ICC EVALUATION SERVICE

Most Widely Accepted and Trusted

ICC-ES Report

ESR-2600

ICC-ES | (800) 423-6587 | (562) 699-0543 | www.icc-es.org

Valid: 02/15 to 02/16

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

SECTION: 07 21 00—THERMAL INSULATION

REPORT HOLDER:

DEMILEC (USA) LLC

2925 GALLERIA DRIVE
ARLINGTON, TEXAS 76011

EVALUATION SUBJECT:

*SEAL*ECTION AGRIBALANCE® SPRAY FOAM INSULATION

Look for the trusted marks of Conformity!

"2014 Recipient of Prestigious Western States Seismic Policy Council (WSSPC) Award in Excellence"

A Subsidiary of ICC INTERNATIONAL CODE COUNCIL

ICC EVALUATION SERVICE

Most Widely Accepted and Trusted

ICC-ES Evaluation Report

ESR-2600

Reissued February 2015

This report is subject to renewal February 2016.

www.icc-es.org | (800) 423-6587 | (562) 699-0543 *A Subsidiary of the International Code Council®*

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 21 00—Thermal Insulation

REPORT HOLDER:

DEMILEC USA LLC
2925 GALLERIA DRIVE
ARLINGTON, TEXAS 76011
(817) 640-4900
www.demilecusa.com

EVALUATION SUBJECT:

***SEAL*ECTION AGRIBALANCE® SPRAY FOAM INSULATION**

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2009 *International Building Code*® (IBC)
- 2009 *International Residential Code*® (IRC)
- 2009 *International Energy Conservation Code*® (IECC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)†

†The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

- Other Codes (see Section 8.0)

Properties evaluated:

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

2.0 USES

*Seal*ection Agribalance® spray foam insulation is used as a nonstructural thermal insulating material in Type V-B construction under the IBC and dwellings under the IRC. The insulation is for use in wall cavities, floor assemblies, roof/ceiling assemblies or attics and crawl spaces when installed in accordance with Section 4.4. Under the IRC, the insulation may be used as air-impermeable insulation when installed in accordance with Section 3.4.

3.0 DESCRIPTION

3.1 General:

*Seal*ection Agribalance® is a spray-applied, semirigid, low-density, cellular polyurethane foam plastic that is installed as a nonstructural component of floor/ceiling and wall assemblies. The material is a two-component, open-cell spray-applied polyurethane foam plastic system. The product is a water-blown foam with nominal density of 0.7 pcf (11.2 kg/m^3) and installed density of 0.6-0.8 pcf (9.6 - 12.8 kg/m^3). The polyurethane foam is produced in the field by combining a polymeric isocyanate (component A) and a resin (component B). The products have a shelf life of one year, when stored in factory-sealed containers at temperatures between 40°F and 100°F (4.5°C and 38°C).

*Seal*ection Agribalance® spray foam insulation is an air-impermeable insulation in accordance with Section R806.4 of the IRC, based on testing in accordance with ASTM E283.

3.2 Surface-burning Characteristics:

The insulation at a maximum thickness of 5.5 inches (139.7 mm) and a density of 0.6 pcf (9.6 kg/m^3), has a flame-spread index of less than 25 and smoke-developed index of less than 450 when tested in accordance with ASTM E84. Thicknesses up to $9^1/_4$ inches (235 mm) for wall cavities and 14 inches (356 mm) for floor/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 wallboard or an equivalent 15-minute thermal barrier complying with, and installed in accordance with, IBC Section 2603.4 or IRC Section R316.4, as applicable.

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. Heatlok® Soy 200 has a thermal resistance *R*-value, at a mean temperature of 75°F (24°C), of 7.4 per inch.

3.4 Air Permeability:

*Seal*ection Agribalance® spray-applied polyurethane foam insulation, at a minimum of 3.5 inches (89 mm), is considered air-impermeable insulation in accordance with Section R806.4 of the IRC based on testing in accordance with ASTM E283 and ASTM E2178.

3.5 Blazelok™ IB4 Intumescent Coating:

Blazelok™ IB4 intumescent coating, manufactured by TPR^2 Corporation, is a one-component, water-based liquid coating with specific gravity of 1.3. Blazelok™ IB4 is supplied in 5-gallon (19 L) pails and/or 55-gallon (208 L) drums and has a shelf life of one year when stored in factory-sealed containers at temperatures between 45°F (7°C) and 90°F (32°C).

3.6 No-Burn® Plus XD Intumescent Coating:

No-Burn® Plus XD intumescent coating, manufactured by No-Burn, Inc., is a translucent aqueous liquid in 1- and 5- gallon (3.8 and 18.8 L) pails and 55-gallon (208 L) drums. The coating has a shelf life of three years when stored in a factory-sealed container at temperatures between 40ºF (4.5ºC) and 90ºF (32ºC).

3.7 Heatlok Soy® 200 Coating:

Heatlok® Soy 200, manufactured by Demilec USA LLC, is a spray-applied foam used as a coating over the *Seal*ection Agribalance® foam insulation, as described in Section 4.4.2.4. The Heatlok® Soy 200 coating is a two-component, closed-cell polyurethane foam plastic insulation with a density of 2.1 pcf (34 kg/m^3) that is installed as a nonstructural component in walls and floor/ceiling assemblies. The foam plastic components have a shelf life of one year when stored in factory-sealed containers at temperatures between 59°F and 77°F (15°C and 25°C). The foam coating has a thermal resistance, *R*-value, of 7.4 per inch, to a maximum of 2 inches (51 mm), at a mean temperature of 75°F (24°C); and qualifies as Class II vapor retarder under the IRC when applied at a minimum thickness of 1.2 inches (30.5 mm).

4.0 DESIGN AND INSTALLATION

4.1 General:

*Seal*ection Agribalance® spray foam insulation must be installed in accordance with the manufacturer's published installation instructions 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 as identified in the Demilec application manual. The insulation can be installed in one pass to the maximum thickness as specified in Sections 3.2 and 4.4.2. The foam plastic must not be used in electrical outlet or junction boxes or in contact with rain, water, or soil. The foam plastic must not be sprayed onto a substrate that is wet, or covered with frost or ice, loose scales, rust, oil, or grease. *Seal*ection Agribalance® resin (component B) must be stored in areas where the ambient temperature is between 40°F and 100°F (4.5°C and 38°C). *Seal*ection Agribalance® must be used in areas where maximum ambient temperature is equal or less than 180°F (82°C). The insulation must be protected from the weather during and after application.

4.3 Thermal Barrier:

*Seal*ection Agribalance® spray foam insulation 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, IBC Section 2603.4 or IRC Section R316.4, as applicable, except when installation is in attics and crawl spaces, as described in Section 4.4. Thicknesses of up to $9^1/_4$ inches (235 mm) for wall cavities and 14 inches (356 mm) for floor/ceiling cavities are recognized, based on room corner fire testing in accordance with NFPA 286.

4.4 Attics and Crawl Spaces:

4.4.1 Application with a Prescriptive Ignition Barrier: When *Seal*ection Agribalance® 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 or 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 the foam plastic insulation is not exposed. *Seal*ection Agribalance® insulation as described in this section may be installed in unvented attics in accordance with IRC Section R806.4.

4.4.2 Application without a Prescriptive Ignition Barrier:

4.4.2.1 General: Where *Seal*ection Agribalance® insulation is installed without a prescriptive ignition barrier in attics and crawl spaces in accordance with Sections 4.4.2 and 4.4.3, 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 must be provided when required by the applicable code, except when air-impermeable insulation is permitted in unvented attics in accordance with Section R806.4 of the IRC.

e. Under-floor (crawl space) ventilation is provided when required by IBC Section 1203.3 or IRC Section R408.1, as applicable.

f. Combustion air must be provided in accordance with *International Mechanical Code*® (IMC) Section 701.

4.4.2.2 Application with Blazelok™ IB4 Coating: In attics, *Seal*ection Agribalance® insulation may be spray-applied to the underside of roof sheathing and/or rafters; and the underside of wood floors and/or floor joists in crawl spaces as described in this section. The thickness of the foam plastic applied to the underside of the wood floor and roof sheathing must not exceed $11^1/_4$ inches (285.8 mm). The spray foam insulation applied to vertical wall surfaces in attics and crawl spaces must not exceed $9^1/_4$ inches (235 mm) in depth. The foam plastic surface must be covered with a minimum 5-dry-mil [9 wet mils (0.23 mm)] thickness of Blazelok™ IB4 intumescent coating as described in Section 3.5. The intumescent coating must be spray-applied over the insulation in accordance with the coating manufacturer's instructions and this report at a rate of 1 gallon (3.38 L) per 175 square feet (16.3 m^2) to obtain the recommended minimum dry film thickness noted in this section. Surfaces to be coated must be dry and clean, and free of dirt, loose debris and any other substances that could interfere with adhesion of the coating.

4.4.2.3 Application with No-Burn® Plus XD Intumescent Coating: In attics, *Seal*ection Agribalance® foam insulation may be spray-applied to the underside of the roof sheathing and/or rafters and in crawl spaces. The insulation may be spray-applied to the underside of wood floors as described in this section. The thickness of the foam plastic applied to the underside of the top of the space must not exceed $11^1/_2$ inches (292 mm), and the thickness on vertical surfaces must not exceed $9^1/_2$ inches (241 mm). The foam plastic surface must be covered with a minimum nominal thickness of 6 dry mils (0.15 mm) [10 wet mils (0.25 mm)] of the No-Burn® Plus XD intumescent coating described in Section 3.6. The intumescent coating must be spray-applied over the insulation in accordance with the coating manufacturer's instructions and this report at a rate of 1 gallon (3.38 L) per 160 square feet (14.9 m^2) to obtain the recommended

minimum dry film thickness noted in this section. Surfaces to be coated must be dry and clean, and free of dirt, loose debris and any other substances that could interfere with adhesion of the coating.

4.4.2.4 Application of *Seal*ection Agribalance® with Heatlok Soy® 200 Coating: *Seal*ection Agribalance® foam insulation may be spray-applied to the underside of roof sheathing and/or rafters; and the underside of wood floors and/or floor joists in crawl spaces as described in this section. The thickness of the foam plastic applied to the underside of the wood floor and roof sheathing must not exceed $9^1/_2$ inches (241 mm). The spray foam insulation applied to vertical wall surfaces in attics or crawl spaces must not exceed $5^1/_2$ inches (140 mm) in depth. *Seal*ection Agribalance® foam insulation applied to all surfaces must be covered with a nominal thickness of 2 inches (51 mm) of Heatlok Soy® 200 spray foam coating as described in Section 3.7.

4.4.3 Use on Attic Floors: *Seal*ection Agribalance® spray-applied insulation may be installed exposed at a maximum thickness of $9^1/_2$ inches (241 mm) between and over the joists in attic floors, when covered with the No-Burn® Plus XD intumescent coating described in Section 4.4.2.3. *Seal*ection Agribalance® spray-applied insulation may be installed exposed at a maximum thickness of $9^1/_4$ inches (235 mm) between and over the joists in attic floors, when covered with the Blazelok™ IB4 intumescent coating described in Section 4.4.2.2. The foam plastic insulation may be installed at a maximum of $5^1/_2$ inches (140 mm) between and over the joists in an attic floor when covered with a nominal 2 inches (51 mm) of Heatlok Soy® 200 coating as described in Section 4.4.2.4. The 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 and IRC Section R316.5.3 may be omitted.

5.0 CONDITIONS OF USE

The *Seal*ection Agribalance® spray-applied 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 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 The products must be installed in accordance with the manufacturer's published installation instructions, this evaluation report and the applicable code. The instructions within this report govern if there are any conflicts between the manufacturers' published installation instructions and this report.

5.3 The insulation must be separated from the interior of the building by an approved 15-minute thermal barrier, except when installation is in attics and crawl spaces as described in Section 4.4.

5.4 The insulation must not exceed the density and thicknesses noted in Sections 3.2, 4.4.2 and 4.4.3 of this report.

5.5 The insulation must be protected from the weather during and after application.

5.6 The insulation must be applied by contractors certified by Demilec USA.

5.7 Use of the insulation in areas where the probability of termite infestation is "very heavy" must be in accordance with IRC Section R318.4 or IBC Section 2603.8, as applicable.

5.8 The insulation has been evaluated only for use in Type V-B construction under the IBC and non-fire-resistance rated assemblies in dwellings under the IRC.

5.9 Jobsite certification and labeling of the insulation must comply with IRC Sections N1101.4 and N1104.4.1 and IECC Sections 303.1.1 and 303.1.2, as applicable.

5.10 A vapor retarder must be installed when required by the applicable code.

5.11 The insulation is produced in Arlington, Texas, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation (AC377), dated June 2012, including testing in accordance with Appendix X.

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

6.3 Reports of air leakage tests in accordance with ASTM E283.

6.4 Reports of air permeance tests in accordance with ASTM E2178.

7.0 IDENTIFICATION

Components of *Seal*ection Agribalance® spray foam insulation are identified with the manufacturer's name (Demilec USA), address and telephone number; the product trade name (*Seal*ection Agribalance®); use instructions; the density; the flame-spread and smoke-development indices; and the evaluation report number (ESR-2600).

Each pail of Blazelok™ IB4 intumescent coating is labeled with the manufacturer's name (TPR^2 Corporation), the product name and use instructions.

No-Burn® Plus XD intumescent coating is identified with the manufacturer's name (No-Burn, Inc) and address, the product trade name, and use instructions.

Heatlok® Soy 200 coating is identified with the manufacturer's name (Demilec USA), address and telephone number, the product trade name and use instructions.

8.0 OTHER CODES

In addition to the codes referenced in Section 1.0, the products described in this report have been evaluated in accordance with the following codes:

- 2006 *International Building Code*® (2006 IBC)
- 2006 *International Residential Code*® (2006 IRC)
- 2006 *International Energy Conservation Code*® (2006 IECC)
- 2003 *International Building Code*® (2003 IBC)
- 2003 *International Residential Code*® (2003 IRC)
- 2003 *International Energy Conservation Code*® (2003 IECC)

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

- **Application with a Prescriptive Thermal Barrier:** See Section 4.3, except the approved thermal barrier must

be installed in accordance with Section R314.4 of the 2006 IRC or Section R314.1.12 of the 2003 IRC.

- **Application with a Prescriptive Ignition Barrier:** See Section 4.4.1, except attics must be vented in accordance with Section 1203.2 of the 2006 and 2003 IBC or Section R806 of the 2003 IRC, and crawl space ventilation must be in accordance with Section 1203.3 of the 2006 and 2003 IBC or Section R408 of the 2006 and 2003 IRC, as applicable. Additionally, an ignition barrier must be installed in accordance with Section R314.5.3 or R314.5.3 of the 2006 IRC or Section R314.2.3 of the 2003 IRC, as applicable.
- **Application without a Prescriptive Ignition Barrier:** See Section 4.4.2, except attics must be vented in accordance with Section 1203.2 of the 2006 and 2003 IBC or Section R806 of the 2006 and 2003 IRC, and crawl space ventilation must be in accordance with Section 1203.3 of the 2006 and 2003 IBC or Section R408 of the 2006 and 2003 IRC, 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 or Section R320.4 of the 2003 IRC.
- **Jobsite Certification and Labeling:** See Section 5.9, except jobsite certification and labeling must comply with Sections 102.1.1 and 102.1.11, as applicable, of the 2006 IECC.

TABLE 1—THERMAL RESISTANCE (*R*-VALUES)

THICKNESS (INCH)	*R*-VALUE[1] (°F.ft^2.h/Btu)
1	4.5
2	8.9
3	13
3.5	16
4	18
5.5	24
6	27
7.5	33
9.25	41
9.5	42
10	44
11.25	50
11.5	51
14	62

For **SI:** 1 inch = 25.4 mm; 1°F.ft^2.h/Btu = 0.176 110°K.m^2/W.

[1]*R*-values are calculated based on tested *K*-values at 1-and 4-inch thicknesses.