



DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

Section: 07 21 00—Thermal Insulation

Section: 07 25 00—Water-Resistive Barriers/Weather Barriers

Section: 07 27 00—Air Barriers

REPORT HOLDER:

BASF CORPORATION

EVALUATION SUBJECT:

NEOPOR® THERMAPLUS™

ADDITIONAL LISTEE:

PROGRESSIVE FOAM TECHNOLOGIES

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012 and 2009 *International Building Code*® (IBC)
- 2021, 2018, 2015, 2012 and 2009 *International Residential Code*® (IRC)
- 2021, 2018, 2015, 2012 and 2009 *International Energy Conservation Code*® (IECC)

For evaluation of compliance with codes adopted by the California Office of Statewide Health Planning and Development (OSHPD) and Division of State Architects (DSA), see the [ESR-4431 CBC and CRC Supplement](#).

For evaluation for compliance with codes adopted by Los Angeles Department of Building and Safety (LADBS), see [ESR-4431 LABC and LARC Supplement](#).

Properties evaluated:

- Durability
- Surface-burning characteristic
- Water vapor transmission
- Water-resistive barrier
- Air barrier

2.0 USES

The NEOPOR® ThermaPlus™ ridged foam insulation boards are used as nonstructural thermal insulation materials on the exterior walls of Type V construction under the IBC and in structures constructed in accordance with the IRC.

The boards may be used as an alternative to the water-resistive barrier specified in 2021 and 2018 IBC Section 1403.2 [2015, 2012 and 2009 IBC Section 1404.2] and IRC R703.2 when installed in accordance with Section 4.2.

Under the IRC, the boards may be used as air-impermeable insulation under 2021, 2018, 2015 and 2012 IRC Section R806.5 (2009 IRC Section R806.4), when installed in accordance with Sections 4.3.

3.0 DESCRIPTION

3.1 NEOPOR® ThermaPlus™:

The NEOPOR® ThermaPlus™ rigid foam insulation boards are expanded polystyrene foam plastic insulation boards, produced using BASF NEOPOR® EPS beads described in [ESR-2784](#). The boards have minimum density of 1.35 pcf (21.6 kg/m³) and are classified as Type II boards in accordance with ASTM C578. The exterior side of the boards are laminated with Barricade Building Products Barricade Plus® Protective House Wrap described in [ESR-1197](#). The insulation boards are available in various lengths and widths and in thicknesses up to 6 inches (152 mm).

3.2 Joint Sealing Tapes:

Joint-sealing tapes are used in conjunction with the insulation boards to seal joints between two or more edges of the boards, when installed as an alternative water-resistive barrier. The installation shall be as described in Section 4.2 of this report.

3.2.1 3M Construction Tape 8087: The tape is a polypropylene, self-adhering flashing tape with acrylic adhesive. The tape is nominally 0.003 (0.076 mm) thick and is produced in minimum 3-inch-wide (76 mm) rolls.

3.2.2 Barricade Joint Treatment Tape: The tape is a polypropylene, self-adhering flashing tape with acrylic adhesive. The tape is nominally 0.003 (0.076 mm) thick and is produced in minimum 3-inch-wide (76 mm) rolls.

3.2.3 TYPAR® Construction Tape: The tape is a polypropylene, self-adhering flashing tape. The tape is produced in minimum 2-inch-wide (51 mm) rolls.

3.3 Surface-burning Characteristics:

The insulation board core has a flame-spread index of 25 or less and a smoke development index of 450 or less at maximum thickness of 6 inches (152 mm) when tested in accordance with ASTM E84 (UL 723). The Barricade Building Products Barricade Plus® Protective House Wrap ([ESR-1197](#)) has a flame-spread index of 25 or less and a smoke development index of 450 or less when tested in accordance with ASTM E84.

3.4 Thermal Resistance R-values:

The boards have a thermal resistance (R-value) of 5.0 hr·ft²·°F/Btu (8.6 m²·K/W) at a mean temperature of 75°F (24°C) when tested at a 1.0625-inch thickness..

3.5 Vapor Retarder:

The boards have a vapor permeance of greater than 1.0 perm (5.7X10⁻¹¹ kg/Pa-s-m²) and less than 10 perms (5.7 X 10⁻¹⁰ kg/Pa-s-m²) at a minimum thickness of 1 inch (25.4 mm) when tested in accordance with ASTM E96 (desiccant method) (Procedure A), and qualify as a Class III vapor retarder.

3.6 Air Permeability:

At a minimum thickness of 1/4 inch (6.4 mm), insulation boards are considered air-impermeable in accordance with the 2021 and 2018 IBC Section 1202.3 (2015 IBC Section 1203.3) and 2021, 2018, 2015 and 2012 IRC Section R806.5 (2009 IRC Section R806.4), based on testing in accordance with ASTM E283.

4.0 DESIGN AND INSTALLATION

4.1 General:

The insulation boards must be installed in accordance with BASF published installation instructions, the applicable code and this report. The manufacturer's published installation instructions must be available on the jobsite at all times during installation.

The insulation boards, at a maximum thickness of 6 inches (152 mm), may be used as nonstructural insulation materials on exterior walls of Type V construction (IBC). The insulation boards 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, IBC Section 2603.4 or IRC Section R316.4, as applicable.

The insulation boards must be attached with fasteners spaced a maximum of 12 inches (305 mm) on center in field and on the perimeter.

4.2 Water-resistive Barrier:

The insulation boards may be used on exterior walls as an alternative to the water-resistive barrier requirements prescribed in the 2021, and 2018 IBC Section 1403.2 [2015, 2012 and 2009 IBC Section 1404.2] and IRC R703.2, when installed as described in this section.

The insulation boards are installed horizontally or vertically with edge joints in contact with one another. The insulation boards must be installed directly on framing members spaced a maximum of 16 inches (406 mm) on center. The insulation boards must be attached with fasteners spaced a maximum of 12 inches (305 mm) on center in the field and on the perimeter.

When the insulation boards are attached to steel studs, the boards must be attached with a tapered screw with a drill point and plastic washer. The screws must be long enough to penetrate the framing a minimum of 0.45 inch (11.4 mm).

When the insulation boards are attached to wood studs, the boards must be attached using nails, screws or staples. Nails and screws must be used with 1-inch-diameter (25.4 mm) washers or plastic caps. The fasteners must be long enough to penetrate the framing members a minimum of 3/4 inch (19.1 mm).

The horizontal and vertical seams of the insulation boards must be covered with one of the flashing tapes described in Section 3.2. The boards shall be covered by an approved wall cladding complying with the requirements of the applicable code.

4.3 Air Barrier:

When used as an air barrier material, the insulation boards must be installed in accordance with BASF Corporation's installation instructions and this report.

5.0 CONDITIONS OF USE

The NEOPOR® ThermaPlus™ rigid foam 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 Installation must comply with this report, the report holder's published installation instructions and the applicable code. In the event of a conflict between the report holder's published installation instructions and this report, this report governs.
- 5.2 Use of the insulation boards to resist structural loads is outside the scope of this report. The walls must be braced in accordance with the requirements of the applicable code.
- 5.3 The insulation boards must not be used as a nailing base for exterior siding materials. All nailing must be into the wall framing or structural sheathing as required by the siding manufacturer's published installation instructions or the applicable code.
- 5.4 The insulation boards 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, IBC Section 2603.4 or IRC Section R316.4, as applicable.
- 5.5 Jobsite certification and labeling of the insulation must comply with 2021, 2018 and 2015 IRC Section N1101.10 [2012 IRC Section N1101.12 (2009 IRC Section 1101.4)] and 2021, 2018, 2015 and 2012 IECC Section C303.1, R303.1 and R401.3 (2009 IECC Sections 303.1 and 401.3), as applicable.
- 5.6 Use of insulation in areas where the probability of termite infestation is "very heavy" must be in accordance with 2021, 2018, 2015 and 2009 Section 2603.8 (2012 IBC Section 2603.9) or IRC Section R318.4, as applicable. In these areas there must be a clearance of 6 inches (152 mm) between the foam plastic insulation and exposed earth.
- 5.7 When the insulation boards are installed on the exterior face of exterior walls as an alternative to the required water-resistive barrier, as described in Section 4.2, the boards must be covered with an approved exterior wall covering.
- 5.8 The exterior wall covering spanning between wall framing members must provide the necessary structural resistance to wind and seismic forces.
- 5.9 The insulation boards must not be used as a water-resistive barrier with Portland cement plaster where two layers of water-resistive barrier complying with ASTM E2556 Type I are required or two layers of Grade D paper are required in accordance with 2021 IBC Section 2510.6.1 Item 1 [2018, 2015, 2012 and

2009 IBC Section 2510.6] or 2021 IRC Section R703.7.3.1 Item 1 [2018 and 2015 IRC Section R703.7.3 (2012 and 2009 IRC Section R703.6.3)].

- 5.10 The insulation boards are manufactured in Gnadenhutten, Ohio, under a quality-control program with inspections provided by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2015 (editorially revised December 2020).
- 6.2 Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Sheathing Panels Used as Weather-resistive Barriers (AC71), dated February 2003 (editorially revised March 2021).

7.0 IDENTIFICATION

- 7.1 The insulation boards must be packaged in bundles wrapped in opaque poly film or cardboard bearing a label with the BASF NEOPOR® trademark; the product name (NEOPOR® ThermaPlus™); the manufacturing location (Gnadenhutten, Ohio); the date of manufacture; the evaluation report number (ESR-4431); and the thermal resistance (*R*-value).

- 7.2 The report holder's contact information is the following:

BASF CORPORATION
11750 KATY FREEWAY
17TH FLOOR
HOUSTON, TEXAS 77079
(908) 420-7211
www.neopor.basf.us

- 7.3 The Additional Listee's contact information is the following:

PROGRESSIVE FOAM TECHNOLOGIES
1 SOUTHERN GATEWAY DRIVE
GNADENHUTTEN, OHIO 44629
(303) 756-3349

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REPORT HOLDER:**BASF CORPORATION****EVALUATION SUBJECT:****NEOPOR® THERMAPLUS™****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that the NEOPOR® ThermaPlus™ ridged foam insulation boards described in ICC-ES evaluation report [ESR-4431](#), have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2020 *City of Los Angeles Building Code* (LABC)
- 2020 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The NEOPOR® ThermaPlus™ rigid foam insulation boards, described in Sections 2.0 through 7.0 of the evaluation report [ESR-4431](#), comply with the LABC Chapter 7, 14 and 26, and the LARC Section R316, R318, R703 and R806, and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The NEOPOR® ThermaPlus™ rigid foam insulation boards described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-4431](#).
- The design, installation, conditions of use and identification of the NEOPOR® ThermaPlus™ rigid foam insulation boards are in accordance with the 2018 *International Building Code*® (IBC) and 2018 *International Residential Code*® (IRC) provisions noted in the evaluation report [ESR-4431](#).
- The design, installation and inspection are in accordance with additional requirements of LABC Chapter 17, as applicable.

This supplement expires concurrently with the evaluation report, reissued June 2021.

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The purpose of this evaluation report supplement is to indicate that NEOPOR® ThermaPlus™ rigid foam insulation boards, described in ICC-ES evaluation report ESR-4431, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2019 *California Building Code* (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) and Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2019 *California Residential Code* (CRC)
- 2019 *California Energy Code* (CEC)

2.0 CONCLUSIONS**2.1 CBC:**

The NEOPOR® ThermaPlus™ rigid foam insulation boards, described in Sections 2.0 through 7.0 of the evaluation report ESR-4431, comply with the CBC, provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report.

2.1.1 OSHPD:

The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement

2.1.2 DSA:

The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

2.2 CRC:

The NEOPOR® ThermaPlus™ rigid foam insulation boards, described in Sections 2.0 through 7.0 of the evaluation report ESR-4431, comply with the CRC, provided the design and installation are in accordance with the 2018 *International Residential Code*® (IRC) provisions noted in the evaluation report.

2.3 CEC:

The NEOPOR® ThermaPlus™ rigid foam insulation boards, described in Sections 2.0 through 7.0 of the evaluation report ESR-4431, comply with the 2019 CEC, provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) or 2018 *International Residential Code*® (IRC), as applicable, provisions noted in the evaluation report.

2.3.1 Conditions of Use:

In accordance with Section 110.8 of the 2019 California Energy Code (CEC), verification of certification by the Department of Consumer Affairs, Bureau of Household Goods and Services, must be provided to the code official, demonstrating that the insulation conductive thermal performance is approved pursuant to the California Code of Regulations, Title 24, Part 12, Chapters 12-13, Article 3, "Standards for Insulating Materials." The certification must be verified with the DCA Bureau of Household Goods and Services using the following link to the bureau's Directory of Certified Insulation Materials: https://bhgs.dca.ca.gov/consumers/ti_directory.pdf

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The purpose of this evaluation report supplement is to indicate that NEOPOR® ThermaPlus™ rigid foam insulation boards, described in ICC-ES evaluation report ESR-4431, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2020 Florida Building Code—Building
- 2020 Florida Building Code—Residential

2.0 CONCLUSIONS

The NEOPOR® ThermaPlus™ rigid foam insulation boards, described in Sections 2.0 through 7.0 of ICC-ES evaluation report ESR-4431, complies with the 2020 Florida Building Code—Building and 2020 Florida Building Code—Residential, provided the design requirements are determined in accordance with the Florida Building Code—Building or the Florida Building Code—Residential, as applicable. The installation requirements noted in ICC-ES evaluation report ESR-4431 for the 2018 International Building Code® meet the requirements of the 2020 Florida Building Code—Building or the 2020 Florida Building Code—Residential, as applicable, with the following conditions:

1. Use of the insulation boards to resist structural loads is outside the scope of this report. The walls must be braced in accordance with the requirements of the Florida Building Code—Building or the Florida Building Code—Residential, as applicable.
2. Installation must meet the requirements of Section 1403.8 and 2603.8 of the Florida Building Code—Building and Section R318.7 and R318.8 of the Florida Building Code—Residential.
3. The insulation boards must be separated from the interior of the building by an approved thermal barrier of 1/2-inch-thick (12.7 mm) gypsum or an equivalent thermal barrier complying with, and installed in accordance with, Florida Building Code—Building Section 2603.4 or Florida Building Code—Residential Section R316.4, as applicable.
4. The insulation boards must not be used as a water-resistive barrier with Portland cement plaster where two layers of water-resistive barrier complying with ASTM E2556 Type I are required or two layers of Grade D paper are required in accordance with Section 2510.6 or R703.7.3.

Use of the NEOPOR® ThermaPlus™ rigid foam insulation boards has also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the Florida Building Code—Building or the Florida Building Code—Residential.

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report, reissued June 2021.