

DIVISION: 07 00 00 – THERMAL AND MOISTURE PROTECTION

Section: 07 21 00 – Thermal Insulation

Section: 07 21 19 – Foamed-In-Place Insulation

REPORT HOLDER:

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REPORT SUBJECT:

ThermoSeal 500HY Spray-applied Polyurethane Insulation

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2018 and 2015 *International Building Code*® (IBC)
- 2018 and 2015 *International Residential Code*® (IRC)
- 2018 and 2015 *International Energy Conservation Code*® (IECC)

NOTE: This report references 2018 Code sections. Sections for earlier Code editions may differ.

1.2 The insulation has been evaluated for the following properties (see Table 1):

- Physical properties
- Surface-burning characteristics
- Thermal resistance

1.3 The insulation has been evaluated for the following uses (see Table 1):

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

2.0 STATEMENT OF COMPLIANCE

ThermoSeal 500HY 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 ThermoSeal 500HY: The insulation is a two-component, open-cell, spray-applied polyurethane foam plastic with a nominal density of 0.5 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 65°F and 85°F. The A and B components have a shelf life of six months when stored in factory-sealed containers at these temperatures.

4.0 PERFORMANCE CHARACTERISTICS

4.1 Surface-burning characteristics: The insulation, at a maximum thickness of 4 inches and the nominal densities stated in Section 3.1 of this report, 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 insulation thickness is not limited. Under the 2018 and 2015 IRC, a thermal barrier of minimum 23/32-inch-thick wood structural panel is also permitted, and the maximum insulation thickness is not limited.

4.2 Thermal Resistance: The thermal resistance of the insulations is shown in Table 2.

5.0 INSTALLATION

5.1 General:

The 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 manufacturer's application instructions. The insulation 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 of greater than 180°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.

ThermoSeal 500HY may be applied to the intended thickness, with each pass being a maximum of 12-inches thick. Where multiple passes are required, no cure time between passes is required.

5.3 Thermal Barrier:

5.3.1 Application with a Prescriptive Thermal Barrier: The insulation must be separated from the interior living 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, as applicable. Exceptions are provided in Section 5.4.

When the insulations are separated from the interior living space of the building with minimum 1/2-inch-thick gypsum board, the maximum thickness is not limited. Under the 2018 and 2015 IRC, a thermal barrier of 25/32-inch-thick wood structural panel is also permitted, and the maximum insulation thickness is unlimited

5.4 Attics and Crawl Spaces:

The insulation may be applied in attics and crawl spaces as described in 5.4.1. When the insulation is installed in an attic or crawlspace in accordance with this section, a thermal barrier is not required between the insulation and the attic or crawl space but is required between the insulation and the interior living 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 within 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.

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 Section 5.4.

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

6.4 Use of the insulations 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, as applicable.

6.5 Jobsite certification and labeling of the insulation must comply with IRC Section N1101.10, N1101.14 and IECC Sections C303.1 or R303.1 and R403.1, as applicable.

6.6 The insulation is manufactured under a quality control program with inspections by Intertek Testing Services NA, Inc.

7.0 SUPPORTING EVIDENCE

7.1 Reports of tests in accordance with ASTM E84.

7.2 Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation (AC 377), dated February 2020.





7.3 Intertek Listing Report "ThermoSeal 500HY Spray-applied Polyurethane Insulation", on the [Intertek Directory of Building Products](#).

8.0 IDENTIFICATION

The A and B components of the insulations described in this Research Report are identified with the report holder's name (Spray Foam Polymers, LLC.), address and telephone number; the product name; use instructions; the flame-spread and smoke-developed indices; the lot number; the Intertek Mark as shown below; and the Code Compliance Research Report number (CCRR-0415).



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	2018 IBC SECTION ¹	2018 IRC SECTION ¹	2018 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	C303.1.1 C303.1.4 R303.1.1 R303.1.4

¹ Section numbers may be different for earlier versions of the International codes.

TABLE 2 – THERMAL RESISTANCE

THICKNESS (in.)	R-VALUE (°F.ft ² .h/Btu) ^{1, 2, 3, 4}
	ThermoSeal 500HY
1	3.6
3.5	12
16	54

¹R-values are calculated based on tested K values at 1- and 3-1/2-inch thicknesses

²R-values may be interpolated between 1 and 3-1/2 inches

³Above 3-1/2 inches, R-values may be calculated for ThermoSeal 500HY using R =3.45/ inch

⁴R-values greater than 10 are rounded to the nearest whole number