



**NORTH AMERICAN SPRAY FOAM  
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## **ECOPOLYSEAL ECO500 NM SPRAY- APPLIED POLYURETHANE FOAM PLASTIC INSULATION**

**CSI Section:**  
**07 21 00 Thermal Insulation**

### **1.0 RECOGNITION**

ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation described in this report has been evaluated for use as thermal insulation. The physical properties, thermal resistance, surface burning characteristics, air permeability, water vapor transmission, fire-resistance-rating, attic and crawl space installations, and uses in Type V construction were evaluated for compliance with the following codes and regulations:

- 2018 and 2015 International Building Code® (IBC)
- 2021, 2018, and 2015 International Residential Code® (IRC)
- 2021, 2018, and 2015 International Energy Conservation Code® (IECC)
- 2020 Florida Building Code, Building (FBC, Building) – Supplement attached
- 2020 Florida Building Code, Residential (FBC, Residential) – Supplement attached

### **2.0 LIMITATIONS**

Use of ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation recognized in this report is subject to the following limitations:

**2.1** The insulation shall 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, the more restrictive shall govern.

**2.2** In accordance with Sections 4.6.1 and 4.6.2 of this report, the insulation shall be separated from the interior of the building by a code-complying thermal barrier.

**2.3** The insulation shall not exceed the nominal density and thickness for the installation conditions described in this report.

**2.4** During application, the insulation shall be protected from exposure to weather.

**2.5** The insulation shall be installed by professional spray polyurethane foam installers approved by North American Spray Foam Polymers or by the Spray Polyurethane Foam Alliance (SPFA).

**2.6** Use of the insulation in areas of “very heavy” termite infestation probability shall be in accordance with IBC Section 2603.8, or IRC Section R318.4, as applicable.

**2.7** When required by the applicable code, a vapor retarder shall be installed.

**2.8** Labeling and jobsite certification of the insulation and coatings shall comply with the following code sections as applicable:

- IBC Section 2603.2
- IRC Section R316.2
- Section N1101.10.1.1
- IECC Sections C303.1.1.1 or R303.1.1.1

**2.9** Foam plastic used in plenums as interior finish or interior trim shall comply with Section 2603.7 of the IBC.

### **3.0 PRODUCT USE**

ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation complies with IBC Section 2603, IRC Section R316, and IECC Sections C303, C402, R303, and R402. When installed in accordance with Section 4.0 of this report, the foam plastic insulation may be used in wall cavities, floor assemblies or ceiling assemblies, and/or in attics and crawl spaces as nonstructural thermal insulation material. ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation may be used in Type V construction under the IBC and in one- and two-family dwellings under the IRC.

ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation may be used as air impermeable insulation when installed in accordance with Section 4.4 of this report.

### **4.0 PRODUCT DESCRIPTION**

**4.1 Properties:** ECOPOLYSEAL ECO500 NM is a low-density, open cell, spray-applied polyurethane foam plastic insulation in accordance with Section 3.1.1 and Table 1 of AC377. The insulation has a nominal in-place density of 0.5 pcf (8 kg/m<sup>3</sup>).

*The product described in this Uniform Evaluation Service (UES) Report has been evaluated as an alternative material, design or method of construction in order to satisfy and comply with the intent of the provision of the code, as noted in this report, and for at least equivalence to that prescribed in the code in quality, strength, effectiveness, fire resistance, durability and safety, as applicable, in accordance with IBC Section 104.11. This document shall only be reproduced in its entirety.*

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The two-component spray foam plastic is produced in the field by combining a polymeric isocyanate (A component) and a polymeric resin (B component). The liquid components shall be stored in 55-gallon (208 L) drums at temperatures between 50°F and 80°F (10°C and 27°C). When Component A and Component B are stored in factory-sealed containers at the recommended temperatures, the maximum shelf life is six months.

**4.2 Thermal Resistance (R-Values):** ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation has thermal resistance (R-Value) at a mean temperature of 75°F ± 5°F (23.8°C ± 2.8°C) as shown in Table 1 of this report.

| TABLE 1 - Thermal Resistance (R-Values) |                                     |
|---|-------------------------------------|
| Thickness (inch)                        | ECOPOLYSEAL ECO500 NM               |
|   | R-Value (°F·ft <sup>2</sup> ·h/Btu) |
| 1                                       | 3.7                                 |
| 2                                       | 7.3                                 |
| 3.5                                     | 13                                  |
| 4                                       | 15                                  |
| 5                                       | 19                                  |
| 5.5                                     | 20                                  |
| 6                                       | 22                                  |
| 7                                       | 26                                  |
| 7.5                                     | 28                                  |
| 8                                       | 30                                  |
| 9                                       | 33                                  |
| 9.5                                     | 35                                  |
| 10                                      | 37                                  |
| 11.5                                    | 43                                  |

For SI: 1 inch = 25.4 mm, 1°F·ft<sup>2</sup>·h/Btu = 0.176 110 K·m<sup>2</sup>/W

**4.3 Surface Burning Characteristics:** At a maximum thickness of 4 inches (102 mm) and a nominal density of 0.5 pcf (8.0 kg/m<sup>3</sup>), ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation yields a flame spread index of 25 or less and smoke-developed index of 450 or less when tested in accordance with ASTM E84.

Foam insulation thicknesses are not limited when covered by a code complying thermal barrier and installed in accordance with Section 4.6.1.1 of this report.

**4.4 Air Permeability:** ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation is classified as an air-impermeable insulation when tested in accordance with ASTM E283 at a minimum thickness of 3½ inches (89 mm) in accordance with 2018 IBC Section 1202.3, 2015 IBC Section 1203.3, and IRC Section R806.5.

**4.5 Fire-Protective Coatings and Coverings:** Fire protective coatings for use as part of alternative thermal barrier assemblies or alternative ignition barrier assemblies, shall be in accordance with Tables 2 or 3 of this report, as applicable, and installed in accordance with Section 4.6 of this report.

**4.6 Installation:** ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation shall comply with IECC Sections C402.1 or R402.1, as applicable.

The manufacturer’s published installation instructions for ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation and this report shall be available on the jobsite during installation. Where conflicts occur, the most restrictive governs.

ECOPOLYSEAL ECO500 NM shall be spray-applied on the jobsite using equipment specified in the manufacturer’s published installation instructions. The maximum in-service temperature for all areas shall not exceed the maximum temperature stated in the manufacturer’s published installation instructions. The insulation shall be sprayed onto a substrate that is protected and clean from any debris or weather-related conditions during and after application and shall not be used in electrical outlets or junction boxes or in contact with rain or water.

**4.6.1 Thermal Barrier**

**4.6.1.1 Application with a Prescriptive Thermal Barrier:** ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation, in any thickness, in ceiling cavities and in wall cavities, shall be separated from the interior by prescriptive thermal barrier. The thermal barrier shall comply with and be installed in accordance with IBC Section 2603.4, or IRC Section R316.4, as applicable.

**Exception:** The thermal barrier is not required when the insulation is installed in attics or crawlspaces as described in Section 4.6.2 but shall be installed between the insulation and the interior of the building.

**4.6.1.2 Alternative Thermal Barrier Assemblies:** ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation may be installed without a prescriptive thermal barrier as defined in Section 4.6.1.1 of this report when installed with a fire-protective coating as described in Table 2 of this report.

**4.6.2 Installation in Attics or Crawl Spaces:** ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation may be installed in attics or crawl spaces when installed in accordance with this section. The insulation may be installed in unvented attics and unvented enclosed rafter spaces for use as air-impermeable insulation described in Section 4.4 of this report.

When installed in attics or crawl spaces where entry is made only for the service of utilities, ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation need not be surfaced with a thermal barrier. However, such attic and crawl space areas shall be separated from the interior of the building by a thermal barrier in accordance with Section 4.6.1.1 of this report.



### 4.6.2.1 Installation Using a Prescriptive Ignition Barrier:

When installed within attics or crawl spaces where entry is made only for the service of utilities, ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation shall be covered with a prescriptive ignition barrier in accordance with IBC Section 2603.4.1.6 or IRC Sections R316.5.3 and R316.5.4, as applicable.

**Exception:** The prescriptive ignition barrier may be omitted when installed with an alternative ignition barrier assembly in accordance with Section 4.6.2.2 and Section 4.6.2.3 of this report.

### 4.6.2.2 Installation Using an Alternative Ignition Barrier Assembly:

ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation may be installed in attics and crawl spaces using an alternative ignition barrier assembly provided:

- a. Entry is only to service utilities in the attic or crawl space and no storage is permitted.
- b. Attic or crawl space areas cannot be interconnected.
- c. Air from the attic or crawl space cannot be circulated to other parts of the building.
- d. Attic ventilation is provided as required by 2018 IBC Section 1202 or 2018 IRC Section R806 except where air-impermeable insulation is permitted in unvented attics and shall comply with the following code sections as applicable:

For Unvented Attics:

- 2018 IBC Section 1202.3
- 2015 IBC Section 1203.3
- IRC Section R806.5

Crawl space ventilation is provided as required by the following code sections as applicable:

- 2018 IBC Section 1202.4
- 2015 IBC Section 1203.4
- IRC Section R408.1

- e. The foam plastic insulation is limited to the maximum thickness and density tested.
- f. In accordance with IMC (International Mechanical Code®) Section 701, combustion air is provided.
- g. For ECOPOLYSEAL ECO500 NM, the installed coverage rate or thickness of coatings shall be as described in Section 4.6.2.3 of this report.

### 4.6.2.3 Installation Using an Alternative Ignition Barrier Assembly with Application of Fire-Protective Coatings:

ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation may be spray-applied in attics to the underside of roof sheathing or roof rafters, and vertical surfaces; and may be spray-applied in crawl spaces to the underside of floors and vertical surfaces as described in this section.

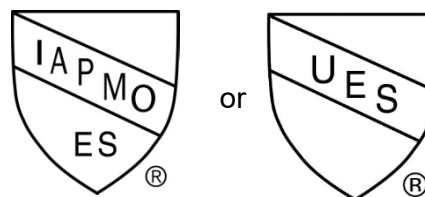
The ECOPOLYSEAL ECO500 NM foam plastic insulation shall be covered with a fire-retardant intumescent coating described in Table 3 of this report. The coating shall be applied over the insulation using airless spray equipment, roller, or a brush in accordance with the coating manufacturer’s published installation instructions and this report. The ambient and substrate temperatures shall be within a range of 50°F (10°C) to 90°F (32°C), and the surface shall be dry, clean, free of dirt and loose debris, and any other substance that could interfere with adhesion of the coating.

## 5.0 IDENTIFICATION

The spray foam insulation is identified with the following:

- a. Manufacturer’s name (North American Spray Foam Polymers)
- b. address and telephone number,
- c. the product trade name (ECOPOLYSEAL ECO500 NM)
- d. use instructions
- e. density, flame-spread and smoke-development indices
- f. date of manufacture or batch/run number
- g. thermal resistance values
- h. the evaluation report number (ER-844)

Either IAPMO UES Mark of Conformity may also be used as shown below:



IAPMO UES ER-844

## 6.0 SUBSTANTIATING DATA

**6.1** Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation, AC377, dated April 2020 (Editorially Revised July 2020), including Appendix X.

**6.2** Reports of room corner fire testing in accordance with NFPA 286.

**6.3** Reports of air permeance testing in accordance with ASTM E283.

**6.4** Report of room corner fire testing in accordance with UL 1715.

**6.5** Test reports are from Laboratories in conformance with ISO/IEC 17025.



### 7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research completed by IAPMO Uniform Evaluation Service on ECOPOLYSEAL ECO500 NM to assess their conformance to the codes and standards shown in Section 1.0 of this report and documents the products' certification. Products are manufactured under a quality control program with periodic inspection under the supervision of IAPMO UES.

For additional information about this evaluation report please visit [www.uniform-es.org](http://www.uniform-es.org) or email us at [info@uniform-es.org](mailto:info@uniform-es.org)

| TABLE 2 - ALTERNATIVE THERMAL BARRIER ASSEMBLIES |                          |  |                              |                               |
|--|--------------------------|--|------------------------------|-------------------------------|
| FIRE-PROTECTIVE COATING/COVERING <sup>1</sup>    |                          |  | MAXIMUM SPF THICKNESS (inch) |                               |
| TYPE   | MINIMUM THICKNESS (mils) | THEORETICAL APPLICATION RATE (COATINGS ONLY) | WALLS AND VERTICAL SURFACES  | CEILING AND OVERHEAD SURFACES |
| DC315 <sup>2</sup>                               | 20 WFT (13 DFT)          | 80 ft <sup>2</sup> /gal.                     | 8                            | 11.5                          |
| PlusThB <sup>3</sup>                             | 14 WFT (9 DFT)           | 115 ft <sup>2</sup> /gal.                    | 8.5                          | 14                            |

For SI: 1 inch = 25.4 mm, 1 gallon = 3.785 L, 1 ft<sup>2</sup> = 0.0929 m<sup>2</sup>

<sup>1</sup> Fire-protective coatings and coverings shall be applied over all exposed SPF surfaces in accordance with the coating/covering manufacturer's instructions and this report.

<sup>2</sup> International Fireproof Technology, Inc, recognized in [IAPMO UES ER-499](#) and tested to the requirements of [NFPA 286](#).

<sup>3</sup> No-Burn, Inc., recognized in IAPMO UES ER-305 and tested to the requirements of UL-1715.

| TABLE 3 -ALTERNATIVE IGNITION BARRIER ASSEMBLIES |                          |  |                              |                                |
|--|--------------------------|--|------------------------------|--------------------------------|
| FIRE-PROTECTIVE COATING/COVERAGE <sup>1</sup>    |                          |  | MAXIMUM SPF THICKNESS (inch) |                                |
| TYPE   | MINIMUM THICKNESS (mils) | THEORETICAL APPLICATION RATE (COATINGS ONLY) | WALLS AND VERTICAL SURFACES  | CEILINGS AND OVERHEAD SURFACES |
| DC315 <sup>2</sup>                               | 4 WFT (3 DFT)            | 400 ft <sup>2</sup> /gal.                    | 8                            | 11.5                           |
| Plus XD or Plus ThB <sup>3</sup>                 | 6 WFT (4 DFT)            | 267 ft <sup>2</sup> /gal.                    | 11.25                        | 16                             |
| Flame Seal FS-IB <sup>TM4</sup>                  | 4 WFT (3 DFT)            | 400 ft <sup>2</sup> /gal.                    | 6                            | 10                             |

For SI: 1 inch = 25.4 mm, 1 gallon = 3.785 L, 1 ft<sup>2</sup> = 0.0929 m<sup>2</sup>

<sup>1</sup> Fire-protective coatings and coverings must be applied over all exposed SPF surfaces in accordance with the coating/covering manufacturer's instructions and this report.

<sup>2</sup> International Fireproof Technology, Inc, recognized in [IAPMO UES ER-499](#).

<sup>3</sup> No-Burn, Inc., recognized in IAPMO UES ER-305.

<sup>4</sup> Flame Seal LLC., recognized in IAPMO UES ER-600.



## FLORIDA SUPPLEMENT

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**ECOPOLYSEAL ECO500 NM SPRAY-  
APPLIED POLYURETHANE FOAM  
PLASTIC INSULATIONS**

### CSI Section:

**07 21 00 - Thermal Insulation**

### 1.0 SCOPE OF EVALUATION

- 2020 Florida Building Code, Building (FBC, Building)
- 2020 Florida Building Code, Residential (FBC, Residential)

### 2.0 FINDINGS

ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulations reported in IAPMO UES Evaluation Report ER-844 are satisfactory building product alternatives to those prescribed in the 2020 FBC, Building, and the 2020 FRC, Residential. Installation of the foam plastic insulations shall be in accordance with the 2018 International Building Code and the 2018 International Residential Code as noted in ER-844. ECOPOLYSEAL ECO500 NM Insulation complies with the high-velocity hurricane zone provisions of the FBC, Building, and FBC, Residential.

### 3.0 LIMITATIONS

Use of ECOPOLYSEAL ECO500 NM spray-applied polyurethane foam plastic insulation recognized in this report supplement is subject to the following limitations:

**3.1** In order to provide for inspection for termite infestation, clearance between exterior wall coverings and final earth grade on the exterior of a building shall not be less than 6 inches (152 mm) in accordance with Section 1403.7 of the FBC, Building or Section R704 of the FRC, Residential.

**3.2** This supplement expires concurrently with ER-844.

### 4.0 STATE PRODUCT APPROVAL

For products falling under Florida Rule 61G20-3.001, verification shall be provided that a quality assurance agency audits the manufacturer's quality assurance program and audits the production quality of products, in accordance with Section (5)(d) of Florida Rule 61G20-3.008. The quality assurance agency shall be approved by the Commission (or the building official when the report holder does not possess an approval by the Commission).

For additional information about this evaluation report please visit [www.uniform-es.org](http://www.uniform-es.org) or email us at [info@uniform-es.org](mailto:info@uniform-es.org)