

UL Evaluation Report

UL ER40361-01

Issued: December 31, 2020

Revised: October 29, 2021

Visit UL, LLC's [Product iQ™ database](#) for the status of this Report.

UL Category Code: ULEX

CSI MasterFormat®

DIVISION: 06 00 00 - WOOD, PLASTICS, AND COMPOSITES

Sub-level 2: 06 12 00 - Structural Panels

Sub-level 3: 06 12 19 - Shear Wall Panels

Sub-level 2: 06 16 00 - Sheathing

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

Sub-level 2: 07 20 00 - Thermal Protection

Sub-level 3: 07 21 00 - Thermal Insulation

Sub-level 4: 07 21 13 - Board Insulation

Sub-level 3: 07 22 00 - Roof and Deck Insulation

Sub-level 4: 07 22 16 - Roof Board Insulation

Sub-level 3: 07 25 00 - Weather Barriers

Sub-level 3: 07 27 00 - Air Barriers

DIVISION: 31 00 00 - Earthworks

Sub-level 3: 31 23 00 - Excavation and Fill

Sub-level 4: 31 23 23 - Fill

COMPANY:

BIG SKY INSULATIONS INC

15 ARDEN DRIVE

PO Box 838

BELGRADE, MT 59714

www.bigskycontrol.com



1. SUBJECT:

R-SHIELD® INSULATION BOARDS

R-SHIELD® MAX INSULATION BOARDS

FILM FACED R-SHIELD® INSULATION BOARDS

R-SHIELD® GEOFOAM BLOCK

R-SHIELD® NAILBASE

R-SHIELD® NAILBASE 2Ci

R-SHIELD® NAILBASE 3Ci

Throughout this report, unless specifically indicated otherwise:

- The reference to R-Shield Insulation Boards, R-Shield MAX Insulation Boards, and Film Faced R-Shield Insulation Boards will also apply to R-Shield Insulation Boards with Perform Guard, R-Shield Max Insulation Boards with Perform Guard, and Film Faced R-Shield Insulation Boards with Perform Guard.
- The reference to R-Shield Geofoam Blocks will apply to R-Shield Geofoam Blocks with Perform Guard.

2. SCOPE OF EVALUATION:

- 2018 and 2015 *International Building Code*® (IBC)
- 2018 and 2015 *International Residential Code*® (IRC)
- 2018 and 2015 *International Energy Code*® (IECC)
- ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12),
- ICC-ES Acceptance Criteria for Termite Resistant Foam Plastic (AC239)
- ICC-ES Acceptance Criteria for Foam Plastic Sheathing Panels used as Water Resistive Barriers (AC71)
- ICC-ES Acceptance Criteria for Quality Documentation (AC10)

The products were evaluated for the following properties:

R-Shield Insulation Boards:

- Surface Burning Characteristics (UL723)
- Physical Properties (ASTM C578)
- Physical Properties –WSG Insulation only (ASTM E2430)
- Roof Deck Construction Material with Resistance to Internal Fire Exposure (UL1256)
- Roofing Systems for Exterior Fire Exposure (UL790)
- Uplift Tests for Roof Covering Systems, (UL1897)
- Flammability Testing for Use in Attics and Crawl Spaces (AC12, App. A and B)
- Termite Resistance – R-Shield Insulation Boards with Perform Guard only (ICC-ES AC239)
- For Use on Exterior Commercial Walls (NFPA 285)

R-Shield MAX:

- Surface Burning Characteristics (UL723)
- Physical Properties (ASTM C578)
- Roof Deck Construction Material With Resistance to Internal Fire Exposure (UL1256)
- Roofing Systems for Exterior Fire Exposure (UL790)
- Uplift Tests for Roof Covering Systems, (UL1897)
- Flammability Testing for Use in Attics and Crawl Spaces (AC12, App. A and B)
- Termite Resistance –R-Shield MAX Insulation Board with Perform Guard only, (ICC-ES AC239)
- For Use on Exterior Commercial Walls (NFPA 285)

Film Faced R-Shield Insulation Boards:

- Surface Burning Characteristics (UL723)
- Physical Properties (ASTM C578)
- Roofing Systems for Exterior Fire Exposure (UL790)
- Air Barrier (ASTM E2178)
- Flammability Testing for Use in Attics and Crawl Spaces (AC12, App. A and B)
- Water-resistive Barrier (AC71)
- Perform Guard – Film Faced R-Shield Insulation Boards with Perform Guard only (AC239)

R-Shield Geofoam Blocks:

- Surface Burning Characteristics (UL723)
- Physical Properties (ASTM D6817)
- Foam Plastic - Special Approval (UL1715)
- Termite Resistance - R-Shield Geofoam Blocks with Perform Guard only, (AC239)

R-Shield Nailbase:

- Surface Burning Characteristics –Insulation Component (UL723)
- Physical Properties –Insulation Component (ASTM C578)
- Roofing Systems for Exterior Fire Exposure (UL790)
- Uplift Tests for Roof Covering Systems, (UL1897)

R-Shield Nailbase 2-Ci:

- Surface Burning Characteristics –Insulation Component (UL723)
- Physical Properties –Insulation Component (ASTM C578)
- Roofing Systems for Exterior Fire Exposure (UL790)
- Uplift Tests for Roof Covering Systems, (UL1897)

R-Shield Nailbase 3-Ci:

- Surface Burning Characteristics –Insulation Component (UL723)
- Physical Properties –Insulation Component (ASTM C578)
- Roofing Systems for Exterior Fire Exposure (UL790)
- Uplift Tests for Roof Covering Systems, (UL1897)
- Water Resistive Barrier –Insulation Component (AC71)
- Air Barrier –Insulation Component (ASTM E2178)

Table 1 – Properties Evaluated

| Properties Evaluated | R-Shield Insulation Boards | R-Shield MAX | Film Faced R-Shield Insulation Boards | R-Shield Geofoam Blocks | R-Shield Nailbase, R-Shield Nailbase 2-Ci, R-Shield Nailbase 3-Ci |
|---|-----------------------------------|---------------------|--|--------------------------------|--|
| Surface Burning Characteristics | X | X | X | X | X³ |
| Physical Properties (ASTM C578) | X | X | X | | X |
| Physical Properties (ASTM D2430) | X¹ | | | | |
| Physical Properties (ASTM D6817) | | | | X | |
| Roofing Systems for Exterior Fire Exposure | X | X | X | | X |
| Uplift Tests for Roof Covering Systems | X | X | X | | X |
| Flammability Testing for Use in Attics and Crawl Spaces | X | X | X | | |
| Termite Resistance ² | X | X | X | X | |
| Water-resistive Barrier | | | X | | X⁴ |
| Air Barrier | | | X | | X⁴ |
| Foam Plastic - Special Approval | X | X | | X | |
| Exterior Commercial Walls | X | X | | | |

¹ Only R-Shield WSG Insulation Boards

² Only the products with Perform Guard have been evaluated for Termite Resistance

³ Foam plastic component only

⁴ Applicable to R-Shield Nailbase 3-Ci only

3. REFERENCED DOCUMENTS

■ ICC-ES:

- ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12)
- ICC-ES Acceptance Criteria for Quality Documentation (AC10)
- ICC-ES Acceptance Criteria for Termite Resistant Foam Plastic (AC239)
- ICC-ES Acceptance Criteria for Foam Plastic Sheathing Panels Used as Water-Resistive Barriers (AC71)

■ UL:

- UL723, Test for Surface Burning Characteristics of Building Materials
- UL790, Standard Test Methods for Fire Tests of Roof Coverings
- UL1256, Standard for Fire Test of Roof Deck Constructions
- UL 1897, Uplift Tests for Roof Covering Systems
- UL 1715, Fire Test of Interior Finish Material

■ ASTM:

- ASTM C578, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
- ASTM D6817, Standard Specification for Rigid Cellular Polystyrene Geofoam
- ASTM D7180, Standard Guide for Use of Expanded Polystyrene (EPS) Geofoam in Geotechnical Projects
- ASTM D7557, Standard Practice for Sampling of Expanded Polystyrene Geofoam Specimens
- ASTM E2178, Standard Test Method for Air Permeance of Building Materials
- ASTM E2430, Standard Specification for Expanded Polystyrene (EPS) Thermal Insulation Boards for Use in Exterior Insulation and Finish Systems (EIFS)

■ U.S. Department of Commerce:

- DOC PS-2, Performance Standard for Wood-Based Structural-Use Panels

■ NFPA:

- NFPA 285, Standard Fire Test for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Assemblies Containing Combustible Components

4. USES

4.1 R-Shield Insulation Boards:

R-Shield, R-Shield MAX, and Film Faced R-Shield Insulation Boards are used as nonstructural insulation on the interior or exterior of above grade walls, on the interior or exterior of below grade walls, below concrete slabs, around concrete slab edges, or as roof insulation. Installation shall be in accordance with Section 6.2 of this report.

These insulation boards may be used on walls in attics and crawl spaces when installation is in accordance with Section 6.2.2 of this report.

4.2 R-Shield Geofoam Blocks:

R-Shield Geofoam Blocks are used as lightweight structural fill in floor cavities. Installation shall be in accordance with Section 6.3 of this report.

4.3 R-Shield Nailbase:

R-Shield Nailbase is used as insulation on the interior or exterior of above grade walls or as roof insulation. Installation shall be in accordance with Section 6.4 of this report.

4.4 R-Shield Nailbase 2-Ci:

R-Shield Nailbase 2-Ci is used as insulation on the interior or exterior of above grade walls. Installation shall be in accordance with Section 6.5 or Section 6.7 of this report.

4.5 R-Shield Nailbase 3-Ci:

R-Shield Nailbase 3-Ci is used as insulation on the interior or exterior of above grade walls. Installation shall be in accordance with Section 6.6 or Section 6.8 of this report.

The insulation may be used as an alternative to the water-resistive barrier specified in Section 1403.2 of the 2018 IBC, Section 1404.2 of the 2015 IBC, and Section R703.2 of the 2018 and 2015 IRC when installation is in accordance with Section 6.8 of this report.

The insulation may be used as an air barrier to limit air infiltration in accordance with Section C402.5.1 of the 2018 and 2015 IECC when installation is in accordance with Section 6.6 of this report.

5. PRODUCT DESCRIPTION

5.1 General:

R-Shield Insulation Boards, R-Shield MAX Insulation Boards, Film Faced R-Shield Insulation Boards, and R-Shield Geofoam Blocks described in 5.2, 5.3, 5.4, and 5.5 are molded, closed-cell expanded polystyrene having a flame spread index not exceeding 25 and a smoke developed index not exceeding 450 for thicknesses up to 5 inches for the R-Shield Insulation Boards, R-Shield MAX, and R-Shield Geofoam Blocks and for thicknesses up to 4 inches for Film Faced R-Shield, when tested in accordance with UL723 (ASTM E84) as required by Section 2603.3 of the 2018 and 2015 IBC or Section R316.3 of the 2018 and 2015 IRC, as applicable.

The following products are treated for Perform Guard in accordance with Section 2603.9 of the 2018 IBC and Section 2603.8 of the 2015 IBC, or Section R318.4, of the 2018 and 2015 IRC, as applicable:

- R-Shield Insulation Boards with Perform Guard
- R-Shield MAX Insulation Boards with Perform Guard
- Film Faced R-Shield Insulation Boards with Perform Guard
- R-Shield Geofoam with Perform Guard

R-Shield Nailbase, R-Shield Nailbase 2-Ci and R-Shield Nailbase 3-Ci described in 5.6, 5.7, and 5.8 are insulation products consisting of R-Shield Insulation Boards laminated to Oriented Strand Board (OSB). The OSB facing is $\frac{7}{16}$ -inch thick in compliance with U.S. Department of Commerce, DOC PS-2, Performance Standard for Wood-Based Structural-Use Panels.

5.2 R-Shield Insulation Boards:

R-Shield 50, 100, 130, 150, 250, 400, and 600 Insulation Boards are manufactured at minimum densities of 0.70, 0.90, 1.15, 1.35, 1.80, 2.40, and 3.00 lbs/ft³ and comply with ASTM C578 designations of Type XI, Type I, Type VIII, Type II, Type IX, Type XIV, and Type XV, respectively.

See Table 2 for thermal resistance and Table 3 for potential heat.

Table 2 – Thermal Resistance of R-Shield Insulation Boards

| PRODUCT | ASTM C578 Type | DENSITY, min., lb/ft ³ | THERMAL RESISTANCE ¹ , min., °F-ft ² -h/Btu |
|--------------|----------------|--------------------------------------|---|
| R-Shield 50 | XI | 0.70 | 3.1 |
| R-Shield 100 | I | 0.90 | 3.6 |
| R-Shield 130 | VIII | 1.15 | 3.8 |
| R-Shield 150 | II | 1.35 | 4.0 |
| R-Shield 250 | IX | 1.80 | 4.2 |
| R-Shield 400 | XIV | 2.40 | 4.2 |
| R-Shield 600 | XV | 3.00 | 4.3 |

¹Thermal resistance (R) values are based on tested values at 1-inch thickness and 75°F mean temperature and must be multiplied by the installed thickness for thicknesses greater than 1 inch.

Table 3 – Potential Heat of R-Shield Insulation Boards

| PRODUCT | ASTM C578 TYPE | HEAT POTENTIAL ¹ , Btu/ft ² | HEAT POTENTIAL ¹ , mJ/m ² |
|--------------|----------------|--|--|
| R-Shield 50 | XI | 1165 | 13.2 |
| R-Shield 100 | I | 1500 | 17.0 |
| R-Shield 130 | VIII | 1875 | 21.3 |
| R-Shield 150 | II | 2250 | 25.5 |
| R-Shield 250 | IX | 3000 | 34.0 |
| R-Shield 400 | XIV | 4000 | 45.4 |
| R-Shield 600 | XV | 5000 | 56.8 |

¹Based on 1 in. thickness

5.3 R-Shield MAX Insulation Boards:

R-Shield MAX 100, 130, 150, 200, and 250 Insulation Boards are manufactured at minimum densities of 0.90, 1.15, 1.35, 1.45, and 1.80 lbs/ft³, respectively and comply with ASTM C578 designations of Type I, Type VIII, Type II, Type II, and Type IX, respectively. See Table 4 for applicable thermal resistance values for each Type.

Table 4 – Thermal Resistance of R-Shield IMAX Insulation Boards

| PRODUCT | ASTM C578 Type | DENSITY, min., lb/ft ³ | THERMAL RESISTANCE ¹ , min., °F-ft ² -h/Btu |
|------------------|----------------|--------------------------------------|---|
| R-Shield MAX 100 | I | 0.90 | 5.0 |
| R-Shield MAX 130 | VIII | 1.15 | 5.0 |
| R-Shield MAX 150 | II | 1.35 | 5.0 |
| R-Shield MAX 250 | IX | 1.80 | 5.0 |

¹Thermal resistance (R) values are based on tested values at 1-1/16 inch thickness and 75°F mean temperature.

5.4 Film Faced R-Shield Insulation Boards:

Film Faced R-Shield 100, 130, 150, and 250 Insulation Boards consist of R-Shield Insulation Boards laminated with polyethylene or polyester film on both faces. The facers may also be a metalized polypropylene film. Film Faced R-Shield 100, 130, 150, and 250 are manufactured at minimum core densities of 0.90, 1.15, 1.35, and 1.80lbs/ft³ and comply with ASTM C578 designations Type I, Type VIII, Type II, and Type IX, respectively. R-Shield MAX 100, 130, 150, and 250 Insulation Boards may be used as an alternate to Film Faced R-Shield.

5.5 R-Shield Geofoam Blocks:

R-Shield Geofoam EPS12, EPS15, EPS19, EPS22, EPS29, EPS39, AND EPS46 blocks are manufactured at minimum densities of 0.70, 0.90, 1.15, 1.35, 1.80, 2.40, and 2.85 lbs/ft³ and comply with ASTM D6817 designations of EPS12, EPS15, EPS19, EPS22, EPS29, EPS39, and EPS46, respectively. See Table 4.

Table 5 – Compressive Resistance of R-Shield Geofoam Block

| PRODUCT | ASTM D6817 Type | DENSITY, min., lb/ft ³ | COMPRESSIVE RESISTANCE AT 1% STRAIN, min., psi |
|----------------|-----------------|-----------------------------------|--|
| R-Shield EPS12 | EPS12 | 0.70 | 2.2 |
| R-Shield EPS15 | EPS15 | 0.90 | 3.6 |
| R-Shield EPS19 | EPS19 | 1.15 | 5.8 |
| R-Shield EPS22 | EPS22 | 1.35 | 7.3 |
| R-Shield EPS29 | EPS29 | 1.80 | 10.9 |
| R-Shield EPS39 | EPS39 | 2.40 | 15.0 |
| R-Shield EPS46 | EPS46 | 2.85 | 18.6 |

5.6 R-Shield Nailbase:

R-Shield Nailbase consists of R-Shield 100 laminated to a 7/16-inch OSB facing. R-Shield Nailbase is available in thicknesses of 2, 4, 6, 7-¾, 9-¾, and 11-¾ inches. R-Shield MAX may be used as an alternate insulation component in Nailbase.

Table 5 – Thermal Resistance of R-Shield Nailbase

| THICKNESS, in. | THERMAL RESISTANCE ¹ , min., °F-ft ² -h/Btu |
|----------------|---|
| 2 | 6.2 |
| 4 | 13.4 |
| 6 | 20.6 |
| 7-¾ | 26.9 |
| 9-¾ | 34.1 |
| 11-¾ | 41.3 |

¹Overall R-value is calculated based on a combination of the R-value of the OSB and the EPS at 75°F mean temperature

5.7 R-Shield Nailbase 2-Ci:

R-Shield Nailbase 2-Ci consists of R-Shield 100 laminated to a $\frac{7}{16}$ -inch OSB facing. R-Shield Nailbase 2-Ci is available in thicknesses of $1\text{-}\frac{5}{16}$, $1\text{-}\frac{9}{16}$, $2\text{-}\frac{1}{4}$, and $2\text{-}\frac{7}{8}$ inches. R-Shield MAX may be used as an alternate insulation component in Nailbase.

Table 6 – Thermal Resistance of R-Shield Nailbase 2-Ci

| THICKNESS, in. | THERMAL RESISTANCE ¹ , min., °F-ft ² -h/Btu |
|-------------------------|--|
| $1\text{-}\frac{5}{16}$ | 3.8 |
| $1\text{-}\frac{9}{16}$ | 5.1 |
| $2\text{-}\frac{1}{4}$ | 7.6 |
| $2\text{-}\frac{7}{8}$ | 10.1 |

¹Overall R-value is calculated based on a combination of the R-value of the OSB and the EPS at 75°F mean temperature

5.8 R-Shield Nailbase 3-Ci:

R-Shield Nailbase 3-Ci consists of R-Shield 100 laminated to a $\frac{7}{16}$ -inch OSB facing on one side and polymeric film on the other side. R-Shield Nailbase 3-Ci is available in thicknesses of $1\text{-}\frac{5}{16}$, $1\text{-}\frac{9}{16}$, $2\text{-}\frac{1}{4}$, and $2\text{-}\frac{7}{8}$ inches. R-Shield MAX may be used as an alternate insulation component in Nailbase.

Table 8 – Thermal Resistance of R-Shield Nailbase 3-Ci

| THICKNESS, in. | THERMAL RESISTANCE ¹ , min., °F-ft ² -h/Btu |
|-------------------------|--|
| $1\text{-}\frac{5}{16}$ | 3.8 |
| $1\text{-}\frac{9}{16}$ | 5.1 |
| $2\text{-}\frac{1}{4}$ | 7.6 |
| $2\text{-}\frac{7}{8}$ | 10.1 |

¹Overall R-value is calculated based on a combination of the R-value of the OSB and the EPS at 75°F mean temperature

6. INSTALLATION

6.1 General:

R-Shield Insulation Boards, Film Faced R-Shield Insulation Boards, R-Shield MAX Insulation Boards, R-Shield Geofoam blocks, R-Shield Nailbase, R-Shield Nailbase 2-Ci, and R-Shield Nailbase 3-Ci are installed in accordance with the manufacturer's published installation instructions and this evaluation report. The manufacturer's published installation instructions and this report must be strictly adhered to, and a copy of the instructions shall be available on the jobsite during installation.

6.2 R-Shield Insulation Boards, R-Shield MAX Insulation Boards , and Film Faced R-Shield Insulation Boards:

R-Shield Insulation Boards, R-Shield MAX, or Film Faced R-Shield must be attached to the structure in a manner that will hold the insulation securely in place. The insulation boards must not be used structurally to resist transverse, axial, or shear loads.

The interior of the building must be separated from the R-Shield Insulation Boards, R-Shield MAX Insulation Boards, and Film Faced R-Shield Insulation Boards with a thermal barrier as required by Section 2603.4 of the IBC or Section R316.4 of the IRC, as applicable.

R-Shield Insulation Boards, R-Shield MAX Insulation Boards, and Film Faced R-Shield Insulations Boards may be used as vapor retarders based on perm values described in Tables 8, 9, and 10, respectively, when required in accordance with the applicable sections of the IBC, IRC, and IECC. Vapor retarders are certified as follows:

Class I: 0.1 perm or less

Class II: 0.1 <perm ≤ 1.0

Class III: 1.0 <perm ≤ 10 perm

Table 9 – Water Vapor Permeance of R-Shield Insulation Boards

| PRODUCT | ASTM C578 Type | DENSITY, min., lb/ft ³ | PERMEANCE ¹ , max., perms |
|--------------|----------------|--------------------------------------|---|
| R-Shield 50 | XI | 0.70 | 5.0 |
| R-Shield 100 | I | 0.90 | 5.0 |
| R-Shield 130 | VIII | 1.15 | 3.5 |
| R-Shield 150 | II | 1.35 | 3.5 |
| R-Shield 250 | IX | 1.80 | 2.5 |
| R-Shield 400 | XIV | 2.40 | 2.5 |
| R-Shield 600 | XV | 3.00 | 2.5 |

¹Water vapor permeance values are based on 1-inch thickness when tested in accordance with ASTM C578 and ASTM E96. Actual water vapor permeance values may be calculated based on insulation thickness, by dividing the perm value shown by the installed thickness in inches.

Table 10 – Water Vapor Permeance of R-Shield MAX Insulation Boards

| PRODUCT | ASTM C578 Type | DENSITY, min., lb/ft ³ | PERMEANCE ¹ , max., perms |
|------------------|----------------|--------------------------------------|---|
| R-Shield MAX 100 | I | 0.90 | 5.0 |
| R-Shield MAX 130 | VIII | 1.15 | 3.5 |
| R-Shield MAX 150 | II | 1.35 | 3.5 |
| R-Shield MAX 250 | IX | 1.80 | 2.5 |

¹Water vapor permeance values are based on 1 inch thickness when tested in accordance with ASTM C578 and ASTM E96. Actual water vapor permeance values may be calculated based on insulation thickness, by dividing the perm value shown by the installed thickness in inches

Table 11 – Water Vapor Permeance of Film Faced R-Shield Insulation Boards

| PRODUCT | ASTM C578 Type | DENSITY, min., lb/ft ³ | PERMEANCE ¹ , max., perms |
|--------------|----------------|--------------------------------------|---|
| R-Shield 100 | I | 0.90 | 0.3 |
| R-Shield 130 | VIII | 1.15 | 0.3 |
| R-Shield 150 | II | 1.35 | 0.3 |
| R-Shield 250 | IX | 1.80 | 0.3 |

¹Water vapor permeance values are based on 1-inch thickness when tested in accordance with ASTM C578 and ASTM E96. Actual water vapor permeance values vary based on insulation thickness.

6.2.1 R-Shield Insulation Boards, R-Shield MAX Insulation Boards, and Film Faced R-Shield Boards Used in Roofing:

R-Shield Insulation Boards and R-Shield MAX are used as a roofing insulation as follows:

- As part of a UL Certified Class A, B or C roof-covering assembly in accordance with UL 790,
- As part of a UL Certified Roof Deck Construction in accordance with UL 1256, or
- As part of a UL Certified Roofing System, Uplift Resistance, in accordance with UL 1897.

6.2.2 R-Shield Insulation Boards, R-Shield MAX Insulation Boards, and Film Faced R-Shield Insulation Boards Used in Attics and Crawl Spaces:

R-Shield Insulation Boards, R-Shield MAX Insulations Boards, and Film Faced R-Shield Insulation Boards may be used in attics and crawl spaces, without the ignition barrier listed in Section 2603.4.1.6 of the IBC or Sections R316.5.3 and R316.5.4 of the IRC, as follows:

1. Attic ventilation is provided when required by Section 1202.1 of the 2018 IBC, Section 1203.2 of 2015 IBC or Section R806.1 of the IRC, as applicable.
2. Under-floor (crawl space) ventilation is provided when required by Section 1203.3 of the IBC, or Section R408.1 or Section R408.3 of the IRC, as applicable.
3. Combustion air is provided in accordance with Section 701.1 of the IMC.
4. Insulation boards are limited to a maximum thickness of 4 inches (102 mm) for R-Shield 100 and R-Shield MAX 100, or a maximum thickness of 3-¼ inches (82.6 mm) for R-Shield 130 and R-Shield MAX 130, or a maximum thickness of 2-⅔ inches (67.8 mm) for R-Shield 150 and R-Shield MAX 150, or a maximum thickness of 2-½ inches (60 mm) for R-Shield 200 and R-Shield MAX 200, or a maximum thickness of 2 inches (51 mm) for R-Shield 250 and R-Shield MAX 250.

6.2.3 Film Faced R-Shield Insulation Board Used as a Water-Resistive Barrier

Film Faced R-Shield Insulation Board with a minimum of 1 inch (25.4 mm) thickness may be used as an alternative to the water-resistive barrier required by Section 1403.2 of the 2018 IBC, Section 1404.2 of the 2015 IBC, and Section R703.2 of the IRC when installed in accordance with this Section.

Film Faced R-Shield Insulation Board must be installed directly to framing members spaced a maximum of 24 inches (610 mm) on center. Film Faced R-Shield Insulation Board must be installed horizontally with tongue edges facing upward or installed vertically with no horizontal joints. Vertical joints must be backed by framing members. Film Faced R-Shield Insulation Board is attached with 1 inch (25.4 mm) wide crown No. 16 gage corrosion-resistant staples spaced 6 inches (152mm) on center. Fastener crowns and joints between boards must be covered with Film Faced R-Shield Tape. A minimum 0.019-inch (0.48 mm) corrosion-resistance weep screed with a vertical attachment flange measuring a minimum of 3-½ inches (89mm) must be provided at the bottom of the wall. The installation of the weep screed must be in accordance with Section 2512.1.2 of the IBC or Section R703.7.2.1 of the IRC, as applicable.

Flashing of flanged window penetrations must be installed in accordance with Section 1404.4 of the 2018 IBC and Section 1405.4 of the 2015 IBC. The flashing tape must completely cover the framing sill and extend a minimum of 8 inches (203 mm) up the sides of the opening and 6 inches (152 mm) onto the face of the Film Faced R-Shield at the front of the window opening.

Flashing of small penetrations (e.g., pipes) must be with a silicone sealant complying with ASTM C920.

6.2.4 R-Shield Insulation Boards, R-Shield MAX Insulation Boards, and Film Faced R-Shield Insulation Boards used on the exterior of above grade walls:

R-Shield Insulation Boards, R-Shield MAX, and Film Faced R-Shield Insulation Boards are used on the exterior of above grade walls as follows:

- Exterior Walls of One- and Two-Family Dwellings in accordance with the IRC,
- Exterior walls of one story buildings of Types I, II, III, or IV construction in accordance with Section 2603.4.1.4 of the IBC,
- Exterior walls of Type V construction in accordance with Sections 2603.2, 2603.3, and 2603.4 of the IBC
- Exterior walls of buildings more than one story of Types I, II, III, or IV construction in accordance with Section 2603.5 of the 2018 and 2015 IBC, when part of:
 - A UL Classified Exterior Wall System in accordance with NFPA 285. See Section 7.2.
 - An Exterior Wall System in accordance with NFPA 285. See Table 12.

Figure 1 – NFPA 285 Wall Assembly

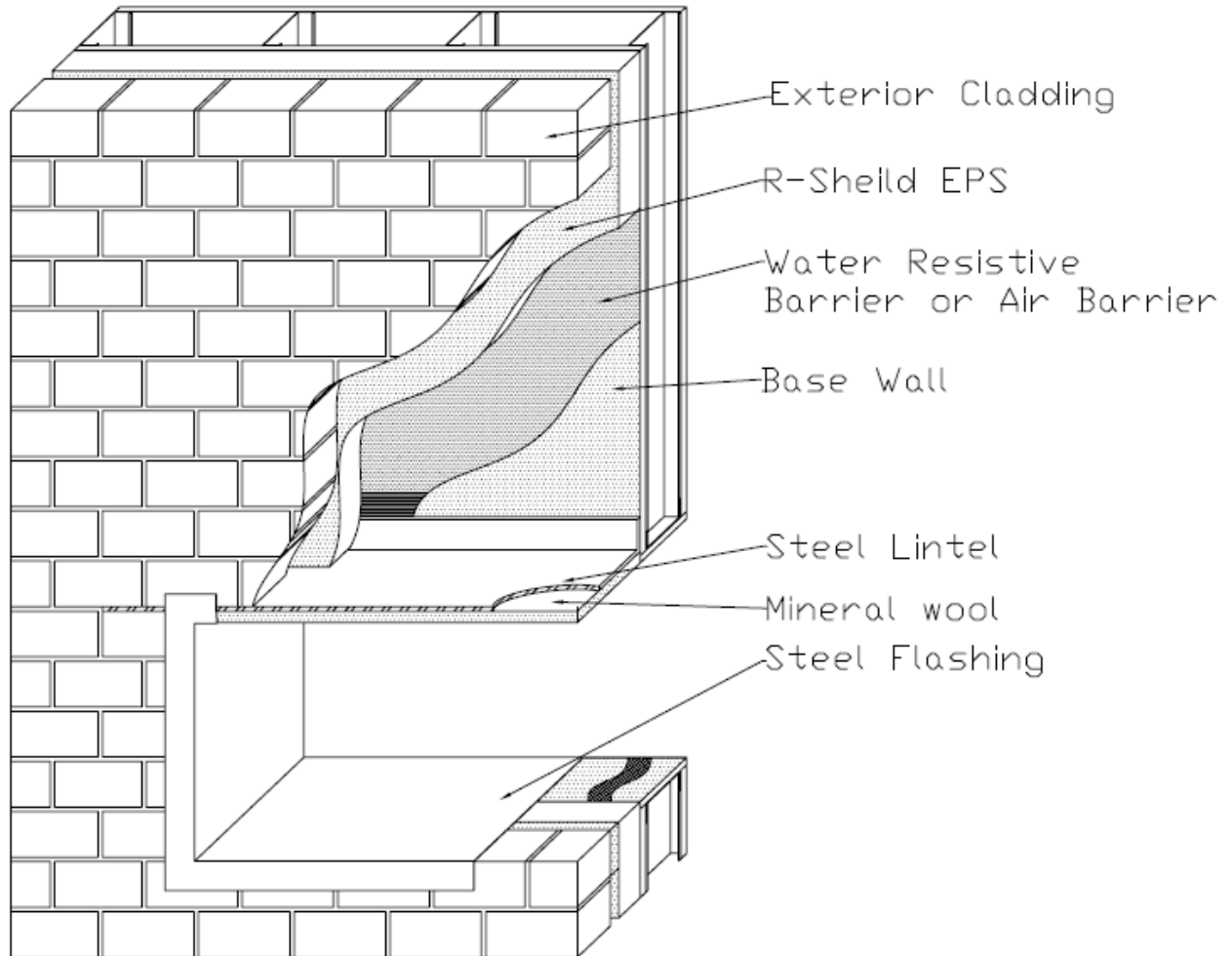


Table 12 – NFPA 285 Compliant Assembly Options – See Figure 1

| Base Wall Options |
|--|
| <ol style="list-style-type: none"> 1) Cast Concrete Walls 2) CMU Cast Concrete Walls 3) Steel Stud Framed Wall <ol style="list-style-type: none"> a. 25 GA. (min.) 3-5/8" (min.) steel studs spaced 24" o.c. (max.) b. Lateral Bracing Every 4 ft. vertically c. 5/8" Type X Gypsum Wallboard Interior d. Cavity Insulation <ol style="list-style-type: none"> i. None ii. Any Class A, B, or C Fiberglass batt insulation (faced or unfaced) iii. Any noncombustible insulation e. Any 1/2" (min.) Exterior Gypsum Sheathing |
| Water Resistive Barrier / Air Barrier Options Over Base Wall |
| <ol style="list-style-type: none"> 1) None 2) BASF Enershield HP 3) BASF Enershield I 4) Carlisle Barritech NP 5) Carlisle Barritech VP 6) Dupont Fluid Applied WB 7) Dupont Tyvek Commercialwrap (1 or 2 layers) 8) Grace Perm-A-Barrier VPS 9) Tremco EXOAir 230 |
| R-Shield EPS Exterior Insulation Options |
| <ol style="list-style-type: none"> 1) 10-3/4" (max.) R-Shield 100 or R-Shield MAX 100 2) 8-1/4" (max.) R-Shield 130 or R-Shield MAX 130 3) 7" (max.) R-Shield 150 or R-Shield MAX 150 4) 6" (max.) R-Shield 200 or R-Shield MAX 200 5) 5-1/4" (max.) R-Shield 250 or R-Shield MAX 250 |
| Exterior Cladding Options |
| <ol style="list-style-type: none"> 1) Brick - Nominal 4" clay brick or veneer with 2" (max.) air gap behind the cladding. Brick with ties/anchors 24" o.c. (max.) 2) Concrete - 2" (min.) with 2" (max.) air gap behind the cladding 3) Concrete Masonry Units - 4" (min.) with 2" (max.) air gap behind the cladding 4) Limestone - 2" (min.) with non-open joints installation technique such as shiplap 5) Natural Stone Veneer - 2" (min.) with non-open joints installation technique such as shiplap 6) Precast Artificial Stone - 1-1/2" (min.) complying with ICC-ES, AC 51 with non-open joint installation technique 7) Terra Cotta Cladding - 1-1/4" (min.) solid with non-open joint installation technique such as shiplap 8) Stucco - 3/4" (min.) exterior cement plaster and lath |
| Fire Stopping at Floor Line Options |
| <ol style="list-style-type: none"> 1) Mineral wool fiber fire stop in each stud cavity at floor line. Thickness equal to stud cavity depth. Follow manufacturer instruction for installation. |
| Window Header Detail |
| <ol style="list-style-type: none"> 1) 25 GA. (min.) sheet metal (steel) flashing with 1" thick, 4 pcf mineral wool over interior of sheet steel 2) Header design equal or better than item 1 |

6.3 R-Shield Geofoam Blocks:

R-Shield Geofoam blocks are placed loosely on a level surface or existing structural slab. The blocks may be installed in a single layer or in multiple layers.

Structural loads on the R-Shield geofoam blocks shall not exceed the compressive resistance at 1% strain in accordance with ASTM D6817. Additional design considerations are included in ASTM D7180, "Standard Guide for Use of Expanded Polystyrene (EPS) Geofoam" and ASTM D7557, "Standard Practice for Sampling of Expanded Polystyrene Geofoam Specimens". When R-Shield geofoam blocks are less than 4 in. in thickness, the interior of the building must be separated from the geofoam blocks with a thermal barrier as required by Section 2603.4 of the IBC or Section R316.4 of the IRC, as applicable.

When R-Shield geofoam blocks are greater than 4 in. in thickness, a minimum 1 in. concrete or masonry must cover the geofoam blocks on all faces.

6.4 R-Shield Nailbase:

R-Shield Nailbase must be attached to the structure in a manner that will hold the insulation securely in place.

The interior of the building must be separated from the EPS component of R-Shield Nailbase Boards with a thermal barrier as required by Section 2603.4 of the 2018 and 2015 IBC or Section R316.4 of the 2018 and 2015 IRC, as applicable.

R-Shield Nailbase may be used as vapor retarders based on perm values described in Tables 4 when required in accordance with the applicable sections of the IBC, IRC and IECC. Vapor retarders are Certified as follows:

Class I: 0.1 perm or less

Class II: 0.1 <perm ≤ 1.0

Class III: 1.0 <perm ≤ 10 perm

Table 13 – Water Vapor Permeance of R-Shield Nailbase

| THICKNESS,+ in. | PERMEANCE¹, max., perms |
|----------------------------|---|
| 2 | 1.2 |
| 4 | 0.8 |
| 6 | 0.6 |
| 7-¾ | 0.5 |
| 9-¾ | 0.4 |
| 11-¾ | 0.4 |

¹Overall Perm Rating is calculated based on a combination of the perm rating of the OSB (at 50% RH) and the EPS

6.4.1 R-Shield Nailbase may be used as a roofing insulation as follows:

- As part of a UL Certified Class A, B, or C roof-covering assembly in accordance with UL790
- As part of a UL Certified Roofing System, Uplift Resistance, in accordance with UL 1897

6.5 R-Shield Nailbase 2-Ci:

R-Shield Nailbase 2-Ci must be attached to the structure in a manner that will hold the insulation securely in place.

The interior of the building must be separated from the EPS component of R-Shield Nailbase 2-Ci boards with a thermal barrier as required by Section 2603.4 of the 2018 and 2015 IBC or Section R316.4 of the 2018 and 2015 IRC, as applicable.

R-Shield Nailbase 2-Ci may be used as vapor retarders based on perm values described in Tables 5 when required in accordance with the applicable sections of the IBC, IRC and IECC. Vapor retarders are Certified as follows:

Class I: 0.1 perm or less Class II: 0.1 <perm ≤ 1.0 Class III: 1.0 <perm ≤ 10 perm

Table 5 – Water Vapor Permeance of R-Shield Nailbase 2-Ci

| THICKNESS, in. | PERMEANCE¹, max., perms |
|---------------------------------|---|
| 1- ⁵ / ₁₆ | 1.5 |
| 1- ⁹ / ₁₆ | 1.3 |
| 2- ¹ / ₄ | 1.1 |
| 2- ⁷ / ₈ | 1.0 |

¹Overall Perm Rating is calculated based on a combination of the perm rating of the OSB (at 50% RH) and the EPS

6.6 R-Shield Nailbase 3-Ci:

R-Shield Nailbase 3-Ci must be attached to the structure in a manner that will hold the insulation securely in place.

The interior of the building must be separated from the EPS component of R-Shield Nailbase 3-Ci boards with a thermal barrier as required by Section 2603.4 of the 2018 and 2015 IBC or Section R316.4 of the 2018 and 2015 IRC, as applicable.

R-Shield Nailbase 3-Ci may be used as vapor retarders based on perm values described in Table 5 when required in accordance with the applicable sections of the IBC, IRC and IECC. Vapor retarders are Certified as follows:

Class I: 0.1 perm or less Class II: 0.1 <perm ≤ 1.0 Class III: 1.0 <perm ≤ 10 perm

Table 15 – Water Vapor Permeance of R-Shield Nailbase 3-Ci

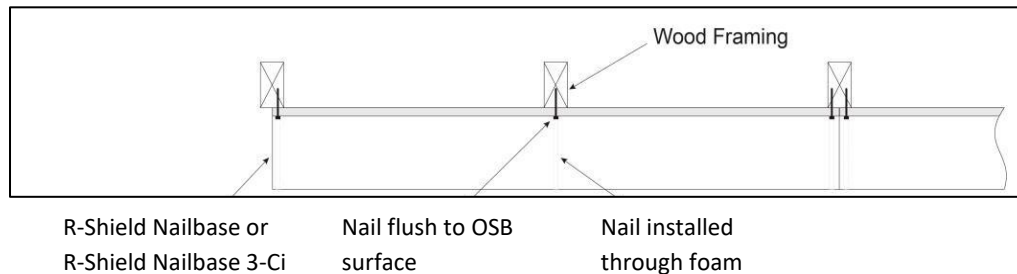
| THICKNESS, in. | PERMEANCE¹, max., perms |
|---------------------------------|---|
| 1- ⁵ / ₁₆ | 0.2 |
| 1- ⁹ / ₁₆ | 0.2 |
| 2- ¹ / ₄ | 0.2 |
| 2- ⁷ / ₈ | 0.2 |

¹Overall Perm Rating is calculated based on a combination of the perm rating of the OSB (at 50% RH) and the EPS

6.7 R-Shield Nailbase 2-Ci and R-Shield Nailbase 3-Ci Used as Wall Bracing:

R-Shield Nailbase 2-Ci and R-Shield Nailbase 3-Ci are used as a wall bracing material for exterior walls when installed with the OSB side applied directly to wood framing members. Installation requires a specialty nail gun which installs code specified diameter fasteners through the insulation and flush against the OSB surface. Minimum fastener diameter must be 0.113 inch. Minimum fastener penetration into framing members must be 1-½ inch.

Figure 2 – Installation of R-Shield Nailbase 2-Ci and R-Shield Nailbase 3-Ci as Wall Bracing



When installed in accordance with Figure 2, R-Shield Nailbase 2-Ci and R-Shield Nailbase 3-Ci are sheathing alternatives to:

- IRC bracing methods using wood structural panels (WSP), including portal frames, in accordance with Section R602.10 and R602.12 of the 2018 and 2015 IRC.
- IBC Conventional Wall Bracing provisions, Section 2308.9.3 for Type V construction and the alternative bracing methods in accordance with Section 2308.6.5.
- IBC performance-based provisions, Section 2306.1 and 2306.3 of the 2018 and 2015 IBC for light-frame wood wall assemblies

6.8 R-Shield 3-Ci Used as a Water-Resistive Barrier:

R-Shield Nailbase 3-Ci may be used as an alternative to the water-resistive barrier required by Section 1403.2 of the 2018 IBC, Section 1404.2 of the 2015 IBC, and Section R703.2 of the 2018 and 2015 IRC when installed in accordance with this Section.

Holes from fastener installation and joints between boards must be covered with R-Shield Tape.

A minimum 0.019-inch (0.48 mm) corrosion-resistance weep screed with a vertical attachment flange measuring a minimum of 3-½ inches (89mm) must be provided at the bottom of the wall. The installation of the weep screed must be in accordance with Section 2512.1.2 of the 2018 and 2015 IBC or Section R703.7.2.1 of the 2018 and 2015 IRC, as applicable.

Flashing of flanged window penetrations must be installed in accordance with Section 1404.4 of the 2018 IBC and Section 1405.4 of the 2015 IBC. The flashing tape must completely cover the framing sill and extend a minimum of 8 inches (203 mm) up the sides of the opening and 6 inches (152 mm) onto the face of the Foam-Control R-SHIELD 3-Ci at the front of the window opening.

Flashing of small penetrations (e.g., pipes) must be with a silicone sealant complying with ASTM C920.

7. CONDITIONS OF USE

7.1 General:

The R-Shield Insulation Board, R-Shield MAX, and Film Faced R-Shield Insulation Board products described in this report comply with, or are suitable alternatives to what is specified in those codes listed in Section 2 of this report, subject to the following conditions. Each of the finished products covered by this report must be produced, identified, and installed in accordance with the manufacturer's published installation instructions. If there is a conflict between this report and the manufacturer's instructions this report governs.

In areas where the probability of termite infestation is defined as "very heavy", R-Shield Insulation Boards, R-Shield MAX Insulation Boards, Film Faced R-Shield Insulation Boards, and R-Shield Geofoam Blocks without the Perform Guard treatment must be installed in accordance with Section 2603.9 of the IBC or Section R318.4 of the IRC, as applicable.

The use of R-Shield Insulation Boards, R-Shield MAX Insulation Boards, Film Faced R-Shield Insulation Boards, and R-Shield Geofoam Blocks, with the Perform Guard treatment are not restricted in areas where the probability of termite infestation is defined as "very heavy" in accordance with Section 2603.9 of the IBC or Section R318.4 of the IRC, as applicable.

The R-Shield Nailbase, R-Shield 2-Ci, and R-Shield Nailbase 3-Ci described in this report comply with, or are suitable alternatives to, what is specified in those codes listed in Section 2 of this report, subject to the following conditions. The R-Shield Nailbase, R-Shield Nailbase 2- Ci, and R-Shield Nailbase 3-Ci must be produced, identified, and installed in accordance with the manufacturer's published installation instructions. If there is a conflict between this report and the manufacturer's instructions this report governs.

7.2 R-Shield Insulation Boards, R-Shield MAX Insulations Boards, and Film Faced R-Shield Insulation Boards:

The R-Shield Insulation Boards and Film Faced R-Shield must be separated from the building interior with a thermal barrier, such as ½ in. gypsum board, as required by Section 2603.4 of the IBC or Section R316.4 of the IRC, as applicable.

For a listing of applicable UL Certifications for R-Shield Insulation Boards, R-Shield MAX Insulations Boards, and Film Faced R-Shield Insulation Boards, see the Product iQ™ database for the following categories. Film Faced R-Shield is UL Certified for BRYX, and QORW only.

See UL Product iQ™ database for the following:

- Foamed Plastic, UL Certified for Surface Burning Characteristics in accordance with UL723 ([BRYX](#))
- Polystyrene Thermal Insulation, Rigid Cellular, UL Certified in accordance with ASTM C578 ([QORW](#))
- Class A, B or C roof-covering assemblies UL Certified in accordance with UL 790 ([TGFU](#))
- Roof Deck Constructions for assemblies UL Certified in accordance with UL 1256 ([TJBX](#))
- Roof Deck Constructions for assemblies UL Certified in accordance with UL 1897 ([TGIK](#))

For a listing of applicable UL Certifications for R-Shield Insulation Boards and R-Shield MAX Insulation Boards, see the Product iQ™ database for the following Exterior Walls for assemblies UL Classified in accordance with NFPA 285 (FWFO):

[EWS0001](#)

[EWS0002](#)

[EWS0003](#)

7.3 R-Shield Geofoam Blocks:

R-Shield Geofoam Blocks less than 4 in. in thickness must be separated from the building interior with a thermal barrier such as ½ inch thick gypsum board, as required by Section 2603.4 of the IBC or Section R316.4 of the IRC, as applicable. R-Shield Geofoam Blocks greater than 4 in. in thickness must be separated from the building interior with a minimum 1 in. thick concrete or masonry on all faces as required by Section 2603.4.1.1 of the IBC.

Design loads to be resisted by the R-Shield Geofoam Blocks must be determined in accordance with the IBC or IRC, as applicable, and must not exceed the allowable loads noted in this report.

All construction documents specifying the R-Shield Geofoam Blocks must comply with the design limitations of this report. Design calculations and details for the specific applications must be furnished to the code official, verifying compliance with this report and applicable codes. The documents must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

For a listing of applicable UL Certifications for R-Shield Geofoam Blocks, see the Product iQ™ database for the following categories:

- Foamed Plastic, UL Certified for Surface Burning Characteristics in accordance with UL723 ([BRYX](#))
- Foamed Plastic, UL Certified for Interior Building Construction in accordance with UL1715 ([OERU](#))

7.4 R-Shield Nailbase, R-Shield Nailbase 2-Ci, and R-Shield Nailbase 3-Ci:

The EPS component of R-Shield Nailbase, R-Shield Nailbase 2-Ci, and R-Shield Nailbase 3-Ci must be separated from the building interior with a thermal barrier, such as ½-inch thick gypsum board, as required by Section 2603.4 of the 2018 and 2015 IBC or Section R316.4 of the 2018 and 2015 IRC, as applicable.

For a listing of applicable UL Certifications, see the Product iQ™ database for the following categories.

- Foamed Plastic, UL Certified for Surface Burning Characteristics in accordance with UL723 ([BRYX](#)) for the R-Shield EPS component of R-Shield Nailbase, R-Shield Nailbase 2-Ci, and R-Shield Nailbase 3-Ci.
- Class A, B or C roof-covering assemblies UL Certified in accordance with UL 790 ([TGFU](#)) for R-Shield Nailbase.
- Roof Deck Constructions for assemblies UL Certified in accordance with UL 1897 ([TGIK](#)) for R-Shield Nailbase.
- Polystyrene Thermal Insulation, Rigid Cellular, UL Certified in accordance with ASTM C578 ([QORW](#)) for the R-Shield EPS component of R-Shield Nailbase, R-Shield Nailbase 2-Ci, and R-Shield Nailbase 3-Ci.

7.5 Manufacturing Location:

The products are manufactured in Belgrade, MT under the UL LLC Listing or Certification and Follow-Up Service Program, which includes audits in accordance with ICC-ES Acceptance Criteria for Quality Documentation, AC 10.

8. SUPPORTING EVIDENCE

8.1 R-Shield Insulation Boards and R-Shield Max Insulations Boards:

8.1.1 Data in accordance with ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12)

8.1.2 Data in accordance with ICC-ES Acceptance Criteria for Termite Resistant Foam Plastics (AC239)

8.1.3 UL Certification reports in accordance with UL 723, ASTM C578, UL 790, UL 1256, and UL 1897. See UL Product Certification Categories (BRYX), (QORW), (TGFU), (TJBX), and (TGIK), respectively. See links to UL, LLC's Product iQ™ database in Section 7.2

8.1.4 Reports and analysis of wall fire tests in accordance with NFPA 285

8.1.5 Documentation of quality system elements described in AC10

8.2 Film Faced R-Shield Insulation Boards:

8.2.1 Data in accordance with ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12)

8.2.2 Data in accordance with ICC-ES Acceptance Criteria for Termite Resistant Foam Plastics (AC239)

8.2.3 Data in accordance with ICC-ES Acceptance Criteria for Foam Plastic Sheathing Panels used as Water Resistive Barriers (AC71)

8.2.4 Data in accordance with ASTM E2178 Standard Test Method for Air Permeance of Building Materials

8.2.5 UL Certification reports in accordance with UL 723, ASTM C578, and ASTM E2430. See UL Product Certification Categories (BRYX), and (QORW).

See links to UL, LLC's Product iQ™ database in Section 7.2.

8.2.6 Documentation of quality system elements described in AC10

8.3 R-Shield MAX Insulation Boards:

8.3.1 UL Certification reports in accordance with UL 723, ASTM D6817, and UL 1715. See UL Product Certification Categories (BRYX), (QORW) and (OERU), respectively

See links to UL, LLC's Product iQ™ database for BRYX and QORW in section 7.3.

8.3.2 Data in accordance with ICC-ES Acceptance Criteria for Termite Resistant Foam Plastics (AC239)

8.3.3 Documentation of quality system elements described in AC10

8.4 R-Shield Geofam Blocks:

8.4.1 UL Certification reports in accordance with UL 723, ASTM D6817, and UL 1715. See UL Product Certification Categories (BRYX), (QORW) and (OERU), respectively

See links to UL, LLC's Product iQ™ database for BRYX and QORW in section 7.3.

8.4.2 Data in accordance with ICC-ES Acceptance Criteria for Termite Resistant Foam Plastics (AC239), dated October 2008.

8.4.3 Documentation of quality system elements described in AC10

8.5 R-Shield Nailbase:

8.5.1 Data in accordance with ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12).

See links to UL, LLC's Product iQ™ database for BRYX and QORW in section 7.3.

8.5.2 Documentation of quality system elements described in AC10.

8.6 R-Shield Nailbase 2-Ci:

8.6.1 Data in accordance with ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12).

8.6.2 Documentation of quality system elements described in AC10.

8.7 R-Shield Nailbase 3-Ci:

8.7.1 Data in accordance with ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12).

8.7.2 Data in accordance with ICC-ES Acceptance Criteria for Foam Plastic Sheathing Panels used as Water Resistive Barriers (AC71).

8.7.3 Data in accordance with ASTM E2178 Standard Test Method for Air Permeance of Building Materials.

8.7.4 Documentation of quality system elements described in AC10.

9. IDENTIFICATION

The R-Shield Insulation Boards, R-Shield MAX Insulation Boards, Film Faced R-Shield Insulation Boards, R-Shield Geofoam Blocks, R-Shield Nailbase, R-Shield Nailbase 2-Ci, and R-Shield Nailbase 3-Ci products described in this evaluation report are identified by a marking bearing the report holder's name (Big Sky Insulations Inc.), the plant identification, the product name, the ASTM type designation, the UL Certification Mark, and the evaluation report number UL ER40361-01. The validity of the evaluation report is contingent upon this identification appearing on the product or UL Certification Mark certificate.

10. USE OF UL EVALUATION REPORT

10.1 The approval of building products, materials or systems is under the responsibility of the applicable authorities having jurisdiction.

10.2 UL Evaluation Reports shall not be used in any manner that implies an endorsement of the product, material or system by UL.

10.3 The status of this report, as well as a complete directory of UL Evaluation Reports may be found at UL.com via the [Product iQ™ database](#).

© 2021 UL LLC

This UL Evaluation Report is not an endorsement or recommendation for use of the subject and/or product described herein. This report is not the UL Listing or UL Classification Report that covers the subject product. The subject product's UL Listing or UL Classification is covered under a separate UL Report. UL disclaims all representations and warranties whether express or implied, with respect to this report and the subject or product described herein. Contents of this report may be based on data that has been generated by laboratories other than UL that are accredited as complying with ISO/IEC Standard 17025 by the International Accreditation Service (IAS) or by any other accreditation body that is a signatory to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA). The scope of the laboratory's accreditation shall include the specific type of testing covered in the test report. As the accuracy of any non-UL data is the responsibility of the accredited laboratory, UL does not accept responsibility for the accuracy of this data.

