and 703.

4.2.2.1 Attics: Sealite insulation may be spray-applied to the underside of roof sheathing or roof rafters, 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 16 inches (406 mm). The thickness of the foam plastic applied to vertical surfaces must not exceed 12 inches (304 mm). The foam plastic applied to vertical surfaces must be covered with Aldocoat 757 intumescent coating, applied in accordance with the coating manufacturer's instructions, at a minimum application rate of 1 gallon per 100 square feet (0.41 L/m²). The foam plastic on the underside of the roof sheathing or roof rafters does not require covering with intumescent coating.

The Aldocoat® 757 intumescent coating must be applied over the Sealite™ 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 any other substances that could interfere with adhesion of the coating. The coating is applied with a medium-size nap roller, soft brush or conventional airless spray equipment. The foam plastic on the underside of the roof sheathing or roof rafters does not require covering with intumescent coating. The coating must be applied when ambient and substrate temperatures are within a range of 50°F (10°C) and 90°F (32°C) and requires a 24-hour curing time.

The prescriptive ignition barrier required by IBC Section 2603.4.1.6 or IRC Section R314.5.3 may be omitted. The foam plastic insulation described in this section may be installed in unvented conditioned attics in accordance with IRC Section R806.4 when the foam plastic is applied at a thickness of 1 inch (25.4 mm) or greater.

4.2.2.2 Crawl Spaces: Sealite™ insulation may be spray-applied 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 16 inches (406 mm). The thickness of the foam plastic applied to vertical surfaces must not exceed 11.75 inches (298 mm). The foam plastic on both horizontal and vertical surfaces must be covered with Aldocoat® 757 intumescent coating described in Section 3.4 at a minimum application rate of 1 gallon per 100 square feet (0.41 L/m²). The Aldocoat® 757 intumescent ignition barrier coating must be applied over the Sealite™ 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 any other substances that could interfere with adhesion of the coating. The Aldocoat 757 coating is applied with a medium size nap roller, soft brush or conventional airless spray equipment. The coating must be applied when ambient and substrate temperatures are within a range of 50°F (10°C) and 90°F (32°C) and requires a twenty-four hour curing time. Sealite™ insulation, as described in this section, may be installed in unvented attics in accordance with IRC Section R806.4.

The prescriptive ignition barrier required by IBC Section 2603.4.1.6 or IRC Section R314.5.4 may be omitted. The foam plastic insulation described in this section may be installed in unvented conditioned attics in accordance with IRC Section R806.4 when the foam plastic is applied at a thickness of 1 inch (25.4 mm) or greater.

4.2.3 Use on Attic Floors: Sealite™ insulation may be installed exposed at a maximum thickness of 11.75 inches (298 mm) between joists in attic floors. Aldocoat 757 must be applied over the foam plastic at a minimum rate of 1 gallon per 100 square feet (0.41 L/m²) as described in Section 4.2.2.2. The Sealite™ insulation must be separated from the interior of the building by an approved thermal barrier. The ignition barrier in accordance with IBC Section 2603.4.1.6, IRC Section R314.2.3, BNBC Section 2603.4.1.4, SBC Section 2603.5.1.6, and UBC Section 2602.4 may be omitted.

5.0 CONDITIONS OF USE

The Sealite™ 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** This evaluation report and the manufacturer's published installation instructions, when required by the code official, must be submitted at the time of permit application.
- 5.2** Sealite™ insulation and Aldocoat® 757 intumescent ignition barrier 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.
- 5.3** Sealite™ insulation must be separated from the interior of the building by an approved 15-minute thermal barrier, as described in Section 4.1.

- 5.4 Sealite™ insulation must not exceed the thickness and density noted in Sections 3.2 and 3.3 of this report.
- 5.5 Sealite™ insulation must be protected from the weather during and after application.
- 5.6 Sealite™ insulation must be applied by contractors certified by NCFI Polyurethanes.
- 5.7 In areas where the probability of termite infestation is “very heavy” as determined in accordance with IBC Figure 2603.8 or IRC Figure R301.2 (6), the foam plastic must be installed in accordance with IBC Section 2603.8 or IRC Section R320.5.
- 5.8 In jurisdictions that have adopted the SBC and when the Sealite™ insulation is installed in buildings of wood construction, the insulation must not be installed on the exterior of foundation walls or below floor slabs on the ground or in contact with the ground. The insulation must have a clearance above grade and exposed earth of 6 inches (152 mm) or greater.
- 5.9 Sealite™ insulation has been evaluated only for use in Type V-B construction under the IBC [Type 5-B under the BNBC, Type VI under the SBC, Type V-N under the UBC] and dwellings under the IRC.
- 5.10 Jobsite certification and labeling of the insulation must comply with IRC Sections N1101.4 and N1101.4.1 and IECC Sections 102.1.1 and 102.1.11, as applicable.

- 5.11 A vapor retarder must be installed in accordance with the applicable code.
- 5.12 Sealite™ insulation is produced in Mount Airy, North Carolina, under a quality control program, with inspections by Intertek Testing Services NA Ltd. (AA-657).

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation (AC377), dated June 2009, including reports of the fire tests in accordance with Section A1.2.2 (attics) and Appendix X (crawl spaces).
- 6.2 Test reports on room corner fire testing of spray-applied foam plastic in accordance with UBC 26-3.
- 6.3 Reports on air leakage rate tests in accordance with ASTM E 283.

7.0 IDENTIFICATION

Components for Sealite™ insulation are identified with the manufacturer’s name (NCFI Polyurethanes), address and telephone number; the product trade name (Sealite™); use instructions; the density; the flame-spread and smoke-development indices; the evaluation report number (ESR-1154); and the name of the inspection agency (Intertek Testing Services NA Ltd.).

TABLE 1—THERMAL RESISTANCE (R-VALUES)

THICKNESS (inch)	R-VALUE (°F.ft ² .h/Btu)
ASTM C 518 TESTED VALUES	
1	4.1
3.5	13
CALCULATED R-VALUES¹	
2	7.5
3	11
4	14
5	18
6	22
7	25
7.5	27
8	29
9	32
10	36
11	40
11.5	41
12	43

For SI: 1 inch = 25.4 mm; 1 °F.ft².h/Btu = 0.176 110 °K.m²/W.

¹Calculated R-values are based on tested k-values at a 3.5-inch thickness.