



Report Number: 0123

Issued: 07/2009

Expires: 07/2010

DIVISION: 07—THERMAL AND MOISTURE PROTECTION

Section: 07210—Building Insulation

REPORT HOLDER:

DEMILEC USA

2925 GALLERIA DRIVE

ARLINGTON, TEXAS 76011

(817) 640-4900

www.Demilec.com

info@Demilec.com

EVALUATION SUBJECT:

SEALECTION AGRIBALANCE™ SPRAY FOAM INSULATION

1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2003 International Building Code® (IBC)
- 2003 International Residential Code® (IRC)
- 2004 Supplement to the 2003 International Residential Code® (IRC)
- 2003 International Energy Conservation Code® (IECC)
- 2006 International Building Code® (IBC)
- 2006 International Residential Code® (IRC)
- 2006 International Energy Conservation Code® (IECC)

Evaluated in accordance with:

- ICC-ES AC 377 Dated June 2009

1.3 Property Evaluated:

- Surface burning characteristics
- Thermal transmission
- Attic and crawl space installation

2.0 USES

SEALECTION Agribalance™ Spray Foam Insulation is spray-applied, semi-rigid, low-density, cellular polyurethane foam plastic that is installed as a nonstructural component of floor/ceiling and wall assemblies.

3.0 DESCRIPTION

3.1 Product Information:

3.1.1 SEALECTION Agribalance™: SEALECTION Agribalance™ is a two-component, open cell spray-applied semi-rigid polyurethane foam plastic system, fully-water blown with a density of 0.60 - 0.80 lbs/ft³ (9.60 - 12.80 kg/m³). The polyurethane foam is produced by combining a polymeric isocyanate (A) and a resin (B). By-products of the reaction include carbon dioxide and steam which act together as a blowing agent. SEALECTION Agribalance™ contains 10 percent rapid renewable, non-edible, biobased contents in the finished foam in accordance with ASTM D6866.

3.1.2 BLAZELOK™ IB ignition Barrier: BLAZELOK™ IB ignition barrier is a water-based liquid coating. BLAZELOK™ IB is supplied in 5-gallon (19 L) plastic pails and has a shelf life of nine months when stored in a factory-sealed container

3.2 Surface Burning Characteristics:

3.2.1 The SEALECTION Agribalance™, at a thickness of 5 inches (152 mm) and a density of 0.60 - 0.80 lbs/ft³ (9.60 - 12.80 kg/m³) has a flame-spread index of 15-20 and a smoke-development index of 400 when tested in accordance with ASTM E84.

3.3 Thermal Resistance, R-Values:

3.3.1 The SEALECTION Agribalance™ has a thermal resistance (R-value) of 4.5 ft²- h-°F/Btu (0.80 m²-K/W) at a 1-inch (25.4 mm) thickness and a density of 0.60 - 0.80 lbs/ft³ (9.60 - 12.80 kg/m³). See Table 1 for R-value ratings at various thicknesses.

3.4 Vapor Retarder:

3.4.1 The *SELECTION* Agribalance™ when tested in accordance with Procedure A of ASTM E96, has a vapor permeance of more than 1 perm (5.7×10^{-11} kg/Pa·s·m²) at a thickness of 5 inches (127 mm), and therefore where a vapor retarder is required by the code a vapor retarder shall be provided.

3.5 Air Permeability:

3.5.1 *SELECTION* Agribalance™, when tested in accordance with ASTM E283 and ASTM E2178 is air-impermeable when installed at 3.5 inch (89 mm) thickness or greater.

3.6 Fungal Resistance:

3.6.1 *SELECTION* Agribalance™, when tested in accordance with ASTM C1338 exhibits no fungal growth.

4.0 INSTALLATION

4.1 General:

SELECTION Agribalance™ Spray Foam Insulation shall be installed in accordance with the manufacturer's published installation instructions and this report. The manufacturer's published installation instructions and this report shall be strictly adhered to and a copy of these instructions shall be available at all times on the jobsite during installation.

4.2 Application:

4.2.1 *SELECTION* Agribalance™: *SELECTION* Agribalance™ is spray-applied on the jobsite using a volumetric positive displacement pump as identified in the Demilec application manual. The *SELECTION* Agribalance™ Resin component shall not be stored, before installation, at temperatures below 50°F (10°C) or above 95°F (35°C). *SELECTION* Agribalance™ shall not be used in areas that have a maximum service temperature greater than 180°F (82°C). The foam plastic shall not be in contact with rain, water, or soil. The foam plastic shall not be sprayed onto a substrate that is wet, or covered with frost or ice, loose scales, rust, oil, or grease. The insulation shall be protected from the weather after application.

4.2.2 BLAZELOK™ IB: When required by Sections 4.4.3, 4.5.2, or 4.6.2, the BLAZELOK™ IB ignition barrier fluid-applied coating must be applied in accordance with the coating manufacturer's instructions. 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 BLAZELOK™ IB ignition barrier is applied with an air type or airless sprayer at a coverage rate of 100-110 ft²/gallon to a minimum thickness of 10 mils (0.25mm) dry film (16 wet mils or 0.4 mm). The coating must be applied at a temperature above 45°F (7°C) and has a two-hour drying time. Lower temperatures and higher humidity levels will slow the drying time.

4.3 Thermal Barrier:

4.3.1 Application with a Prescriptive Thermal Barrier: *SELECTION* Agribalance™ shall be separated from the interior occupied area of the building by an approved thermal barrier of 0.5-inch (12.7 mm) gypsum wallboard or an equivalent 15-minute thermal barrier complying with and installed in accordance with the applicable code, except where installation is in an attic or crawl space as described in Sections 4.4, 4.5, or 4.6 of this report. The maximum foam thickness shall be 5 inches (127mm).

4.4 Attics

4.4.1 Application With a Prescriptive Ignition Barrier: The *SELECTION* Agribalance™ Spray Foam Insulation may be installed in attics without a thermal barrier in accordance with IBC Section 2603.4.1.6 or IRC Section R314.5.3, provided entry to the attic is limited to service of utilities. The *SELECTION* Agribalance™ Spray Foam Insulation shall be applied to the underside/interior of the structural roof deck and rafters at a maximum thickness of 11.5 inches (292mm) and to walls and floors at a maximum thickness of 10 inches (254mm).

The *SELECTION* Agribalance™ Spray Foam Insulation shall be protected against ignition by one of the following:

- 1.5-inch-thick (38mm) mineral fiber insulation;
- 0.25-inch-thick (6.4 mm) wood structural panel, particleboard or hardboard;

- 0.375-inch (9.5mm) gypsum wallboard,
- corrosion-resistant steel having a base metal thickness of 0.016 inch (0.4mm), or
- other approved material installed in such a manner that the *SEALECTION* Agribalance™ is not exposed.

The protective covering shall be consistent with the requirements for the type of construction.

The *SEALECTION* Agribalance™ must be separated from the interior occupied area of the building by an approved thermal barrier in accordance with Section 4.3.

4.4.2 Application Without a Prescriptive Ignition Barrier: The *SEALECTION* Agribalance™ Spray Foam Insulation may be installed exposed in attics without a thermal barrier or prescriptive ignition barrier as described in this section and subject to the following provisions:

- Entry to the attic is limited to service of utilities, mechanical and electrical systems. No storage is permitted.
- There are no interconnected attic areas.
- Air in the attic is not circulated to other parts of the building.
- Attic ventilation is provided when required by IBC Section 1203.2 or IRC Section R806, as applicable.
- The maximum thickness of *SEALECTION* Agribalance™ Spray Foam insulation allowed is 11.5 inches (292.1 mm) in the ceiling or under the roof deck and 10 inches (254 mm) on walls.
- Combustion air is provided in accordance with IMC Sections 701 and 703.
- The *SEALECTION* Agribalance™ Spray Foam insulation must be covered 10 dry mils (0.26 mm) BLAZELOK™ 1B applied as described in Section 4.2.2 of this report.

4.5 Attic Floors:

4.5.1 Application With a Prescriptive Ignition Barrier: The *SEALECTION* Agribalance™ Spray Foam Insulation may be installed between and over joists in attic floors without a thermal barrier in accordance with IBC Section 2603.4.1.6 or IRC

Section R314.5.3, provided entry to the attic is limited to service of utilities.

The *SEALECTION* Agribalance™ Spray Foam Insulation shall be protected against ignition by one of the following:

- 1.5-inch-thick (38mm) mineral fiber insulation;
- 0.25-inch-thick (6.4 mm) wood structural panel, particleboard or hardboard;
- 0.375-inch (9.5mm) gypsum wallboard,
- corrosion-resistant steel having a base metal thickness of 0.016 inch (0.4mm), or
- other approved material installed in such a manner that the *SEALECTION* Agribalance™ is not exposed.

The protective covering shall be consistent with the requirements for the type of construction.

The *SEALECTION* Agribalance™ must be separated from the interior occupied area of the building by an approved thermal barrier in accordance with Section 4.3.

4.5.2 Application Without a Prescriptive Ignition Barrier: The *SEALECTION* Agribalance™ Spray Foam Insulation may be installed exposed between and over joists in attic floors provided:

- Entry to the attic is limited to service of utilities, mechanical and electrical systems. No storage is permitted.
- There are no interconnected attic areas.
- Air in the attic is not circulated to other parts of the building.
- Attic ventilation is provided when required by IBC Section 1203.2 or IRC Section R806, as applicable.
- The maximum thickness of *SEALECTION* Agribalance™ Spray Foam insulation allowed is 10 inches (254 mm).
- Combustion air is provided in accordance with IMC Sections 701 and 703.
- The *SEALECTION* Agribalance™ Spray Foam insulation must be covered 10 dry mils (0.26 mm) BLAZELOK™ 1B applied as described in Section 4.2.2 of this report.

4.6 Crawl Spaces:

4.6.1 Application With a Prescriptive Ignition Barrier: The *SELECTION* Agribalance™ Spray Foam Insulation may be installed in attics without a thermal barrier in accordance with IBC Section 2603.4.1.6 or IRC Section R314.5.3, provided entry to the attic is limited to service of utilities.

The *SELECTION* Agribalance™ Spray Foam Insulation shall be protected against ignition by one of the following:

- 1.5-inch-thick (38mm) mineral fiber insulation;
- 0.25-inch-thick (6.4 mm) wood structural panel, particleboard or hardboard;
- 0.375-inch (9.5mm) gypsum wallboard,
- corrosion-resistant steel having a base metal thickness of 0.016 inch (0.4mm), or
- other approved material installed in such a manner that the *SELECTION* Agribalance™ is not exposed.

The protective covering shall be consistent with the requirements for the type of construction.

The *SELECTION* Agribalance™ must be separated from the interior occupied area of the building by an approved thermal barrier in accordance with Section 4.3.

4.6.2 Application Without a Prescriptive Ignition Barrier: The *SELECTION* Agribalance™ Spray Foam Insulation may be installed exposed in crawl spaces without a thermal barrier or prescriptive ignition barrier as described in this section:

- Entry to the crawl space is limited to service of utilities, mechanical and electrical systems. No storage is permitted.
- There are no interconnected crawl space areas.
- Air in the crawl space is not circulated to other parts of the building.
- Under-floor (crawl space) ventilation is provided when required by IBC Section 1203.3 or IRC Section R408.1 as applicable.
- The maximum thickness of *SELECTION* Agribalance™ Spray Foam insulation

allowed applied to the under side of wood floors is 11.5 inches (292.1 mm) and 10 inches (254 mm) on crawl space walls.

- Combustion air is provided in accordance with IMC Sections 701 and 703 of the International Mechanical Code.
- The *SELECTION* Agribalance™ Spray Foam insulation must be covered 10 dry mils (0.26 mm) BLAZELOK™ 1B applied as described in Section 4.2.2 of this report.

5.0 CONDITIONS OF USE

5.1 The *SELECTION* Agribalance™ 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:

5.1.1 This evaluation report and the manufacturer's published installation instructions, when required by the code official, shall be submitted at the time of permit application.

5.1.2 The *SELECTION* Agribalance™ Spray Foam Insulation shall be installed in accordance with the manufacturer's published installation instructions, this evaluation report and the applicable code.

5.1.3 The *SELECTION* Agribalance™ Spray Foam Insulation shall be separated from the interior occupied area of the building by an approved 15-minute thermal barrier, except when installed in attics and crawl spaces as described in Sections 4.4, 4.5 and 4.6 of this report.

5.1.4 The *SELECTION* Agribalance™ Spray Foam Insulation shall not exceed the thickness noted in Sections 4.4.1 and 4.4.2 of this report.

5.1.5 The *SELECTION* Agribalance™ Spray Foam Insulation shall be protected from the weather after application.

5.1.6 The *SELECTION* Agribalance™ Spray Foam Insulation shall be applied by contractors certified by Demilec USA.

5.1.7 In jurisdictions that have adopted the IRC, when installed in buildings of wood construction, the insulation shall not be installed on the exterior of foundation walls or below floor slabs on ground or in contact with the ground. The insulation shall have a

Report Number: 0123

Issued: 07/2009

Expires: 07/2010

clearance above grade and exposed earth of 6 inches (152 mm) or greater.

5.1.8 The *SELECTION* Agribalance™ Spray Foam Insulation is limited to use in Types V-B construction under the IBC and dwellings under the IRC except where Fire Performance Evaluation in accordance with ASTM E119 and other applicable tests allows for use in other types of building construction.

5.1.9 The *SELECTION* Agribalance™ Spray Foam Insulation is produced in Arlington, Texas, under a quality control program with inspections by Intertek Testing Services NA, Ltd. (AA-689).

5.1.10 Use of *SELECTION* Agribalance™ Spray Foam Insulation as fire blocking has not been evaluated and is outside the scope of this report.

5.1.11 Jobsite certification and labeling of the insulation must comply with IRC Sections N1101.4 and N1101.4.1 and IECC Sections 102.1.1 and 102.2.1, as applicable.

6.0 EVIDENCE SUBMITTED

See Table 2 for test reports analyzed and accepted for this Evaluation Report.

6.1 Data in accordance with ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC377), dated June 2009.

6.2 Reports on comparative fire testing in accordance with Appendix A, Section 1.2.2 of AC 377 utilizing NFPA 286.

6.3 Reports of air leakage in accordance with ASTM E283.

7.0 IDENTIFICATION

7.1 Each package of components for the *SELECTION* Agribalance™ Spray Foam Insulation is identified with the manufacturer's name (Demilec USA), the manufacturer's address and telephone number, the product trade name (*SELECTION* Agribalance™), use instructions, the density; the flame-spread and smoke-development indices; the evaluation report number (IAPMO-0123), and the name of the inspection agency (Intertek Testing Services NA, Ltd.).

7.2 Each pail of BLAZELOK™ IB is labeled with the product name, the manufacturer's name (Demilec USA), address, and application instructions.



IAPMO #0123



Director of Evaluation Services

EVALUATION REPORT



Report Number: 0123
 Issued: 07/2009
 Expires: 07/2010

TABLE 1—THERMAL PERFORMANCE
SEALECTION Agribalance™

Tested per ASTM C518 Thickness (Inch)	Thermal Conductivity (λ -value) (Btu-in/°F-ft ² -h)	Thermal Resistance (R-value) (°F-ft ² -h/Btu)
1	0.224	4.5
2	0.223	9.0
3	0.227	13.2
4	0.225	17.8
Average	0.225	

Calculated R-values based on average λ -value

3.5		15.6
5.5		24.5
6		26.7
7.5		33.4
8.75		38.9
10		44.5

TABLE 2—TEST DATA SUBMITTED
SEALECTION Agribalance™

TESTS REQUIRED	Requirement	Lab	Report	Date	Value	
Thermal Resistance at 75°F(24°C) mean temperature.	ASTM C518	As reported	Intertek	3133593SAT-008	6/30/08	4.5 @ 1" thick
	ASTM C518	As reported	Intertek	3133593SAT-007	6/30/08	9.0 @ 2" thick
	ASTM C518	As reported	Intertek	3133593SAT-006	6/30/08	13.2 @ 3" thick
	ASTM C518	As reported	Intertek	3133593SAT-005	6/30/08	17.8 @ 4" thick
Tensile Strength: ASTM D1623 Note: Closed cell content shall be determined in accordance with ASTM D2856	Closed cell content < 90%	3 lbf/in2, minimum	PRI	DMLC-004-02-05	9/6/07	Closed Cell = 2% Tens. St. = 3.87 psi
Dimensional Stability:	ASTM D2126	15% maximum total change	PRI	DMLC-004-02-05	9/6/07	3.16%
Surface Burning Characteristics:	ASTM E84 or UL 723	FSI 75 or less	Intertek	3118166SAT-005	4/10/07	15
		SDI 450 or less	Intertek	3118166SAT-005	4/10/07	400
		FSI 75 or less	Intertek	3118166SAT-007	4/10/07	20
		SDI 450 or less	Intertek	3118166SAT-007	4/10/07	400
Air Permeance	ASTM E2178	<0.02 L/s·m ²	Intertek	3175805MID-006b	4/29/09	0.001 L/s·m ² @ 5 in.
Air Leakage	ASTM E283	<0.02 L/s·m ²	Intertek	3126751-01	7/27/07	<0.02 L/s·m ²
Critical Radiant Flux	ASTM E970	> 0.12 w/cm ²	Intertek	3136383SAT-005 Rev. 1	2/5/08	0.20 w/cm ²
Water Absorption	ASTM D2842		Intertek	MID3135945-001	12/28/07	15.27%
Water Vapor Transmission	ASTM E96		Intertek	MID3131186-001	12/28/07	4.95 Perms @ 5 in.
Heat Release & Flame Spread	NFPA 286 (AC377-App. A1.2.2)		Intertek	3161466-007 & 3172663SAT-002	3/18/09	Passed
Oxygen Index	ASTM D2863		Intertek	3175805SAT-004b	4/21/09	23%
Fungal Resistance	ASTM C1338		Intertek	3136027COL-001	5/28/08	Passed