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AA-2 VAPOR SHIELD (PERFORATED VERSION), M-SHIELD (PERFORATED VERSION), VR PLUS, RBI-REFLECTIVE/REFLECTIVE, RBI-REFLECTIVE/WHITE, RBI-SHIELD, RBI-MAX, AND RBI-HVAC

CSI Section: 07 21 00 – Thermal Insulation

1.0 RECOGNITION

AA-2 Vapor Shield (Perforated Version), M-Shield, and VR Plus (Perforated and Solid) insulations recognized in this report have been evaluated for use as reflective insulations in concealed wall cavities in buildings of Type III, IV, or V construction in the IBC, and any construction type allowed by the IRC. M-Shield can also be used in buildings of Type I & II construction. RBI-Reflective/Reflective, RBI Reflective/White and RBI-Max insulations recognized in this report have been evaluated for use as reflective insulations in general construction in buildings of Type I, II, III, IV, or V construction in the IBC, and any construction type allowed by the IRC. RBI-HVAC insulation recognized in this report has been evaluated for use as a reflective insulation in general construction in buildings of Type I, II, III, IV, or V construction in the IBC, and any construction type allowed by the IRC and per the IMC. The thermal resistance, surface burning characteristics, and permeability properties comply with the intent of the provisions of the following codes and regulations:

- 2024, 2021, and 2018 International Building Code (IBC®)
- 2024, 2021, and 2018 International Residential Code (IRC®)
- 2024, 2021, and 2018 International Mechanical Code (IMC)- *RBI-HVAC Only
- 2024, 2021, and 2018 International Energy Conservation Code (IECC®)
- 2023 Florida Building Code, Building (FBC, Building) – Attached Supplement
- 2023 Florida Building Code, Residential (FBC, Residential) – Attached Supplement
- 2023 Florida Building Code, Energy Conservation (FBC, Energy Conservation) – Attached Supplement

2.0 LIMITATIONS

AA-2 Vapor Shield (Perforated Version), VR Plus, M-Shield, RBI-Reflective/Reflective, RBI Reflective/White, RBI-MAX and RBI-HVAC recognized in this report are subject to the following limitations:

2.1 AA-2 Vapor Shield (Perforated Version) installed in concealed wall cavities within buildings allowed by the IRC or in buildings of Type III, IV, or V construction as defined by the IBC, shall be installed behind and in substantial contact with the unexposed surface of the wall as per Sections 720.2.1 of the 2024, 2021, and 2018; and R302.10.1 of the IRC.

2.2 Use of the AA-2 Vapor Shield (Perforated Version), M-Shield, or VR Plus (Solid and Perforated Versions) as air duct insulation is beyond the scope of this report.

2.3 Recognition of AA-2 Vapor Shield (Perforated Version) and M-Shield are limited to installation within a minimum ¾-inch deep (19.1 mm) concealed wall cavity.

2.4 The structural design and detailing of the wall assembly for the AA-2 Vapor Shield (Perforated Version) described in Section 3.3.1.1 of this report shall be performed by a registered design professional when required by the applicable codes.

Recognition of VR Plus (Solid and Perforated Versions) are limited to installation within a minimum $1^1/_2$" concealed wall cavity.

2.5 AA-2 Vapor Shield, M-Shield, and VR Plus Shield are manufactured in Auburndale, Florida. RBI Shield, RBI-MAX and RBI-HVAC are manufactured in Carthage, Missouri. Manufacturing at both locations is under quality control program with inspections by IAPMO UES.

3.0 PRODUCT USE

3.1 General:

3.1.1 AA-2 Vapor Shield (Perforated Version), VR Plus (Solid and Perforated Versions), M-Shield insulations recognized in this report have been evaluated for use as reflective insulations in concealed wall cavities in buildings of Type III, IV, or V construction in the IBC, and any construction type allowed by the IRC. These insulations have been found to satisfy the requirements of the codes listed in Section 1 when installed in accordance with this report. M-Shield can also be used in buildings of Type I and II construction.

3.1.2 RBI Shield and RBI-MAX RBI-Reflective/Reflective, RBI Reflective/White and RBI-Max insulations recognized

in this report have been evaluated for use as reflective insulations in general construction in buildings of Type I, II, III, IV, or V construction in the IBC, and any construction type allowed by the IRC. These insulations have been found to satisfy the requirements of the codes listed in Section 1 when installed in accordance with this report.

3.1.3 RBI-HVAC insulation recognized in this report has been evaluated for use as a reflective insulation in general construction in buildings of Type I, II, III, IV, or V construction in the IBC, and any construction type allowed by the IRC and per the IMC. This insulation has been found to satisfy the requirements of the codes listed in Section 1 when installed in accordance with this report.

3.2 Design:

3.2.1 AA-2 Vapor Shield (Perforated Version):

3.2.1.1 The AA-2 Vapor Shield (Perforated Version) R-value of this report is for the added insulation which includes the adjacent reflective air spaces. The R-values of structural building materials such as framing members, concrete blocks, or gypsum boards are not included.

3.2.1.2 AA-2 Vapor Shield (Perforated Version) installed in a nominal 1-inch x 2-inch (25.4 x 50.8 mm) wood furring strips (actual cavity thickness 0.805 to 0.810 inches) (20.5 x 40.9 mm) spaced at either 16 inches (406 mm) or 24 inches (610 mm) on center, with the kraft paper side stapled to the furring strips, facing the interior (hot side) and the aluminum foil side facing the exterior (cold side). The reflective insulation in this configuration tested in accordance with ASTM C1363 and ASTM C1224 with heat flow in the horizontal direction, yielded an R-value of 4.1 hr ft^2 °F/Btu, at a mean temperature of 75°F (24°C). Refer to Figure 1 for additional details.

3.2.1.3 AA-2 Vapor Shield (Perforated Version) has a minimum water vapor permeance of 5.0 perms (grains/ft^2·h·inch Hg) when tested in accordance with ASTM E96 desiccant method at 73.4° F (23°C) and complies as a vapor-permeable membrane in accordance with the IBC and IRC. Which qualifies AA-2 perforated as vapor permeable in accordance with the IBC

3.2.1.4 AA-2 Vapor Shield (Perforated Version) has a thermal emittance no greater than 0.10 when measured in accordance with ASTM C1371 and complies as a low-emittance surface in accordance with the IBC.

3.2.2 M-Shield:

3.2.2.1 M-Shield (Perforated Version) installed in a nominal 16 inch by 0.75 inch cavity the reflective insulation in this configuration tested in accordance with ASTM C1363 and ASTM C1224 with heat flow in the horizontal direction, yielded an R-value of 4.1 hr ft^2 °F/Btu, at a mean temperature of 72.1°F (22.3°C). Refer to Figure 1 for additional details.

3.2.2.2 M-Shield installed in a nominal 16 inch by 0.875 inch cavity the reflective insulation in this configuration tested in accordance with ASTM C1363 and ASTM C1224 with heat flow in the horizontal direction, yielded an R-value of 4.5 hr ft^2 °F/Btu, at a mean temperature of 74.2°F (23.4°C). Refer to Figure 1 for additional details.

3.2.2.3 M-Shield installed in a nominal 16 inch on center by 1.5 x 1.5 inch stud the reflective insulation in this configuration tested in accordance with ASTM C1363 and ASTM C1224 with heat flow in the horizontal direction, yielded an R-value of 4.5 hr ft^2 °F/Btu, at a mean temperature of 74.2°F (23.4°C).

3.2.2.4 M-Shield has a flame-spread index of not more than 25 and a smoke-developed index of not more than 75 when tested in accordance with ASTM E84-11.

3.2.2.5 M-Shield has a thermal emittance of less than 0.10 when measured in accordance with ASTM C1371.

3.2.2.6 M-Shield has a minimum water vapor permeance of 5.0 perm (grains/ft2.h.inch Hg) when tested in accordance with Procedure A of ASTM E96 dry cup method at 73.4°F (23°C). M-Shield satisfies the requirements of a vapor-permeable membrane in accordance with the IBC and IRC.

3.2.3 VR Plus Shield:

3.2.3.1 The VR Plus Shield R-value of this report is for the added insulation which includes the adjacent reflective air spaces. The R-values of structural building materials such as framing members, concrete blocks, or gypsum boards are not included.

3.2.3.2 VR Plus Shield at $1^5/_8$ inches (41.3 mm) thick formed by furring strips spaced at 16 inches (406 mm) on center for the non-perforated type yielded an R-value of 7.1 hr ft^2 °F/Btu at a mean temperature of 75°F (24°C) when tested in accordance with ASTM C21363.

3.2.3.3 VR Plus Shield perforated version has a water vapor permeance in excess of 5.0 perms (grains/ft2.h.inch Hg) in accordance with Procedure A of ASTM E96 Desiccant Method at 73±.4°F (23°C).

3.2.3.4 VR Plus Shield has a thermal emittance no greater than 0.10 when measured in accordance with ASTM C1371 and complies as a low-emittance surface in accordance with the IBC.

3.2.4 RBI Shield

3.2.4.1 Calculated Thermal Resistances: (R-values: ft2·h·°F/Btu) have been calculated for RBI Variations as noted in Tables 3 through 6 of this report. The calculations are based on data published by the U.S. National Bureau of Standards and correlations published by Yam et al.

The assemblies evaluated consist of the reflective insulation material placed above purlins with sufficient material to produce an enclosed reflective air space between the purlins. The calculations are for purlins spaced 60 inches on center with reflective insulation providing enclosed air spaces of 1, 6, 7, and 8 inches. The calculations are based on a material configuration that is 80 percent (48 inches) of insulation forming a constant thickness air space and 20% (12 inches) of material on the edges of the region between purlins with air space varying from 0 to a specified thickness (1, 6, 7, or 8 inches). The edge regions and the center region are then taken to have heat flow in parallel. The overall assembly R-value in this case is the sum of the R-values for the enclosed reflective air space, the reflective insulation material, and the air film on the exposed side of the reflective material. R-values were calculated for assemblies of the following products: RBI Shield-RRDB, -RRSB, -RWDB, -RWSB, and RBI-MAX. The notation RR indicates that both sides of the product have low emittance. RW indicates one side is low emittance and one side is white (high emittance). The assemblies are constructed to have a low emittance side facing the enclosed air space. SB indicates a single layer of cells (bubbles) while DB indicates two layers of bubbles.

3.2.4.2 Physical Property Data: The physical property data used in the calculation were the thermal resistance obtained in accordance with ASTM C518 and the total hemispherical emittance obtained in accordance with ASTM C1371 The property data used in the calculations are contained in Table 1. The air film data used in the calculation listed in Table 2 were taken from the 2021 Edition of the ASHRAE Handbook Fundamentals.

3.2.4.3 RBI Shield has a water vapor permeance of less than 1.0 perm (grains/ft2.h.inch Hg) when tested in accordance with Procedure A of ASTM E96 dry cup method at 73°F (22.7°C) and 50 percent relative humidity.

3.2.4.4 RBI Shield has a thermal emittance of less than 0.10 when measured in accordance with ASTM C1371.

3.2.4.5 RBI Shield has a flame-spread index of not more than 25 and a smoke-developed index of not more than 450 when tested in accordance with ASTM E84-11.

3.2.5 RBI-MAX

3.2.5.1 RBI-MAX has been tested in accordance with ASTM D2261 for Tear Resistance. The test was conducted using an initial grip separation of 3.0 inches (75mm). The tensile load was applied at the rate of 2.0 in/min until failure occurred. The RBI-MAX material had a tearing strength of 32.00 (lb_f) in the Machine Direction (MD) and 39.52 (lb_f) in the Cross Machine Direction.

3.2.5.2 RBI-MAX was tested for slow rate penetration resistance in accordance with ASTM F1306. The test was conducted on a 3- by 3-inch (75 by 75 mm) specimens. During the test, the observed maximum load and energy for the penetration of a film specimen was recorded. The test parameters included a Crosshead Speed of 1.0 in/min and a Probe Area of 0.0123 in^2. The energy needed to break the sample was 1.52 (lb_f*in).

3.2.6 RBI-HVAC

3.2.6.1 RBI-HVAC has a flame-spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84-23 when mounted in accordance with ASTM E2599-22

3.2.6.2 RBI-HVAC has a thermal emittance of less than 0.10 when measured in accordance with ASTM C1371.

3.2.6.3 RBI-HVAC was tested for Hot Surface Performance in accordance with ASTM C411. A 24 by 24- inch sample was tested to a maximum temperature of 250.0 degrees Fahrenheit. The material was tested at a controlled temperature for a period of 96 hours with a ramp rate temperature of 3.6 (°F/min.) The RBI-HVAC sample had no reaction to the test including no Flaming, Glowing, Warping or Fiber Degradation.

3.2.6.4 RBI-HVAC has a water vapor permeance of <0.02 perms (grains/ft^2·h·inch Hg) when tested in accordance with ASTM E96 desiccant method at 73.4°F (23°C).

3.2.6.5 RBI-HVAC Reflective – Double Bubble – Reflective RBI-HVAC insulation was tested according to ASTM C335 with analysis in accordance with ASTM C1668, Section 10.8. The test assembly was over an 84 inch long x 8 x 12 metallic HVAC duct oriented horizontally. The RBI-HVAC duct insulation was triple wrapped around the duct and overlapped leaving a double layer of the double bubble insulation on all sides except the bottom. The wrapping was loose forming an approximate ¾ inch air space on all sides between the duct exterior surface and the DB RBI-HVAC interior surface. The thermal resistance between the duct surface and the air surrounding the duct (the insulation material plus air-film resistance) was 5.6 ft2·h·°F/Btu at an average insulation assembly temperature of 75°F (24°C).

3.2.6.6 RBI-HVAC Reflective – Double Bubble – Reflective RBI-HVAC insulation was tested according to ASTM C335 with analysis in accordance with ASTM C1668, Section 10.8. The test assembly was over an 84 inch long by an 8 x 12 metallic HVAC duct oriented horizontally. The RBI-HVAC duct insulation was cut into strips 2.0 inches by 129 inches and triple wrapped around the duct three times spaced at 20.5 inch centers along the duct's length forming $^7/_8$ inch air spaces. A double layer consisting of 80 inch lengths of RBI-HVAC insulation was then installed over the spacers and wrapped twice around the duct. The wrapping formed an approximate $^7/_8$ inch air space on all sides between the duct exterior surface and the RBI-HVAC interior surface.

The thermal resistance between the duct surface and the air surrounding the duct (the insulation material plus air-film

resistance) was 6.1 ft2·h·°F/Btu at an average insulation assembly temperature of 75°F (24°C).

3.2.6.7 RBI-HVAC Reflective – Double Bubble – Reflective RBI-HVAC insulation was tested according to ASTM C335 with analysis in accordance with ASTM C1668, Section 10.8. The test assembly was over an 84 inch long by an 8 x 12 metallic HVAC duct oriented horizontally. The assembly is described from the duct surface to the air: Layer 1: Two-inch-wide spacers, supplied with the RBI Shield-HVAC Reflective Duct Insulation, were installed 20.5 inches on center. The spacers were 129-inch in length and wrapped around the duct 3 times. An 80-inch-long section of insulation was wrapped around the spacers forming an approximate $^{7}/_{8}$-inch enclosed airspace between the insulation and the duct. The insulation was wrapped in a way that covered the top and sides of the duct with two layers of insulation. Layer 2: The second layer of insulation included 156-inch 2-inch-wide spacers triple wrapped every 20.5 inches over the first layer. Then 96-inch-long section of insulation was wrapped over the spacers forming an additional 1-inch air space. The 96-inch-long wrap covered the top and both sides of the duct with two layers of insulation as shown in Figure 1. Low emittance tape was used to seal all seams.

A double layer consisting of 80-inch sections of material was installed to encompass the entire length of the duct by tightly wrapping the duct 1¾ times covering the top and sides of the duct assembly twice.

The thermal resistance between the duct surface and the exterior insulation surface (the insulation material) was 7.4 ft2·h·°F/Btu at an average insulation assembly temperature of 75°F (24°C).

The thermal resistance between the duct surface and the air surrounding the duct (the insulation material plus air-film resistance) was 9.1 ft2·h·°F/Btu at an average insulation assembly temperature of 75°F (24°C).

3.2.6.8 RBI-HVAC was tested for Aging Resistance in accordance with ASTM C1258. No visible corrosion or delamination was identified during the duration of the test.

3.2.6.9 RBI-HVAC was tested to determine the structural integrity of the product by adhesive bleeding and delamination in accordance with ASTM 1668, Section 10.5. No evidence of bleeding or delamination was observed during the duration of the test.

3.2.6.10 RBI-HVAC was tested for Fungi Resistance in accordance with ASTM C1338. The results of the test show growth that is less than or equal to the fungal growth on the comparative (control) item.

3.3 Installation: Installation instructions for AA-2 Vapor Shield (Perforated Version), M-Shield, VR Plus (Solid and Perforated Versions), RBI Shield, RBI-MAX and RBI-HVAC are supplied with the product and/or are available on the Fi-Foil Company, Inc. website. Installation shall comply with this report; the manufacturer's published installation instructions and the applicable code. In the event of a conflict between this report and the installation instructions, the more restrictive assumes governance.

4.0 PRODUCT DESCRIPTION

4.1 AA-2

AA-2 Vapor Shield (Perforated Version) is a multi-layer reflective insulation recognized for use in a ¾-inch thick (19.1 mm) concealed wall cavity. The insulation is available in either rolls of 16 inches (406 mm) or 24 inches (610 mm) wide containing 500 square feet (46.5 m^2) each. The inner layer is aluminum foil with a minimum 0.00035-inch (0.00889 mm) thickness, and the outer layer is natural kraft paper of 35 pounds (15.9 kg) with internal expanders. The internal expanders separate the kraft paper from the foil creating approximately two ⅜ -inch (9.5 mm) reflective air space between the layers.

4.2 M-Shield

4.2.1 M-Shield is reflective insulation for use on furred-out masonry and framed walls in buildings of Types I, II, III, IV, and V construction. M-Shield incorporates a layer of aluminum foil and synthetic polymers that contain no cellulose. Upon installation, the layers separate with internal expanders creating a reflective air space that forms when installed on wood or metal furring strips spaced 16 inches (406 mm) or 24 inches (610 mm) on center. The second reflective air space is dependent upon the thickness of the framing or furring strips.

4.3 VR Plus Shield

4.3.1 VR Plus Shield is a triple layer reflective insulation for use on furred-out masonry and frame walls. It is available in both non-perforated and perforated versions and in rolls either 16 inches (406 mm) or 24 inches (610 mm) wide containing 500 square feet (46.5 m2) each. The outer layer consists of 35-pound (15.9 kg) white kraft paper coated with polyethylene, a layer of 30 pounds (13.6 kg) natural kraft paper laminated to a minimum 0.00025-inch (0.00635 mm) aluminum foil, and a layer of minimum 0.00035-inch (0.00889 mm) aluminum foil. Upon installation, the layers open using internal expanders that form internal airspace ranging between ¼ inch (6.4 mm) and ½ inch (12.7 mm). The thickness of the third airspace is dependent on the thickness of the furring strips or the wall studs.

4.4 RBI Shield & RBI-MAX

4.4.1 The facer material is a woven reinforced white polymer that is added for increased strength and tear resistance.

4.4.2 RBI Shield & RBI-MAX: RBI Shield (Reflective Bubble Insulation) & RBI-MAX is intended for use in roofs, floors, and walls in buildings of Types I, II, III, IV, and V construction. RBI is available in both single and double bubble versions in rolls of 125 feet (30.1 m) long and 16 inches (406 mm), 24 inches (610 mm), 48 inches (1,219 mm), 54 inches (1,372 mm), 66 inches (1,676 mm), 72 inches (1,829 mm) and 96-inch (2438 mm) widths. It consists of one or two layers of air-filled bubbles and various options for facings: Metalized film both sides or metalized film on one side and white or black polyethylene on the other. The total nominal thickness of the insulation is $^{3}/_{16}$ inch (4.76 mm) for the Single Bubble and $^{5}/_{16}$ inch (7.94 mm) for the Double Bubble. RBI-MAX is a specific version of RBI that is a single bubble product and has a specific white facer material that is a woven reinforced white polymer.

4.5 RBI-HVAC

4.5.1 RBI-HVAC: (Reflective Bubble Insulation) is intended for use on the exterior of HVAC ducts in the interior of buildings of Types I, II, III, IV, and V types of construction. RBI-HVAC is available in reflective/reflective double-bubble in rolls of 125 feet, 100 feet lengths and 16 inches, 24 inches, 48 inches and 60 inches wide. It consists of two layers of air-filled bubbles. Metalized film is exposed on both sides. The total thickness of the insulation is $^{5}/_{16}$ inch (7.94 mm).

5.0 IDENTIFICATION

The insulations recognized in this report are packaged with a label bearing the manufacturer's name (Fi-Foil Company, Inc.), the thermal resistance (R-value), and the Evaluation Report Number (IAPMO UES ER-291) to identify the products recognized in this report. The IAPMO Uniform ES Mark of Conformity may also be used as shown below:

IAPMO UES ER-291

6.0 SUBSTATIATING DATA

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Reflective Insulation (AC02), approved June 2011, editorially revised May 2024.

6.2 Test reports for emittance, humidity resistance, adhesive performance, and fungi resistance testing were submitted in accordance with ASTM C1224-15. Thermal resistance test reports were submitted in accordance with ASTM C1363-11 and ASTM C1224-15.

6.3 Thermal resistance test reports were submitted for RBI-HVAC in accordance with ASTM C335-17 & C518-21.

6.4 Test reports are from laboratories in compliance with ISO/IEC 17025.

7.0 STATEMENT OF RECOGNITION:

This report describes the results of research completed by the IAPMO Uniform Evaluation Service on AA-2 Vapor Shield (Perforated Version), M-Shield, VR Plus (Perforated and Solid), RBI-Reflective/Reflective, RBI-Reflective/White, RBI-SHIELD, RBI-MAX, and RBI-HVAC to assess their conformance to the codes listed in Section 1.0 and serves as documentation of the product certification. The products are manufactured at the locations noted in Section 2.5 of this report under a quality control program with periodic inspections under the supervision of IAPMO UES.

For additional information about this evaluation report please visit www.uniform-es.org or email at info@uniform-es.org

FIGURE 1 - AA-2 Vapor Shield (Perforated Version) & M-Shield

FIGURE 2 – VR Plus (Solid & Perforated Versions)

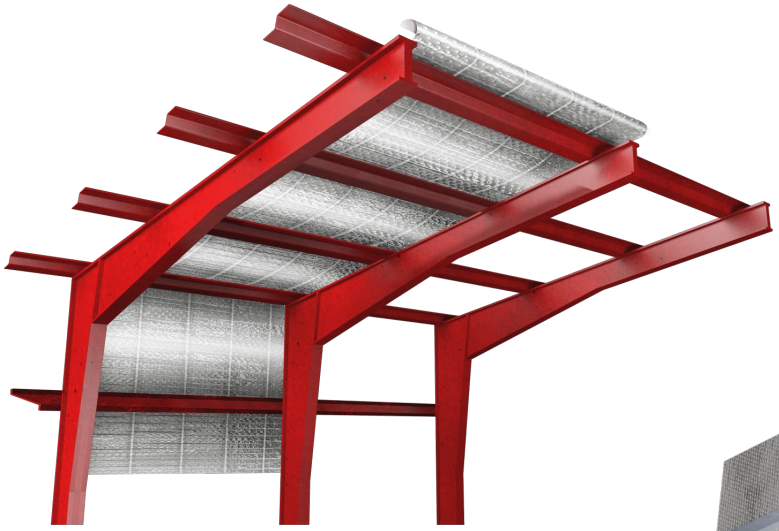

FIGURE 3 – RBI Shield and RBI-MAX

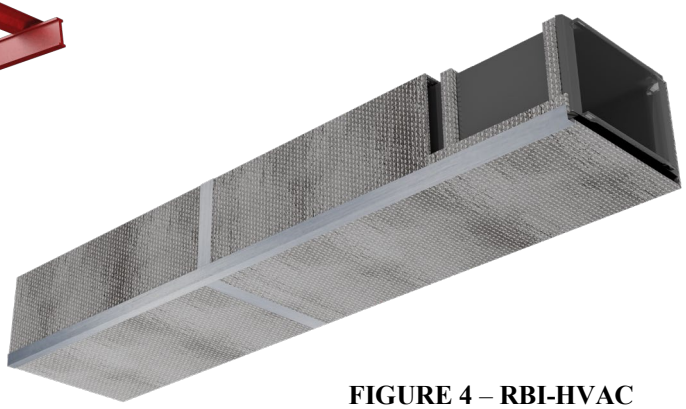

FIGURE 4 – RBI-HVAC

TABLE 1

Material R-values and Thermal Emittances Data Used in Calculations			
Product	**Material R (ft2·h·°F/Btu)**	**Emittance Reflective**	**Emittance White**
RRDB	**1.03**	**0.057**	**0.900**
RRSB	**0.53**	**0.057**	**0.900**
RWDB	**0.89**	**0.057**	**0.900**
RWSB	**0.51**	**0.057**	**0.900**
RBI-Max	**0.55**	**0.057**	**0.900**

TABLE 2: Air-Film R-value

Heat flow direction	R-non-reflective	R-reflective
Up	**0.61**	**1.32**
Horizontal	**0.68**	**1.70**
Down	**0.92**	**4.55**

TABLE 3. R-values for Assemblies with One-Inch Drape (ft^2·h·°F/Btu)

Product	Heat Flow Down		Heat Flow Up		Heat Flow Horizontal	
	Air Space	Total	Air Space	Total	Air Space	Total
RWSB	3.52	4.95	1.67	2.79	2.55	3.74
RWDB	3.52	5.33	1.67	3.17	2.55	4.12
RRSB	3.52	8.60	1.67	3.52	2.55	4.78
RRDB	3.52	9.10	1.67	4.02	2.55	5.28
RBI-Max	3.52	8.62	1.67	3.54	2.55	4.80

TABLE 4. R-values for Assemblies with Six-Inch Drape (ft^2·h·°F/Btu)

Product	Heat Flow Down		Heat Flow Up		Heat Flow Horizontal	
	Air Space	Total	Air Space	Total	Air Space	Total
RWSB	7.88	9.31	2.11	3.23	2.65	3.84
RWDB	7.88	9.69	2.11	3.61	2.65	4.22
RRSB	7.88	12.96	2.11	3.96	2.65	4.88
RRDB	7.88	13.46	2.11	4.46	2.65	5.38
RBI-Max	7.88	12.98	2.11	3.98	2.65	4.90

TABLE 5. R-values for Assemblies with Seven-Inch Drape ($ft^2 \cdot h \cdot °F/Btu$)

Product	Heat Flow Down		Heat Flow Up		Heat Flow Horizontal	
	Air Space	Total	Air Space	Total	Air Space	Total
RWSB	8.03	9.46	2.15	3.27	2.74	3.93
RWDB	8.03	9.84	2.15	3.65	2.74	4.31
RRSB	8.03	13.11	2.15	4.00	2.74	4.97
RRDB	8.03	13.71	2.15	4.50	2.74	5.47
RBI-Max	8.03	13.13	2.15	4.02	2.74	4.99

TABLE 6. R-values for Assemblies with Eight-Inch Drape ($ft^2 \cdot h \cdot °F/Btu$)

Product	Heat Flow Down		Heat Flow Up		Heat Flow Horizontal	
	Air Space	Total	Air Space	Total	Air Space	Total
RWSB	8.16	9.59	2.19	3.31	2.83	4.02
RWDB	8.16	9.97	2.19	3.36	2.83	4.40
RRSB	8.16	13.24	2.19	4.04	2.83	5.06
RRDB	8.16	13.74	2.19	4.54	2.83	5.56
RBI-Max	8.16	13.26	2.19	4.06	2.83	5.08

FLORIDA SUPPLEMENT

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CSI Section:
07 21 00 – Thermal Insulation

1.0 RECOGNITION

AA-2 Vapor Shield (Perforated Version) VR Plus, M-Shield, RBI-Reflective/Reflective, RBI Reflective/White, RBI-SHIELD, RBI-MAX, and RBI-HVAC insulations recognized in IAPMO UES ER-291 and this supplemental report has been evaluated for use as reflective insulations. The thermal resistance, surface burning characteristics, and permeability properties of the AA-2 Vapor Shield (Perforated Version) comply with the intent of the provisions of the following codes and regulations:

- 2023 Florida Building Code, Building (FBC, Building)
- 2023 Florida Building Code, Residential (FBC, Residential)
- 2023 Florida Building Code, Energy Conservation (FBC, Energy Conservation)

2.0 LIMITATIONS

Use of the AA-2 Vapor Shield (Perforated Version) recognized in this supplement is subject to the following limitations:

2.1 FBC, Building: All provisions in IAPMO UES ER-291 referencing the 2021 IBC shall apply to use under the 2023 FBC, Building. In addition, compliance with Section 720 of the FBC, Building, or Section R302 of the FBC, Residential, and C303 or R303 of the FBC, Energy Conservation, shall be observed as applicable.

2.2 FBC, Residential: All provisions in IAPMO UES ER-291 referencing the 2021 IRC shall apply to use under the 2023 FBC, Residential respectively, along with Section 720 of the FBC, Building, or Section R302 of the FBC, Residential, and C303 or R303 of the FBC, Energy Conservation, as applicable.

2.3 FBC, Energy Conservation: All provisions in IAPMO UES ER-291 referencing the 2021 IECC shall apply to use under the 2023 FBC, Energy Conservation respectively, along with Section 720 of the FBC, Building, or Section R302 of the FBC, Residential, and C303 or R303 of the FBC, Energy Conservation, as applicable.

2.4 The reflective insulation may be used in high-velocity hurricane zones (HVHZ) provided the provisions in Chapter 14 of the FBC, Building or Chapter 44 of the FBC, Residential are observed.

2.5 Verification shall be provided that a quality assurance agency audits the manufacturer's quality assurance program and audits the production quality of products, in accordance with Section (5)(d) of Florida Rule 61G20-3.008. The quality assurance agency shall be approved by the Commission (or the building official when the report holder does not possess an approval by the Commission).

2.6 This supplement expires concurrently with IAPMO UES ER-291.