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Code Compliance Research Report CCRR-1018

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DIVISION 07 00 00 – THERMAL AND MOISTURE PROTECTION

Section: 07 25 00 – Water-Resistive Barriers/Weather Barriers

Section: 07 27 00 – Air Barriers

REPORT HOLDER:

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REPORT SUBJECT:

GreenGuard® Building Wrap Products:

Water-resistive Barriers: GreenGuard® HPW™, GreenGuard® RainDrop® 3D, GreenGuard® MAX™, GreenGuard® Classic Wrap, Lowe's, GreenGuard® VW, and GreenGuard® C2000 Building Wraps

Air Barriers: GreenGuard® HPW™, GreenGuard® RainDrop® 3D, GreenGuard® MAX™, and GreenGuard® C2000 Building Wraps

1.0 SCOPE OF EVALUATION

This Research Report addresses compliance with the following Codes:

- 2015 and 2012 *International Building Code®* (IBC)
- 2015 and 2012 *International Residential Code®* (IRC)
- 2015 and 2012 *International Energy Conservation Code®* (IECC)
- 2014 and 2011 *Oregon Residential Specialty Code* (ORSC) – See Section 8.1
- 2014 *Florida Building Code – Residential* – See Section 8.2
- 2014 *Florida Building Code – Building* – See Section 8.2
- 2014 *Florida Energy Code* – See Section 8.2

The products described in this report have been evaluated for the following properties:

- Water-resistive barrier
- Surface-burning characteristics
- Air leakage
- Use on Exterior Walls of Buildings of Any Type of Construction, including Types I, II, III, and IV construction
- Drainage efficiency

See Table 1 for applicable Code sections related to these properties.

2.0 USES

The GreenGuard® Building Wrap products described in this report are alternatives to the water-resistive barriers specified in IBC Section 1404.2 and IRC Section R703.2. The water-resistive barriers may be used on the exterior side of exterior walls of buildings of any type of construction allowed by the IBC and construction permitted under the IRC; when construction is required to be of Type I, II, III, or IV under the IBC, installation must be as described in Section 4.4.

The water-resistive barriers may be used behind exterior cement plaster installed over wood-based sheathing in accordance with IBC Section 2510.6 and IRC Section R703.6.3 when installed as described in Section 4.2.

GreenGuard® HPW™, GreenGuard® RainDrop® 3D, GreenGuard® MAX™, and GreenGuard® C2000 may be used as air barrier materials under IRC Section N1102.4.1 and IECC Sections 402.4 and 502.4.

3.0 DESCRIPTION

3.1 Products:

3.1.1 GreenGuard® HPW™ (High Performance Wrap): GreenGuard® HPW™ is a spun-bond polypropylene non-woven material. It is produced in rolls of varying sizes.

3.1.2 GreenGuard® RainDrop® 3D Building Wrap: GreenGuard® RainDrop® 3D Building Wrap is a cross-woven, non-perforated polyolefin material with a vapor-permeable polyolefin coating. It is produced in rolls of varying sizes.

3.1.3 GreenGuard® MAX™ Building Wrap: GreenGuard® MAX™ Building Wrap is a cross-woven, non-perforated polyolefin material with a vapor-permeable polyolefin coating. It is produced in rolls of varying sizes.

3.1.4 GreenGuard® Classic Wrap Building Wrap: GreenGuard® Classic Wrap Building Wrap is a cross-woven, micro-perforated polyolefin material with a polyolefin coating. It is produced in rolls of varying sizes.



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3.1.5 Lowe's: Lowe's is a cross-woven, micro-perforated polyolefin material with a polyolefin coating. It is produced in rolls of varying sizes.

3.1.6 GreenGuard® VW Building Wrap: GreenGuard® VW Building Wrap is a cross-woven, micro-perforated polyolefin material with a polyolefin coating. It is produced in rolls of varying sizes.

3.1.7 GreenGuard® C2000 Building Wrap: GreenGuard® C2000 Building Wrap is a spun-bond, vapor-permeable polyolefin material. It is produced in rolls of varying sizes.

3.2 Surface-Burning Characteristics:

All the products described in this report have a flame-spread index of 25 or less and a smoke-developed index of 450 or less, when tested in accordance with ASTM E 84.

3.3 Air Barrier Material:

GreenGuard® HPW™, GreenGuard® RainDrop® 3D, GreenGuard® MAX™, and GreenGuard® C2000 have an air leakage rate no greater than 0.02 L/s-m² at 75 Pa [0.004 cfm/ft² at 0.3 inch w.g. (1.57 psf)] when tested in accordance with ASTM E2178.

4.0 INSTALLATION

4.1 General:

The building wrap products must be installed in accordance with the manufacturer's published installation instructions, the applicable Code, and this Research Report. The manufacturer's published installation instructions and this Research Report must be strictly adhered to, and a copy of the instructions must be available on the jobsite during installation.

4.2 Water-resistive Barrier Application:

When used as a water-resistive barrier, the building wrap products must be installed as described in IBC Section 1404.2 and IRC Section R703.2 and in accordance with the manufacturer's published installation instructions.

Two layers of any of the building wrap products recognized in this report may be installed for use in accordance with IBC Section 2510.6 or IRC Section 703.7.3 [703.6.3].

GreenGuard® HPW™, GreenGuard® RainDrop® 3D, GreenGuard® MAX™, and GreenGuard® C2000 may be used where a 60-minute Grade D paper is permitted in the exception to 2012 IBC Section 2510.6, 2015 IRC Section R703.7.3 and 2012 IRC Section 703.6.3.

When used with one-coat stucco or exterior insulation and finish systems (EIFS), application must be in accordance with a current evaluation report on the exterior wall covering.

4.3 Air Barrier Application:

4.3.1 Air Barrier Material: When used as an air barrier material, GreenGuard® HPW™, GreenGuard® RainDrop® 3D, GreenGuard® MAX™, and GreenGuard® C2000 Building Wraps must be installed in accordance with the manufacturer's published installation instructions and this report.

4.3.2 Air Barrier Assembly: The GreenGuard® Building Wrap products are recognized as an air barrier assembly in accordance with Section C402.4.1.2.2 of the 2012 IECC, based on testing in accordance with ASTM E2357. The assembly qualifies as a continuous air barrier as prescribed in Section C402.4.1 of the 2012 IECC.

The building wrap is attached to sheathing with fasteners and plastic caps specified in the manufacturer's published installation instructions. Seams in the building wrap must be sealed with 3 inch wide (76 mm) GreenGuard® Seam Tape.

Penetrations in the air barrier assembly must be sealed in accordance with 2012 IECC Section C402.4.2.

4.4 Exterior Walls of Buildings Required to be of Types I, II, III, or IV Construction:

Use of the building wrap products as water-resistive barriers on buildings required to be of Types I, II, III, and IV construction is limited to buildings a maximum of 40 feet in height except where the water-resistive barrier has been tested in an assembly meeting the requirements of NFPA 285. Under the 2015 IBC, the building wrap products may be used on buildings greater than 40 feet in height where the building wrap is the only combustible component and the exterior wall has a wall covering of brick, concrete, stone, terra cotta, stucco, or steel, with minimum thicknesses in accordance with Table 1405.2.

5.0 CONDITIONS OF USE

The GreenGuard® Building Wrap products described in this Research Report comply with, or are suitable alternatives to, what is specified in those Codes listed in Section 1.0 and Table 1 of this report, subject to the following conditions:

5.1 Installation must comply with this Research Report, the manufacturer's published installation instructions, and the applicable Code. In the event of a conflict between the manufacturer's instructions and this report, this report governs.

5.2 The building wrap products must be covered with an approved exterior wall covering in accordance with the applicable Code.

5.3 The design and evaluation of the air barrier assembly, of which the products are a component, are outside the scope of this report.

5.4 The water-resistive barriers are produced in Winchester, VA under a quality control program with inspections by Intertek (AA-647).

6.0 SUPPORTING EVIDENCE

6.1 Reports of flame spread tests in accordance with ASTM E84.

6.2 Reports of air leakage tests in accordance with ASTM E2178 and E2357.

6.3 Report of drainage efficiency tests in accordance with ASTM E2273.

6.4 Data in accordance with the ICC-ES Acceptance Criteria for Water-resistive Barriers (AC38), dated January 2015.

6.5 Intertek Listing Report ["Kingspan - GreenGuard Building Wraps"](#).

7.0 IDENTIFICATION

The GreenGuard® Building Wrap products described in this Research Report are identified by a marking on the product or packaging label bearing the report holder's name (Kingspan Insulation, LLC), the Intertek Mark, and the Code Compliance Research Report number (CCRR-1018).

8.0 OTHER CODES:

8.1 Oregon Residential Specialty Code:

8.1.1 Scope of Evaluation: GreenGuard® RainDrop® 3D Building Wrap was evaluated for compliance with the 2014 and 2011 Oregon Residential Specialty Code, Section R703.1.1, Exception 1, and 2008 Oregon Residential Specialty Code Amendment 918-480-0010 (8)(a)(B).

8.1.2 Conclusion: A 1/8 inch space between the water-resistive barrier and the exterior veneer is not required when the wall is constructed as follows:

- A single layer of GreenGuard® RainDrop® 3D Building Wrap is installed over the sheathing in accordance with Section 4.0 of this report and the manufacturer's published installation instructions.
- A layer of Grade D building paper is installed over the GreenGuard® RainDrop® 3D.
- A minimum 1/2 inch layer of cementitious scratch coat is applied over self-furring lath complying with, and installed in accordance with, the applicable Code.
- Thin-brick veneer is applied over the scratch coat.

8.2 Florida Building Code:

8.2.1 Scope of Evaluation: The GreenGuard® Building Wrap products were evaluated for compliance with the 2014 Florida Building Code – Building, the 2014 Florida Building Code – Residential, and the 2014 Florida Energy Code.

8.2.2 Conclusion: The GreenGuard® Building Wrap products described in Sections 2.0 through 7.0 of this report comply with the 2014 Florida Building Code – Building, the 2014 Florida Building Code – Residential, and the 2014 Florida Energy Code, subject to the following conditions:

- The barrier materials must be installed in accordance with the provisions noted in Sections 2.0 through 7.0 with the following exceptions:
 1. The third paragraph of Section 4.2 must be revised as follows:
GreenGuard® HPW™, GreenGuard® MAX™, GreenGuard® RainDrop® 3D, and GreenGuard® C2000 may be used where a 60-minute Grade D paper is permitted in the exception to FBC – Building Section 2510.6 and FBC – Residential Section R703.6.3.
 2. Section 4.4 must be revised as follows: Use of the building wrap products as water-resistive barriers on buildings required to be of Types I, II, III, and IV construction is limited to buildings a maximum of 40 feet in height except where the water-resistive barrier has been tested in an assembly meeting the requirements of NFPA 285.

- Use of the building wrap products for compliance with the High-Velocity Hurricane Zone provisions of the 2014 Florida Building Code – Building, and the 2014 Florida Building Code – Residential, has not been evaluated and is outside the scope of this evaluation report.
- The products are manufactured under a quality control program with inspections by Intertek. Intertek is recognized by the Florida Building Commission as a recognized quality assurance entity.

9.0 CODE COMPLIANCE RESEARCH REPORT USE

9.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

9.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

9.3 Reference to the <https://bpdirectory.intertek.com> is recommended to ascertain the current version and status of this report.

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TABLE 1 – PROPERTIES EVALUATED

PROPERTY	IBC and FBC - Building Section	IRC and FBC – Residential Section	IECC and Florida Energy Code Section ¹	2011 ORSC Section
Alternative materials	104.11	104.11	NA	NA
Water-resistive barrier	1404.2	R703.2	NA	NA
Grade D water-resistive barrier	2510.6	R703.7.3 [R703.6.3]	NA	N A
Exterior walls of Types I – IV construction	1403.5	NA	NA	NA
Air barrier	1301	N1102.4.1	C402.4 and R402.4	NA
Water drainage efficiency	NA	NA	NA	703.1.1, Exception 1

Code sections in parenthesis refer to the 2012 IBC and IRC.