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ESR-1655

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

SECTION: 07 21 00—THERMAL INSULATION

REPORT HOLDER:

COVESTRO, LLC

**2400 SPRING STUEBNER ROAD
SPRING, TEXAS 77389**

EVALUATION SUBJECT:

BAYSEAL™ OPEN CELL SPRAY-APPLIED POLYURETHANE INSULATIONS



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A Subsidiary of the International Code Council®
**DIVISION: 07 00 00—THERMAL AND MOISTURE
PROTECTION**
Section: 07 21 00—Thermal Insulation
REPORT HOLDER:

COVESTRO, LLC
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EVALUATION SUBJECT:
**BAYSEAL® OPEN CELL SPRAY-APPLIED
POLYURETHANE INSULATIONS**
1.0 EVALUATION SCOPE
1.1 Compliance with the following codes:

- 2015, 2012 and 2009 *International Building Code*® (IBC)
- 2015, 2012 and 2009 *International Residential Code*® (IRC)
- 2015, 2012 and 2009 *International Energy Conservation Code*® (IECC)
- Other Codes (see Section 8.0)

Properties evaluated:

- Surface-burning characteristics
- Physical properties
- Thermal resistance
- Attic and crawl space applications
- Fire-resistance-rated construction
- Exterior walls in Types I through IV construction
- Air permeability

1.2 Evaluation to the following green standard:

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

Attributes verified:

- See Section 3.1

2.0 USES

The Bayseal® OC insulation is used as a nonstructural thermal insulating material in Type I, II, III, IV and V construction (IBC) and dwellings under the IRC. See

Section 4.5 for use in Type I, II, III and IV construction. The insulation is for use in wall cavities, floor assemblies, ceiling assemblies or attics and crawl spaces when installed in accordance with Section 4.3. The insulation may be used in wall assemblies in fire-resistive-rated-construction as described in Sections 3.11 and 4.4.

Bayseal® OCX insulation is used as a nonstructural thermal insulating material in buildings of Type V-B (IBC) construction and in dwellings built under the IRC. The insulation is for use in wall cavities and floor assemblies, ceiling assemblies, and in attics and crawl spaces when installed in accordance with Section 4.3.

3.0 DESCRIPTION
3.1 General:

Bayseal® OC, with a nominal density of 0.5 pcf (8 kg/m³), and Bayseal® OCX, with a nominal density of 0.6 pcf (10 pcf/m³), are spray-applied cellular polyurethane foam plastic insulations that are installed in stud wall assemblies, ceilings, floors, crawlspaces and cavities of roofs. The foam plastic insulation is a two-component, open-cell, water blown, one-to-one by volume spray foam system. The insulation is produced in the field by combining a polymeric isocyanate (A component) with a polymeric resin blend (B component). The insulation components have a shelf life of six months when stored at temperatures between 65°F (18°C) and 85°F (29°C) before installation.

The attributes of the insulation have been verified as conforming to the provisions of ICC 700-2008 Section 703.2.1.1(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.

3.2 Surface-burning Characteristics:

Bayseal® OC, at a maximum thickness of 4 inches (102 mm) and a nominal density of 0.5 pcf (8 kg/m³), and Bayseal® OCX, at a maximum thickness of 4 inches (102 mm) and a nominal density of 0.6 pcf (10 kg/m³) have a flame spread index of less than 25 and a smoke-developed index of less than 450 when tested in accordance with ASTM E84 / UL 723. The thickness is not limited when the insulation is separated from the interior of the building by a 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*-value), at a mean temperature of 75°F (24°C), as shown in Table 1.

3.4 Air Permeability:

Bayseal® OC and Bayseal® OCX spray-applied foam insulation, at a minimum thickness of 3.5 inches (89 mm), is considered air-impermeable insulation in accordance with 2015 and 2012 IRC Section R806.5 (2009 IRC Section R806.4) and 2015 IBC Section 1203.3 based on testing in accordance with ASTM E283.

3.5 Bayseal® IC Coating:

Bayseal® IC intumescent coating is manufactured by Covestro and is a water-based latex coating with a specific gravity of 1.31. Bayseal® IC is supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums and has a shelf life of 12 months when stored in a factory-sealed container at temperatures between 50°F (10°C) and 100°F (38°C).

3.6 Paint to Protect® DC315 Fireproof Paint:

Paint to Protect® DC 315 Fireproof Paint (ESR-3703) is manufactured by International Fireproof Technology, Inc., and is a water-based coating supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums. The coating material has a shelf life of 24 months when stored in factory-sealed containers at temperatures between 50°F (10°C) and 90°F (32°C).

3.7 TPR² Fireshell® BMS-TC and TPR² Fireshell® TB Intumescent Coatings:

TPR² Fireshell® BMS-TC and TPR² Fireshell® TB Intumescent Coatings are one-component, water-based polymer coatings. The coatings are supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums and have a shelf life of one year when stored in a factory-sealed container at temperatures of 50°F (10°C) or above.

3.8 TPR² Fireshell® BMS-IC and TPR² Fireshell® IB4 Intumescent Coatings:

TPR² Fireshell® BMS-IC and TPR² Fireshell® IB4 Intumescent Coatings are one-component, water-based polymer coatings. The coatings are supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums and have a shelf life of one year when stored in a factory-sealed container at temperatures of 50°F (10°C) or above.

3.9 NO-BURN® Plus XD Intumescent Coating:

NO-BURN® Plus XD intumescent coating is a latex-based coating manufactured by NO-BURN®, Inc. The coating is supplied in 1-gallon (4L) and 5-gallon (19 L) pails and 55-gallon (208 L) drums. The coating material has a shelf life of 36 months when stored in factory-sealed containers at temperatures between 40°F (4.4°C) and 90°F (32.2°C).

3.10 Flame Seal IB Coating:

Flame Seal IB intumescent coating is a water-based latex coating manufactured by Flame Seal Products, Inc. The coating is supplied in 1-gallon (4L) and 5-gallon (19 L) pails and 55-gallon (208 L) drums. The coating material has a shelf life of 6 months when stored in factory-sealed containers at temperatures between 50°F (10°C) and 80°F (27.2°C).

3.11 Fire-resistance-rated Construction:

Bayseal® OC spray-applied foam insulation is recognized for use in a limited load-bearing, one-hour, fire-resistance-rated wall assembly when installed as described in Section 4.4.

4.0 INSTALLATION

4.1 General:

Bayseal® OC and Bayseal® OCX insulation must be

installed in accordance with the manufacturer's published installation instructions and this report. A copy of the instructions must be available at all times on the jobsite during installation.

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 insulation must be protected from the weather during and after application. The insulation must not be applied in electrical boxes.

The insulation is applied in passes having a maximum thickness of 6 inches (152 mm) per pass. Multiple passes are made to obtain the desired thickness, which is not to exceed 12 inches (305 mm) for wall cavities and 16 inches (406 mm) for ceiling cavities. The insulation must not be used in areas that have a maximum service temperature greater than 180°F (82°C). The foam plastic insulation 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, loose scales, rust, oil and grease.

4.2 Thermal Barrier:

4.2.1 Application with a Prescriptive Thermal Barrier:

The Bayseal® OC and Bayseal® OCX insulations 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 15-minute thermal barrier complying with and installed in accordance with the applicable code. When the insulation is 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, the thickness is not limited. Exception: within an attic or crawl space, installation must be in accordance with Section 4.3.

4.2.2 Application without a Prescriptive Thermal Barrier:

4.2.2.1 Application with Paint to Protect® DC-315 intumescent Coating:

The prescriptive 15-minute thermal barrier may be omitted when installation is in accordance with this section. The insulation and coating may be spray-applied to the interior facing of walls, the underside of roof sheathing or roof rafters, and in crawl spaces, may be left exposed as an interior finish without a prescribed 15-minute thermal barrier or prescribed ignition barrier. The Bayseal® OC insulation and coating may be spray-applied to the interior facing of walls, the underside of roof sheathing or roof rafters, and in crawl spaces, and may be left exposed as an interior finish without a prescribed 15-minute thermal barrier or prescribed ignition barrier. The thickness of the foam plastic applied to the underside of the roof sheathing must not exceed 11 1/2 inches (292 mm). The thickness of the foam plastic applied to vertical wall surfaces must not exceed 10 inches (254 mm). The foam plastic must be covered on all surfaces with DC 315 Fireproof Paint at a minimum wet film thickness of 22 wet mils (0.56 mm) [14 dry mils (0.36 mm)], at a rate of 1.37 gallons (5.2L) per 100 square feet (9.2 m²). The coating must be applied over the Bayseal® OC 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 other substances that could interfere with adhesion of the coating. The coating is applied in one coat by airless spray equipment at ambient temperatures above 50°F (10°C) and relative humidity of less than 70 percent.

4.2.2.2 Application with TPR² Fireshell® BMS-TC or TPR² Fireshell TB Intumescent Coating:

The code-

prescribed 15-minute thermal barrier may be omitted when installation is in accordance with this section. The Bayseal[®] OC insulation and Fireshell[®] BMS-TC or Fireshell[®] TB coating may be used in lieu of the code-prescribed 15-minute thermal barrier. The foam plastic insulation thickness must not exceed 7¹/₂ inches (191 mm) in walls and 9¹/₂ inches (241 mm) in ceilings, and the insulation must be covered with 20 wet mils (0.5 mm) [12 dry mils (0.30 mm)] of Fireshell[®] BMS-TC or Fireshell[®] TB intumescent coating applied in a single coat at a minimum rate of 1.20 gallons (4.75L) per 100 square feet (9.2 m²). Surfaces to be coated must be dry, clean and free of dirt, loose debris and other substances that could interfere with adhesion of the coating. Fireshell[®] BMS-TC or Fireshell[®] TB coating is applied by airless spray equipment, conventional spray, medium knap roller or brush at ambient temperatures between 62°F and 95°F (16°C and 35°C) and relative humidity of less than 60 percent.

4.3 Ignition Barrier – Attics and Crawl Spaces:

4.3.1 Application with a Prescriptive Ignition Barrier: When Bayseal[®] OC and Bayseal[®] OCX 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 and IRC Sections R316.5.3 and 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. Bayseal[®] OC and Bayseal[®] OCX insulation, as described in this section, may be installed in unvented attics in accordance with IRC Section R806. The attic or crawl space area must be separated from the interior of the building by an approved 15-minute thermal barrier as described in Section 4.2.1.

4.3.2 Application without a Prescriptive Ignition Barrier: Where the Bayseal[®] OC spray-applied insulation is installed in accordance with Sections 4.3.2.1, 4.3.2.2, 4.3.2.3, 4.3.2.4 and 4.3.2.5 or Bayseal[®] OCX is installed in accordance with Section 4.3.2.6 the following conditions apply:

- a) Entry to the attic or crawl space is to service utilities, and no storage is permitted.
- b) There are no interconnected attic or crawl space areas.
- c) Air in the attic or crawl space is not circulated to other parts of the building.
- d) Attic ventilation is provided when required by IBC Section 1203.2 or IRC Section R806, except when air-impermeable insulation is permitted in unvented attics in accordance with the 2012 IRC Section R806.5 (2009 IRC Section R806.4). Under-floor (crawl space) ventilation is provided when required by IBC Section 1203.3 or IRC Section R408.1, as applicable.
- e) Combustion air is provided in accordance with *International Mechanical Code*[®] Section 701.

4.3.2.1 Application with Bayseal[®] IC Intumescent Coating: In attics, Bayseal[®] OC insulation may be spray-applied to the underside of roof sheathing or roof rafters; and in crawl spaces, Bayseal[®] OC insulation may be spray-applied to the underside of floors as described in this section. The thickness of the foam plastic applied to the underside of the top space must not exceed 16 inches (406 mm). The thickness of the foam plastic applied to vertical surfaces must not exceed 11¹/₄ inches (286 mm). All foam plastic surfaces must be covered with 7.5 wet mils (0.2 mm) [4 dry mils (0.10 mm)] of the Bayseal[®] IC

intumescent coating described in Section 3.4. The Bayseal[®] IC intumescent coating must be applied over the Bayseal[®] OC insulation in accordance with the 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 Bayseal[®] IC coating is applied with a medium-size nap roller, soft brush or conventional airless spray equipment at a rate of 0.5 gallon (1.9L) per 100 square feet (9.2 m²). The coating must be applied when ambient and substrate temperatures are above 50°F (10°C) and requires a 24-hour curing time after application. Bayseal[®] OC insulation, as described in this section, may be installed in unvented attics in accordance with the 2012 IRC Section R806.5 (2009 IRC Section R806.4). The attic or crawl space area must be separated from the interior of the building by an approved 15 minute thermal barrier as described in Section 4.2.1.

4.3.2.2 Application with TPR² Fireshell[®] BMS-IC Intumescent Coating: In attics, Bayseal[®] OC insulation may be spray-applied to the underside of roof rafters; and in crawl spaces, Bayseal[®] OC insulation may be spray-applied to the underside of floors as described in this section. The thickness of the foam plastic applied to the underside of the top space must not exceed 9¹/₂ inches (241 mm). The thickness of the foam plastic applied to vertical surfaces must not exceed 7 inches (178 mm). All foam plastic surfaces must be covered with the TPR² Fireshell[®] BMS-IC intumescent coating described in Section 3.7. The intumescent coating must be applied over the Bayseal[®] OC insulation in accordance with the manufacturer's instructions and this report. The foam plastic insulation must be covered with 7 wet mils (0.2 mm) [4 dry mils (0.10 mm)] of TPR² Fireshell[®] BMS-IC intumescent coating applied in a single coat at a rate of 0.83 gallon (1.10 L) per 100 square feet (9.2 m²). Surfaces to be coated must be dry, clean and free of dirt, loose debris and other substances that could interfere with adhesion of the coating. The coating is applied in one coat by airless spray equipment, conventional sprayer, medium knap roller or brush at ambient temperatures above 70°F (21°C) and relative humidity of less than 60 percent, and requires a 24-hour curing time. The attic or crawl space area must be separated from the interior of the building by an approved 15-minute thermal barrier as described in Section 4.2.1.

4.3.2.3 Application with TPR² Fireshell[®] IB4 Intumescent Coating: In attics, Bayseal[®] OC insulation may be spray-applied to the underside of roof rafters; and in crawl spaces, Bayseal[®] OC insulation may be spray-applied to the underside of floors as described in this section. The thickness of the foam plastic applied to the underside of the top space must not exceed 9¹/₂ inches (241 mm). The thickness of the foam plastic applied to vertical surfaces must not exceed 7¹/₂ inches (191 mm). All foam plastic surfaces must be covered with the TPR² Fireshell[®] IB4 intumescent coating described in Section 3.7. The intumescent coating must be applied over the Bayseal[®] OC insulation in accordance with the manufacturer's instructions and this report. The foam plastic insulation must be covered with 5 wet mils (0.13 mm) [3.5 dry mils (0.09 mm)] of TPR² Fireshell[®] IB4 intumescent coating applied in a single coat at a rate of 0.31 gallon (1.17 L) per 100 square feet (9.2 m²). Surfaces to be coated must be dry, clean and free of dirt, loose debris and other substances that could interfere with adhesion of the coating. The coating is applied in one coat by airless spray equipment, conventional sprayer, medium knap roller or brush at ambient temperatures above 70°F

(21°C) and relative humidity of less than 60 percent, and requires a 24-hour curing time. The attic or crawl space area must be separated from the interior of the building by an approved 15-minute thermal barrier as described in Section 4.2.1.

4.3.2.4 Application with NO-BURN® Plus XD Intumescent Coating: In attics, Bayseal® OC insulation may be spray-applied to the underside of roof sheathing or roof rafters; and in crawl spaces, the Bayseal® OC insulation may be spray-applied to the underside of floors as described in this section. The thickness of the foam plastic applied to the underside of the top space must not exceed 16 inches (406 mm). The thickness of the foam plastic applied to vertical surfaces must not exceed 11¹/₄ inches (286 mm). All foam plastic surfaces must be covered with 6 wet mils (0.15 mm) [4 dry mils (0.10 mm)] of the NO-BURN Plus XD intumescent coating described in Section 3.8. The intumescent coating must be applied over the Bayseal® OC insulation in accordance with the 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 at ambient and substrate temperatures above 50°F (10°C) and requires a 24-hour curing time after application. Bayseal® OC insulation, as described in this section, may be installed in unvented attics in accordance with the 2012 IRC Section R806.5 (2009 IRC Section R806.4). The attic or crawl space area must be separated from the interior of the building by an approved 15 minute thermal barrier as described in Section 4.2.1.

4.3.2.5 Application with Flame Seal IB Intumescent Coating: In attics, Bayseal® OC insulation may be spray-applied to the underside of roof sheathing or roof rafters; and in crawl spaces, Bayseal® OC insulation may be spray-applied to the underside of floors as described in this section. The thickness of the foam plastic applied to the underside of the top space must not exceed 16 inches (406 mm). The thickness of the foam plastic applied to vertical surfaces must not exceed 12 inches (305 mm). All foam plastic surfaces must be covered with 7.5 wet mils (0.2 mm) [4 dry mils (0.10 mm)] of the Flame Seal IB intumescent coating described in Section 3.9. The Flame Seal™ IB intumescent coating must be applied over the Bayseal® OC insulation in accordance with the 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 Flame Seal IB coating is applied with a medium-size nap roller, soft brush or conventional airless spray equipment at a rate of 0.5 gallon (1.9L) per 100 square feet (9.2 m²). The coating must be applied when ambient and substrate temperatures are above 50°F (10°C) and requires a 24-hour curing time after application. Bayseal® OC insulation, as described in this section, may be installed in unvented attics in accordance with the 2012 IRC Section R806.5 (2009 IRC Section R806.4). The attic or crawl space area must be separated from the interior of the building by an approved 15 minute thermal barrier as described in Section 4.2.1.

4.3.2.6 Application without ignition barrier or intumescent coating: In attics, Bayseal® OCX insulation may be spray-applied to the underside of roof sheathing or roof rafters; and in crawl spaces, the Bayseal® OCX insulation may be spray-applied to the underside of floors as described in this section. The thickness of the foam plastic applied to the underside of the top space must not exceed 16 inches (406 mm). The thickness of the foam

plastic applied to vertical surfaces must not exceed 12 inches (305 mm). Bayseal® OCX insulation, as described in this section, may be installed in unvented attics in accordance with the 2012 IRC Section R806.5 (2009 IRC Section R806.4). The attic or crawl space area must be separated from the interior of the building by an approved 15 minute thermal barrier as described in Section 4.2.1. When Bayseal® OCX is installed in accordance with this section, the ignition barrier in accordance with IBC Section 2603.4 and IRC Section R316.5.3 may be omitted.

4.3.2.7 Use on Attic Floors: Bayseal® OC insulation may be installed at a maximum thickness of 11¹/₄ inches (286 mm) between joists in attic floors. The insulation must be covered on all exposed surfaces with Bayseal® IC intumescent coating as described in Section 4.3.2.1. The Bayseal® OC 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 and IRC Section R316.5.3 may be omitted.

Bayseal® OCX insulation may be installed at a maximum thickness of 12 inches (305 mm) between and over joists in attic floors without a code prescribed ignition barrier or intumescent coating. The Bayseal® OCX 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 and IRC Section R316.5.3 may be omitted.

4.4 One-hour Fire-resistance-rated Wall Assembly (Limited Load-bearing) (Bayseal® OC only):

4.4.1 Initial Face: One layer of 5/8-inch-thick (15.9 mm) Type X gypsum wallboard must be applied parallel to the interior face of 2-by-6 wood studs spaced a maximum of 16 inches (406 mm) on center. The gypsum boards must be attached using Type S, 1⁵/₈-inch-long (41 mm) screws spaced 8 inches (203 mm) on center. All exposed wallboard joints must be taped with joint tape, and compound and screw heads must be covered with joint compound in accordance with ASTM C840 or GA216. The interior cavity is filled with Bayseal® OC spray-applied foam insulation.

Opposite Face: One layer of 5/8-inch-thick (15.9 mm) Type X gypsum wallboard must be applied in the same manner as for the initial face. The horizontal joints in the gypsum wallboard on the opposite face must be staggered a minimum of 8 inches (203 mm) from the horizontal joints in the wallboard on the initial face. If the intention is for use as an exterior wall, code-complying sheathing and a code-complying exterior wall covering must be installed in accordance with the applicable code.

4.4.2 Axial Load Design: Axial loads applied to the wall assembly must be limited to the lesser of the following:

1. 2,756 pounds (122 642 N) per stud.
2. A maximum of 51 percent of the load calculated in accordance with Sections 3.6 and 3.7 of the ANSI/AF&PA NDS.

4.5 Exterior Walls in Types I, II, III and IV Construction (Bayseal® OC only):

When used on exterior walls of Type I, II, III and IV construction, must comply with Section 2603.5 of the IBC and this section (Section 4.5), and the Bayseal® OC insulation must be installed at a maximum thickness of 3⁵/₈ inches (92 mm) See Table 2 for a description. The potential heat of the Bayseal® OC spray-applied polyurethane insulation is 488 Btu/ft² (5.5 MJ/m²) per inch of thickness.

5.0 CONDITIONS OF USE

The Bayseal® OC and Bayseal® OCX 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 Bayseal® OC insulation, Bayseal® OCX and Bayseal® IC intumescent coating must be installed in accordance with the manufacturer's published installation instructions, this 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 Bayseal® OC and Bayseal® OCX insulation must be separated from the interior of the building by an approved 15-minute thermal barrier, as described in Section 4.2.1, except as noted in Section 4.2.2.
- 5.4 Bayseal® OC and Bayseal® OCX insulation must be protected from the weather during and after application.
- 5.5 Bayseal® OC and Bayseal® OCX insulation must be applied by installers accredited by Covestro, LLC.
- 5.6 When use is on buildings of Types I, II, III and IV construction, installation is limited to Bayseal® OC only and must be as described in Section 4.5 and Table 2.
- 5.7 Use of Bayseal® OC and Bayseal® OCX insulation in areas where the probability of termite infestation is "very heavy" must be in accordance with 2015 and 2009 IBC Section 2603.8 (2012 IBC Section 2603.9) or IRC Section R318.4, as applicable.
- 5.8 Jobsite certification and labeling of the insulation must comply with 2015 IRC Section N1101.10.1 (2012 IRC Section N1101.12.1 or 2009 IRC Section N1101.4) and 2015 and 2012 IECC Section C303.1.1, R303.1.1 (2009 IECC Section 303.1.1), as applicable.
- 5.9 In exterior wall applications, a vapor retarder may be required by the code official in accordance with IBC Section 1405.3 or 2012 IRC Section R702.7 (2009 IRC Section R601.3), as applicable.
- 5.10 Bayseal® OC and Bayseal® OCX insulation is produced in Spring, Texas, 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 May 2015, including reports of tests in accordance with Appendix X of AC377.
- 6.2 Reports of room corner tests in accordance with NFPA 286.
- 6.3 Report of air leakage testing in accordance with ASTM E283.
- 6.4 Report of testing in accordance with ASTM E119.

6.5 Report of potential heat of foam plastic testing in accordance with NFPA 259.

6.6 Report of fire propagation characteristics testing in accordance with NFPA 285.

7.0 IDENTIFICATION

Components for Bayseal® OC and Bayseal® OCX insulation are identified with the manufacturer's name (Covestro, LLC), address and telephone number; the product trade name (Bayseal® OC or Bayseal® OCX); product type (A or B component); use instructions; the density; the flame-spread and smoke-developed indices; and the evaluation report number (ESR 1655).

Intumescent coatings are identified with the manufacturer's name and address, the product name and use instructions.

8.0 OTHER CODES

In addition to the codes reference in Section 1.0, the products described in this report were evaluated for compliance with the requirements of the following codes:

- 2006 *International Building Code*® (2006 IBC)
- 2006 *International Residential Code*® (2006 IRC)
- 2006 *International Energy Conservation Code*® (2006 IECC)

The products comply with the above-mentioned codes as described in Sections 2.0 through 7.0 of this report, except as noted below:

- **Application with a Prescriptive Thermal Barrier:** see Section 4.2.1, except the approved thermal barrier must be installed in accordance with Section R314.4 of the 2006 IRC.
- **Application without a Prescriptive Thermal Barrier:** See Section 4.2.2.
- **Application with a Prescriptive Ignition Barrier:** See Section 4.3.1 except attics must be vented in accordance with Section 1203.2 of the IBC or Section R806 of the IRC, and crawl space ventilation must be in accordance with IBC Section 1203.3 or IRC Section R408, as applicable.
- **Application without a Prescriptive Ignition Barrier:** See Section 4.3.2, except attics must be vented in accordance with Section 1203.2 of the IBC or Section R806 of the IRC, and crawl space ventilation must be in accordance with IBC Section 1203.3 or IRC Section R408, as applicable.
- **Protection Against Termites:** See Section 5.7, except use of the insulation in areas where the probability of termite infestation is "very heavy" must be in accordance with Section R320.5 of the 2006 IRC.
- **Jobsite Certification and Labeling:** See Section 5.8, except jobsite certification and labeling must comply with Sections 102.1.1 and 102.1.1.q, as applicable, of the 2006 IECC.

TABLE 1—THERMAL RESISTANCE (R-VALUES)

THICKNESS (inches)	Bayseal® OC	Bayseal® OCX
	R-VALUE (°F.ft².h/Btu)	R-VALUE (°F.ft².h/Btu)
1	3.7	3.9
2	7.4	7.4
3	11	11
3.5	13	13
4	15	14
5	18	18
5.5	20	20
6	22	22
7	25	25
7.75	27	27
8	28	28
9	32	32
10	35	35
11	39	39
12	42	42
13	46	46
14	50	50
15	53	53
16	56	56

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 1- and 3.5-inch thicknesses.

²R-values greater than 10 are rounded to the nearest whole number.

TABLE 2—NFPA 285 COMPLYING EXTERIOR WALL ASSEMBLIES IN TYPES I, II, III AND IV CONSTRUCTION

WALL COMPONENT	MATERIALS
Base Wall System – Use either 1, 2 or 3	1 – Concrete wall 2 – Concrete masonry wall 3 – 1 layer 5/8-inch-thick Type X gypsum wallboard complying with ASTM C36 or C1396 on interior, installed over steel studs, minimum 35/8-inch deep, No. 20 gage, C-shaped, spaced a maximum of 24 inches on center. Gypsum wallboard must be attached with No. 6, 11/4-inch-long self-tapping screws located 8 inches on center along the perimeter and in the field of wallboard. Gypsum wallboard joints must be taped and treated with joint compound in accordance with ASTM C840 or GA-216.
Floorline Firestopping	4 pcf mineral wool in each stud cavity at each floor line attached with Z-clips
Cavity Insulation – Use either 1 or 2 or 3	1 – None 2 – Full cavity depth or less of Bayseal® OC insulation applied using exterior sheathing as substrate and covering the width of the cavity and inside the stud flange 3 - Fiberglass batt insulation (faced or unfaced)
Exterior Sheathing – Only for Base Wall System No. 3 Use either 1 or 2	1 – 1/2-inch-thick, exterior type gypsum sheathing 2 – 5/8-inch-thick, exterior type gypsum sheathing
Exterior Wall covering – Use either 1 or 2	1 – Brick - standard nominal 4-inch-thick clay brick - Brick veneer anchors – standard types installed a maximum of 24 inches OC vertically on each stud - Maximum 2 inch air gap between exterior insulation and brick 2 – Stucco - minimum 3/4-inch-thick, exterior cement plaster and lath. A secondary water-resistive barrier may be installed between the exterior insulation and the lath. The secondary water-resistive barrier must not be full-coverage asphalt or butyl-based self-adhered membranes.

For SI: 1 inch = 25.5 mm; 1 pcf = 16.018 kg/m³.