EVALUATION SUBJECT:
NEXGEN® 2.0

REPORT HOLDER:
Accella Polyurethane Systems
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CSI Division: 07 00 00 – THERMAL AND MOISTURE PROTECTION
CSI Section: 07 21 00 – Thermal Insulation

1.0 SCOPE OF EVALUATION

1.1 Compliance to the following codes & regulations:
- 2015, 2012, 2009 and 2006 International Building Code® (IBC)
- 2015, 2012, 2009 and 2006 International Residential Code® (IRC)
- 2015, 2012, 2009 and 2006 International Energy Conservation Code® (IECC)

1.2 Evaluated in accordance with:
- ICC-ES AC377, Approved April 2016

1.3 Properties assessed:
- Surface-burning characteristics
- Physical properties
- Thermal resistance
- Use in attics and crawlspaces
- Air permeability
- Exterior Walls in Types I through IV Construction

2.0 PRODUCT USE

NeXGen® 2.0 is a closed-cell spray foam plastic used as a nonstructural thermal insulating material in walls of Type I, II, III, IV and V construction under Section 2603 of the IBC, dwellings under the 2015, 2012 and 2009 IRC Section R316 (2006 IRC Section R314) and IECC Sections C303, C402, R303 and R402 (2009 IECC Section 303 and 402; 2006 IECC Section 402).

3.0 PRODUCT DESCRIPTION

3.1 NeXGen® 2.0 Insulation: NeXGen® 2.0 is a two-component, spray applied, closed cell polyurethane foam plastic insulation having a nominal density of 2.0 pounds per cubic foot (32 kg/m^3). Shelf life is six months from date of manufacture when stored in original unopened containers at 50°F to 85°F (10°C to 29°C).

3.2 Surface Burning Characteristics

3.2.1 NeXGen® 2.0 insulation, at a maximum thickness of 4 inches (102 mm) and a nominal density of 2.0 pounds per cubic foot (32.0 kg/m^3), 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 and complies with IBC Sections 2603.3 and 2603.5.4, and 2015, 2012 and 2009 IRC Section R316.3 (2006 IRC Section 314.3).

3.2.2 Thicknesses are not limited for ceiling cavities and wall cavities when covered by a prescriptive thermal barrier (minimum ½ inch (12.7 mm) thick gypsum board). Thicknesses of up to 12.5 inches (318 mm) for ceiling cavities and 8½ inches (216 mm) for wall cavities are recognized based on testing in accordance with NFPA 286, when installed in accordance with Section 4.3.2 of this report.

3.3 Thermal Resistance

NeXGen® 2.0 insulation has thermal resistances, R-values, at a mean temperature of 75°F (24°C) as shown in Table 1 of this report.

Table 1—Thermal Resistance (R-Values)[1]

Thickness (inch)	**R-Value** (°F•ft^2•hr/Btu)
1.0	6.5
2.0	13
3.0	19
4.0	25
7.5	47
11.5	71

SI: 1 inch = 25.4 mm; 1 °F•ft^2•hr/Btu = 0.176 °K•m^2•hr/W
[1]R-values are calculated based on tested k-factors at 1- and 3.5-inch thicknesses.

3.4 Intumescent Coatings

3.4.1 DC 315 intumescent coating 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 maximum shelf life of 24 months when stored in factory-sealed containers at temperatures between 50°F (10°C) and 90°F (32°C).

3.4.2 Fireshell TB intumescent coating is manufactured by TPR^2 Corp., and is a water-based coating supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums. The coating material has a maximum shelf life of 12 months when stored in factory-sealed containers at temperatures above 45°F (7°C).

3.4.3 Quadcoat TB intumescent coating is manufactured by TPR^2 Corp., and is a water-based coating supplied in 5-gallon (19 L) pails and 55-gallon (208 L) drums. The coating

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 safely, as applicable, in accordance with IBC Section 104.11. This document shall only be reproduced in its entirety.

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ISO/IEC 17065 Product Certification Body #0675

material has a maximum shelf life of 12 months when stored in factory-sealed containers at temperatures above 45°F (7°C).

4.0 DESIGN AND INSTALLATION

4.1 General: NeXGen® 2.0 spray-applied foam plastic insulation shall be installed in accordance with the manufacturer's published installation instructions and this report. A copy of these instructions and this evaluation report shall be available on the jobsite at all times during installation. Where conflicts occur, the more restrictive governs.

4.2 Design: NeXGen® 2.0 shall be applied using spray equipment specified by Accella Polyurethane Systems.

4.3 Thermal Barrier

4.3.1 Application with a Prescriptive Thermal Barrier: NeXGen® 2.0 spray foam insulation at any thickness in ceiling cavities and in wall cavities shall be separated from the interior of the building by a thermal barrier. The IBC and IRC specify an approved thermal barrier of minimum ½-inch thick (12.7 mm) gypsum board wallboard or equivalent 15-minute thermal barrier complying with IBC Section 2603.4 or IRC Section R316.4 (2006 IRC Section 314.4), as applicable and installed in accordance with the applicable code.

4.3.2 Application without a Prescriptive Thermal Barrier

4.3.2.1 DC 315: NeXGen® 2.0 spray foam insulation may be installed without a prescriptive thermal barrier when coated on all exposed surfaces with 18 mils (0.45 mm) wet film thickness and 12 mils (0.30 mm) dry film thickness of DC 315 intumescent coating as described in Section 3.4.1 of this report. The maximum thickness of the spray foam insulation is limited to 7.5 inches (190 mm) on vertical surfaces and 11.5 inches (292 mm) on overhead surfaces. Coating shall be applied in accordance with International Fireproof Technology's installation instructions and this report. Where conflicts occur the more restrictive governs. Surfaces to be coated shall be dry, clean, and free of dirt, loose debris and other substances. The coating is applied in one-coat with low-pressure airless air equipment.

4.3.2.2 Fireshell TB: NeXGen® 2.0 spray foam insulation may be installed without a prescriptive thermal barrier when coated on all exposed surfaces with 18 mils wet film thickness and 12 mils dry film thickness of Fireshell TB intumescent coating as described in Section 3.4.2 of this report. The maximum thickness of the spray foam insulation is limited to 8.5 inches (216 mm) on vertical surfaces and 12.5 inches (318 mm) on overhead surfaces. Coating shall be applied in accordance with TPR[2]'s installation instructions and this report. Surfaces to be coated shall be dry, clean, and free of dirt, loose debris and other substances. The coating is applied in one-coat with low-pressure airless air equipment.

4.3.2.3 Quadcoat TB: NeXGen® 2.0 spray foam insulation may be installed without a prescriptive thermal barrier when coated on all exposed surfaces with 18 mils (0.45 mm) wet film thickness and 12 mils (0.30 mm) dry film thickness of Quadcoat TB intumescent coating as described in Section 3.4.3 of this report. The maximum thickness of the spray foam insulation is limited to 8.5 inches (216 mm) on vertical surfaces and 12.5 inches (318 mm) on overhead surfaces. Coating shall be applied in accordance with TPR[2]'s installation instructions and this report. Where conflicts occur the more restrictive governs. Surfaces to be coated shall be dry, clean, and free of dirt, loose debris and other substances. The coating is applied in one-coat with low-pressure airless air equipment.

4.4 Attics and Crawl Spaces: When installing NeXGen® 2.0 in attics and/or crawl spaces and a thermal barrier is omitted in accordance with IBC Section 2603.4.1.6 or IRC Sections R316.5.3 or R316.5.4 (2006 IRC Sections R314.5.3 and R314.5.4), installation shall comply with either Sections 4.4.1 or 4.4.2 of this report.

NeXGen® 2.0 spray foam insulation qualifies as an air-impermeable insulation and, when installed in accordance with Sections 4.4.1 or 4.4.2.1 of this report, may be used to insulate unvented attics in accordance with IRC Section R806.4.

4.4.1 Application with a Prescriptive Ignition Barrier: When NeXGen® 2.0 insulation is installed within attics and crawl spaces where entry is made only for service of utilities, an ignition barrier shall be installed in accordance with IBC Section 2603.4.1.6 or IRC Sections R316.5.3 and R316.5.4 (2006 IRC Section R314.5.3 and R314.5.4), as applicable.

The ignition barrier shall be consistent with the construction type of the building.

4.4.2 Application without a Prescriptive Ignition Barrier: Where the spray-applied insulation is installed in accordance with Section 4.4.2.1 or 4.4.2.2 of this report, the following conditions apply:

a) Entry to the attic or crawl space is only 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 an air-impermeable insulation is permitted in unvented attics in accordance with IRC Section R806.5 of IRC. Under-floor (crawl space) ventilation is provided when required by 2015 IBC

Section 1203.4 (2012, 2009 and 2006 IBC Section 1203.3) or IRC Section R408.1, as applicable.

e) The foam plastic insulation is limited to the maximum thickness and density stated in this report.
f) Combustion air is provided in accordance with Sections 701 of the 2015, 2012 and 2009 International Mechanical Code® (IMC) (2006 IMC and Sections 701 and 703) , as applicable.
g) The installed coverage rate or thickness of coatings, if part of the insulation system, shall be equal to or greater than that stated in this report.

4.4.2.1 Attics and Crawl Spaces: NeXGen® 2.0 spray foam insulation may be spray-applied without an ignition barrier to the underside of the roof deck to thicknesses not exceeding 11.5 inches (292 mm) and/or vertical surfaces to thicknesses not exceeding 7.5 inches (190 mm), as described in this section When NeXGen® 2.0 is installed as described in this section, no ignition barrier or coating are required.

As an alternative NeXGen® 2.0 insulation may be installed in accordance with Section 4.3.2 of this report.

4.4.2.2 Use on Attic Floors: NeXGen® 2.0 insulation may be installed exposed (no coating), without an ignition barrier up to a maximum thickness of 11½ inches (292 mm) between and over the joist in attic floors. The insulation shall be separated from the interior of the building by an approved thermal barrier. The ignition barrier required by IBC Section 2603.4 and IRC Section R316.5.3 (2006 IRC Section 314.5.3) may be omitted in this case.

4.5 Exterior Walls of Types I, II, III and IV Construction (IBC)

4.5.1 General: When used on exterior walls of Types I, II, III or IV construction, the assembly shall comply with IBC Section 2603.5 and this section, and the NeXGen® 2.0 insulation shall be installed at a maximum thickness of 3 inches (76 mm). The potential heat of NeXGen® 2.0 insulation is 1857 Btu/ft^2 (21.1 MJ/m^2) per inch of thickness, when testing is in accordance with NFPA 259.

4.5.2 Exterior Face: Nominally 3-5/8 inch deep (92 mm), No. 20 gage (33 mils thick) galvanized steel studs spaced 24 inches (610 mm) on center, are secured with #8 x ½ inch (13 mm) long lath screws to No. 20 gage (33 mils thick) steel floor and ceiling track. Georgia Pacific DensGlass® Gold Sheathing, 5/8 inch (16 mm) thick shall comply with ASTM C1177 and shall be installed over the exterior side of the steel studs with the long dimension perpendicular to the studs using #6 x 1-1/4 inch (32 mm) self-drill, zinc-plated Bugle head screws spaced 8 inches (203 mm) on center around the perimeter and 12 inches (305 mm) on center in the field. Nominal 4 pcf (64 kg/m^3) Thermafiber Safing insulation shall comply with ASTM C665 Type I and shall be placed at floor lines, filling the cavities the full floor depth. The stud cavity is filled with NeXGen® 2.0 insulation to a nominal thickness of 3 inches (76 mm).

4.5.3 Interior Face: Type X gypsum board, 5/8 inches (16 mm) thick, and complying with ASTM C1396 is installed with the long dimension perpendicular to the studs, fastened to the framing with #6 x 1-1/4 inch (32 mm) self-drilling, zinc-plated Bugle head screws spaced 8 inches (203 mm) on center around the perimeter and 12 inches (305 mm) in the field. The gypsum board joints shall be treated with vinyl or casein, dry or premixed joint compound applied in two coats to cover all exposed screw heads and gypsum board butt joints, and a minimum 2-inch-wide (51 mm) paper, plastic, or fiberglass tape embedded in the first layer of compound over butt joints of the gypsum board.

4.5.4 Exterior Wall Covering: Details of the exterior wall covering is non-combustible and shall be provided to the code official by the report holder, designer or specifier, with an engineering analysis demonstrating that (1) the exterior wall covering is non-combustible and conforms to ASTM E136 and (2) the addition of the wall covering to the assembly described in the section does not negatively affect conformance of the assembly with the requirements of IBC Section 2603.5.

4.5.5 Fire Resistance: Fire resistance of building assemblies insulated with NeXGen® 2.0 insulation is outside of the scope of this report.

5.0 LIMITATIONS

The NeXGen® 2.0 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 The product shall be installed in accordance with the manufacturer's published installation instructions, this evaluation report and the applicable code. The more restrictive shall govern if there are any conflicts between the manufacturer's published installation instructions and this report.

5.2 NeXGen® 2.0 insulation shall be protected by a 15-minute thermal barrier in accordance with Section 4.3.1 of this report except when installation complies with Sections 4.3.2 (Application without a Prescriptive Thermal Barrier) and/or 4.4 (Attics and Crawl Spaces) of this report

5.3 The A and B components of the insulation are produced under a quality control program with inspections by IAPMO Uniform ES.

5.4 NeXGen® 2.0 insulation shall be installed by contractors certified by Accella Polyurethane Systems.

5.5 When NeXGen® 2.0 insulation is used in areas wherein the likelihood of termite infestation is “very heavy,” it shall be installed in accordance with IBC Section 2603.8 (2012 IBC Section 2603.9) or IRC Section R318.4 (2006 IRC Section R320.5), as applicable.

5.6 Jobsite labeling and certification of the insulation shall comply with 2015 IRC Sections N1101.10 and N1101.10.1.1, 2012 IRC Sections N1101.12 and N1101.12.1 2009 and 2006 IRC Sections N1101.4 and N1101.4.1 and IECC Sections C303.1.1 and C303.1.2 (2009 IECC Section 303.1.1.1; 2006 IECC sections 102.1.1 and 102.1.1.1), as applicable.

5.7 Where applicable, NeXGen® 2.0 shall be installed with a vapor retarder in accordance with the applicable code.

5.8 When use is on buildings of Type I, II, III or IV, construction shall be as described in Section 4.5 of this report.

6.0 SUBSTANTIATING DATA

6.1 Data and test reports submitted are from laboratories in compliance with ISO/IEC 17025 and in accordance with the ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation, (AC377), Approved April 2016, including reports of tests in accordance with Appendix X of AC 377.

6.2 Reports on room corner fire tests in accordance with NFPA 286.

6.3 Reports on potential heat in accordance with NFPA 259.

6.4 Reports on fire propagation characteristics tests in accordance with NFPA 285.

7.0 IDENTIFICATION

Containers of NeXGen® 2.0 components are identified with a label bearing the Accella Polyurethane Systems. name address; the product trade name (NeXGen® 2.0); the lot number; the flame spread and smoke developed indices; mixing instructions; density; the shelf life; the expiration date; and the IAPMO Uniform ES Evaluation Report number (ER-523).

or

IAPMO UES ER-523

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