



DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

Section: 07 21 00—Thermal Insulation

REPORT HOLDER:

VICTORY POLYMERS CORPORATION

EVALUATION SUBJECT:

VPC-50 NF OPEN-CELL SPRAY FOAM INSULATION

1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

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

Properties evaluated:

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

1.2 Evaluation to the following green standard:

2008 ICC 700 *National Green Building Standard*™ (ICC 700-2008)

Attributes verified:

See Section 3.4

2.0 USES

VPC-50 NF Open-Cell Spray Foam Insulation is used as a nonstructural thermal insulating material in buildings of Type V-B construction under the IBC, and in structures constructed in accordance with the IRC. The insulation is for use in wall cavities, floor/ceiling assemblies, and when installed in accordance with Section 4.4 in attics and crawl spaces.

3.0 DESCRIPTION

3.1 General:

VPC-50 NF Open-Cell Spray Foam Insulation is a spray-applied, semirigid, low-density, cellular polyurethane

foam plastic insulation. The insulation is a two-component, open-cell, spray-applied, semirigid, polyurethane foam plastic system. The foam plastic has a nominal density of 0.5 pcf (8.0 kg/m³). The polyurethane foam plastic is produced by combining a polymeric isocyanate Part A (VPC-50 NF A) with a resin-based Part B (VPC-50 NF B) on site, during the spraying application. The component products have a shelf life of six months when stored in factory-sealed containers at temperatures between 55°F and 80°F (13°C and 27°C).

3.2 Surface-burning Characteristics:

The insulation, at a maximum thickness of 6 inches (152 mm) and a nominal density of 0.5 pcf (8.0 kg/m³), has a flame-spread index not exceeding 25 and a smoke-developed index not exceeding 450 when tested in accordance with ASTM E84 (UL 723). Thicknesses of up to 8 inches (203 mm) for wall cavities and 12 inches (205 mm) for ceiling cavities are recognized based on room corner fire testing in accordance with NFPA 286, when covered with minimum 1/2-inch-thick (12.7 mm) gypsum board or an equivalent thermal barrier complying with, and installed in accordance with, the applicable code.

3.3 Thermal Resistance, 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 Air Permeability:

The VPC-50 NF Open-Cell Spray Foam Insulation is considered air-impermeable, based on testing in accordance with ASTM E283, when installed at a thickness of 3.5 inches (89 mm) or greater.

The attributes of the insulation have been verified as conforming to the provisions of ICC 700-2008 Section 703.2.1.1.1(c) as an air impermeable insulation. Note that decisions on compliance for those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. These codes or standards often provide supplemental information as guidance.

3.5 Intumescent Coating:

3.5.1 Flame Seal TB: Flame Seal TB, manufactured by Flame Seal Products Inc., is a two-component, four-to-one-by-volume, liquid-applied, water-based polymer intumescent coating, manufactured by Flame Seal Products. The coating is supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums and has a shelf life of six months when stored in a factory-sealed container at temperatures between 40°F and 90°F (4°C and 32°C).

4.0 INSTALLATION

4.1 General:

VPC-50 NF Open-Cell Spray Foam Insulation must be installed in accordance with the manufacturer's published installation instructions, the applicable code and this report. A copy of the manufacturer's published installation instructions must be available at all times on the jobsite during installation.

4.2 Application:

The insulation is spray-applied on the jobsite using a volumetric positive displacement pump to combine the Part A and Part B components at a one-to-one ratio, as specified in the manufacturer's published installation instructions. The spray foam insulation may be applied at a maximum of 6 inches (152.4 mm) per pass to the maximum thicknesses specified in Sections 3.2 and 4.4. VPC-50 NF Open-Cell Spray Foam Insulation must not be applied in areas that are exposed to a maximum ambient temperature greater than 180°F (82°C). The substrates to which the insulation is applied must be clean, dry and free of frost, ice, loose debris, or contaminants that will interfere with adhesion of the spray foam insulation. The spray foam insulation must not be applied in electrical outlets or junction boxes, or in direct contact with water or soil. The spray-applied foam insulation must be protected from the weather during and after application.

4.3 Thermal Barrier:

4.3.1 Application with a Prescriptive Thermal Barrier:

VPC-50 NF Open-Cell Spray Foam Insulation at the maximum thickness specified in Section 3.2 must be separated from the interior of the building by a 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, except when installation is in attics or crawl spaces as described in Section 4.4. There is no thickness limit when installation is separated from the interior of the building by a code-prescribed thermal barrier.

4.4 Ignition Barrier—Attics and Crawl Spaces:

4.4.1 Application with a Prescriptive Ignition Barrier:

When VPC-50 NF Open-Cell Spray Foam Insulation is applied 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 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 that the foam plastic insulation is not exposed. The insulation may be installed as described in this section in unvented attics in accordance with 2018, 2015 and 2012 IRC Section R806.5 (2009 IRC Section R806.4).

4.4.2 Application without a Prescriptive Ignition Barrier:

Where VPC-50 NF Open-Cell Spray Foam Insulation is installed in accordance with Sections 4.4.2.1, and 4.4.2.2, 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 crawl space or attic areas.
- Air in the attic or crawl space is not circulated to other parts of the building.
- Attic ventilation is provided when required by 2018 IBC Section 1202.2 (2015, 2012 and 2009 IBC Section

1203.2) or IRC Section R806, except when air-impermeable insulation is permitted in unvented attics in accordance with the 2018 IBC Section 1202.3 (2015 IBC Section 1203.3) or 2018, 2015 or 2012 IRC Section R806.5 (2009 IRC Section R806.4).

- Under-floor (crawl space) ventilation is provided when required by 2018 IBC Section 1202.4 (2015 IBC Section 1203.4, 2012 and 2009 IBC Section 1203.3) or IRC Section R408.1, as applicable.
- Combustion air is provided in accordance with *International Mechanical Code* (IMC) Section 701.

4.4.2.1 Application with Flame Seal TB Intumescent Coating:

In attics, VPC-50 NF Open-Cell Spray Foam Insulation may be spray-applied to the underside of roof sheathing, roof rafters and walls; and in crawl spaces, the insulation may be spray-applied to the underside of wood floors and walls as described in this section. The thickness of the foam plastic applied to the vertical surfaces or the underside of the wood floor or roof sheathing must not exceed 12 inches (304 mm). The foam plastic must be covered with Flame Seal TB, applied in accordance with the coating manufacturer's instructions, at an application rate of 0.64 gallon per 100 square feet, resulting in a 7-mil dry film thickness.

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 Flame Seal TB coating is applied by airless sprayer at ambient temperatures between 50°F and 115°F (10°C and 46°C) and relative humidity of less than 70 percent.

The ignition barrier required by IBC Section 2603.4.1.6 or IRC Section R316.5.3 or R316.5.4 may be omitted. The foam plastic insulation described in this section may be installed in unvented attics in accordance with 2018, 2015 and 2012 IRC Section R806.5 (2009 IRC Section R806.4) when the foam plastic is applied at a thickness of 1 inch (25.4 mm) or greater.

4.4.2.2 Use on Attic Floors:

VPC-50 NF Open-Cell Spray Foam Insulation may be installed between joists in attic floors without a prescriptive ignition barrier or it may be installed with the intumescent coating described in Section 4.4.2.1 at a maximum thickness of 12 inches (304 mm). The foam plastic insulation must be separated from the interior of the building by an approved thermal barrier. The ignition barrier required by IBC Section 2603.4.1.6 or IRC Section R316.5.3 or R316.5.4 may be omitted.

5.0 CONDITIONS OF USE

The VPC-50 NF Open-Cell Spray 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 VPC-50 NF Open-Cell Spray Foam Insulation and coating described in this report must 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, this report governs.
- 5.2 The insulation has been evaluated only for use in Type V-B construction under the IBC and dwellings under the IRC.
- 5.3 A vapor retarder must be installed in accordance with the applicable code.

- 5.4 The thickness and density of the insulation must not exceed what is specified in Sections 3.2 and 4.4.
- 5.5 VPC-50 NF Open-Cell Spray Foam Insulation must be applied by contractors authorized by Victory Polymers Corporation.
- 5.6 VPC-50 NF Open-Cell Spray Foam Insulation must be separated from the building interior as described in Section 4.3.1, except when installation is as described in Section 4.4.
- 5.7 Jobsite certification and labeling of the insulation must comply with 2018 and 2015 IRC Sections N1101.10.1 and N1101.10.1.1, 2012 IRC Sections N1101.12.1 and N1101.12.1.1, 2009 IRC Sections N1101.4 and N1101.4.1) and 2018, 2015 and 2012 IECC Sections C303.1.1 and C303.1.1.1 or R303.1.1 and R303.1.1.1 (2009 IECC Sections 303.1.1 and 303.1.1.1), as applicable.
- 5.8 In areas where the probability of termite infestation is “very heavy” as determined in accordance with 2018, 2015 and 2009 IBC Figure 2603.8 (2012 IBC Figure 2603.9) or IRC Figure R301.2 (6), the foam plastic must be installed in accordance with 2018, 2015 and 2009 IBC Section 2603.8 (2012 IBC Section 2603.9) or IRC Section R318.4.
- 5.9 The A and B components of the insulation are produced under a quality control program, with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation (AC377), dated April 2016 (editorially revised April 2018).
- 6.2 Reports of air leakage tests in accordance with ASTM E283.

- 6.3 Reports of room corner tests in accordance with NFPA 286.
- 6.4 Reports of tests in accordance with Appendix X of AC377.
- 6.5 Report of critical radiant heat flux of exposed attic floor insulation in accordance with ASTM E970.

7.0 IDENTIFICATION

7.1 The Part A and Part B components for VPC-50 NF Open-Cell Spray Foam Insulation are packaged in 55-gallon drums that bear the report holder’s name (Victory Polymers Corporation) and address; the date of manufacture or the lot number; the product trade name (VPC-50 NF); the product type (Part A or Part B); the installation instructions; the density; the flame-spread and smoke-developed indices; and the evaluation report number (ESR-4657).

Each pail of Flame Seal TB intumescent coating is labeled with the manufacturer’s name (Flame Seal Products) and address and the product trade name.

7.2 The report holder’s contact information is the following:

VICTORY POLYMERS CORPORATION
1700 POST OAK BOULEVARD
2 BLVD PLACE, SUITE 600
HOUSTON, TEXAS 77056
(832) 240-7222
www.victorypolymers.com

TABLE 1—THERMAL RESISTANCE (R-VALUES)

THICKNESS (inches)	R-VALUE (°F.ft².h/Btu)
1	3.7
1.5	5.6
2	7.5
2.5	9.4
3	11
3.5	13
4	15
4.5	17
5	19
5.5	21
6	23
7	26
8	30
9	34
10	37
11	41
12	45

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

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

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REPORT HOLDER:

VICTORY POLYMERS CORPORATION

EVALUATION SUBJECT:

VCP-50 NF OPEN-CELL SPRAY FOAM INSULATION

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the VCP-50 NF Open-Cell Spray Foam Insulation, described in ICC-ES evaluation report ESR-4657, have also been evaluated for the codes noted below.

Applicable code editions:

- 2016 *California Building Code* (CBC)

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

- 2016 *California Residential Code* (CRC)
- 2016 *California Energy Code* (CEC)

2.0 CONCLUSIONS

2.1 CBC and CRC:

The VCP-50 NF Open-Cell Spray Foam Insulation, described in Sections 2.0 through 7.0 of the evaluation report ESR-4657, comply with the 2016 CBC and CRC, provided the design and installation are in accordance with the 2015 *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 CEC:

The VCP-50 NF Open-Cell Spray Foam Insulation, described in Sections 2.0 through 7.0 of the evaluation report ESR-4657, comply with the 2016 CEC, provided the design and installation are in accordance with the 2015 *International Building Code*® (IBC) provisions noted in the evaluation report.

2.2.1 Conditions of Use:

In accordance with Section 110.8 of the 2016 California Energy Code, 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 Material." The certification must be verified with the DCA Bureau of Household Goods and Services. The following directory link may be used for verification:

https://bhgs.dca.ca.gov/consumers/ti_directory.pdf

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

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EVALUATION SUBJECT:

VPC-50 NF OPEN-CELL SPRAY FOAM INSULATION

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that VPC-50 NF Open-Cell Spray Foam Insulation, described in ICC-ES evaluation report ESR-4657, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2017 *Florida Building Code—Building*
- 2017 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The VPC-50 NF Open-Cell Spray Foam Insulation, described in Sections 2.0 through 7.0 of the evaluation report ESR-4657, complies with the *Florida Building Code—Building* and the *Florida Building Code—Residential*, provided the installation is in accordance with the 2015 *International Building Code*® (IBC) provisions noted in the report under the following condition:

Installation must meet the requirements of Sections 1403.8 and 2603.8 of the *Florida Building Code—Building* and Sections R318.7 and R318.8 of the *Florida Building Code—Residential*, as applicable.

Use of the VPC-50 NF Open-Cell Spray Foam Insulation for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* and the *Florida Building Code—Residential* has not been evaluated, and is outside the scope of this supplemental report.

For products falling under Florida Rule 9N-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).

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