



CERTIFICATION



Approved. Sealed. Code Compliant.

Technical Evaluation Report

TER 1809-01

Vitrabond®

Fairview Architectural

Product:

**Vitrabond® Metal Composite
Material (MCM)**

Issue Date:

December 11, 2019

Revision Date:

December 11, 2019

Subject to Renewal:

January 1, 2021



**COMPANY
INFORMATION:**

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DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

SECTION: 07 42 00 Wall Panels

SECTION: 07 42 13.23 Metal Composite Material Wall Panels

SECTION: 07 42 43 - Composite Wall Panels

1 PRODUCT EVALUATED¹**1.1 Vitrabond® Metal Composite Material (MCM)****2 APPLICABLE CODES AND STANDARDS^{2,3}****2.1 Codes**

- 2.1.1 *IBC—12, 15, 18: International Building Code®*
- 2.1.2 *IRC—12, 15, 18: International Residential Code®*
- 2.1.3 *FBC-B—17: Florida Building Code – Building⁴*
- 2.1.4 *California Building Code⁵—16*

2.2 Standards and Referenced Documents

- 2.2.1 *AAMA 2605: Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix)*
- 2.2.2 *ASCE/SEI 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures*
- 2.2.3 *ASTM D1781: Standard Test Method for Climbing Drum Peel for Adhesives*

¹ Building codes require data from valid research reports be obtained from approved sources. An approved agency, which is an approved source, is defined as “an established and recognized agency that is regularly engaged in...furnishing product certification where such agency has been approved...” Being approved, defined as “acceptable to the building official,” is accomplished via accreditation using ISO/IEC 17065 evaluation procedures meeting code requirements of independence, adequate equipment, and experienced personnel. DrJ is an ISO/IEC 17065 ANSI-Accredited Product Certification Body – Accreditation #1131.

Through ANSI accreditation, DrJ certification can be used to obtain product approval in any country that is an IAF MLA Signatory and covered by an IAF MLA Evaluation per the Purpose of the MLA – “certified once, accepted everywhere.” Manufacturers can go to jurisdictions in any IAF MLA Signatory Country and have their products readily approved by authorities having jurisdiction using DrJ’s ANSI accreditation.

² Unless otherwise noted, all references in this TER are from the 2018 version of the codes and the standards referenced therein (e.g., *ASCE 7*, *NDS*, *ASTM*). This material, design, or method of construction also complies with the 2000-2015 versions of the referenced codes and the standards referenced therein. As required by code, where this TER is not approved, the building official shall respond in writing stating the reasons this TER was not approved. For any variations in state and local codes, see Section 8.

³ All terms defined in the applicable building codes are italicized.

⁴ All references to the *FBC* are the same as the 2015 *IBC* unless otherwise noted.

⁵ All references to the California Building Code are the same as the 2015 *IBC* unless otherwise noted.

- 2.2.4 *ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*
- 2.2.5 *ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials*
- 2.2.6 *NFPA 285: Standard Fire Test Method for the Evaluation of Fire Propagation Characteristics of Exterior Nonload-bearing Wall Assemblies Containing Combustible Components*
- 2.2.7 *TAS 201: Impact Test Procedures*
- 2.2.8 *TAS 202: Criteria for Testing Impact and Nonimpact Resistance Building Envelope Components Using Uniform Static Air Pressure*
- 2.2.9 *TAS 203: Criteria for Testing Products Subject to Cyclic Wind Pressure Loading*

3 PERFORMANCE EVALUATION

- 3.1 Vitrabond® was evaluated to determine the following properties for use as an exterior wall covering in accordance with IBC Section 1406⁶ for Types I-IV construction:
 - 3.1.1 Structural design in accordance with IBC Section 1406.4⁷
 - 3.1.2 Weather resistance in accordance with IBC Section 1402.2⁸
 - 3.1.3 Durability in accordance with IBC Section 1406.7⁹
 - 3.1.4 NFPA 285 full scale tests in accordance with IBC Section 1406.10.4¹⁰
 - 3.1.5 Thermal barrier requirement in accordance with IBC Section 1406.10.2¹¹
 - 3.1.6 Surface burning characteristics in accordance with IBC Section 1406.10.1¹²
- 3.2 Vitrabond® was tested in accordance with *TAS 201*, *TAS 202*, and *TAS 203* to determine its suitability for use in the High Velocity Hurricane Zone (HVHZ) in accordance with the FBC-B Section 1626, FBC-B Section 1620, and FBC-B Section 1625 respectively.
- 3.3 Use of Vitrabond® for interior applications is outside the scope of this TER.
- 3.4 Use of Vitrabond® as part of a fire-rated wall assembly is outside the scope of this TER.
- 3.5 Any code compliance issues not specifically addressed in this section are outside the scope of this TER.
- 3.6 Any engineering evaluation was performed on the dates provided in this TER and within DrJ's professional scope of work.

4 PRODUCT DESCRIPTION AND MATERIALS

- 4.1 Vitrabond® is a lightweight Metal Composite Material (MCM) cladding panel manufactured in a continuous coil process by fusing metal skins to a composite (polyethylene) core (Figure 1).

⁶ 2015 IBC Section 1407

⁷ 2015 IBC Section 1407.4

⁸ 2015 IBC Section 1403.2

⁹ 2015 IBC Section 1407.7

¹⁰ 2015 IBC Section 1407.10.4

¹¹ 2015 IBC Section 1407.10.2

¹² 2015 IBC Section 1407.10.1

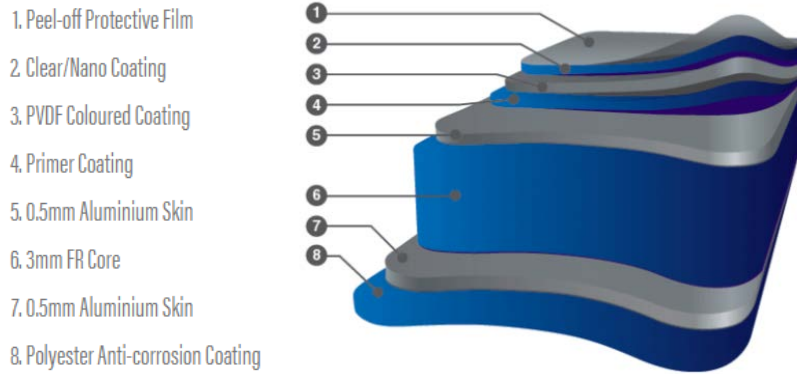


FIGURE 1. TYPICAL COMPOSITION OF VITRABOND® MCM PANEL

4.2 *Material Availability*

- 4.2.1 Thickness: 0.188" (3 mm), 0.157" (4 mm), and 0.236" (6 mm)
- 4.2.2 Width: Standard: 39.4" (100 cm), 49.2" (125 cm), and 62" (157 cm)
- 4.2.3 Length: 122" (310 cm), 146" (371 cm), and 196" (498 cm)
- 4.2.4 Custom sizes are available in widths between 36" and 80" and in lengths up to 256".
- 4.2.5 See fairview-na.com for available finishes

4.3 The Vitrabond® panels are installed using the [Arrowhead® panel system](#). The Arrowhead® panel system is outside the scope of this TER.

5 APPLICATIONS

5.1 *General*

- 5.1.1 Vitrabond® panels are used as an exterior wall covering in accordance with [IBC Section 1406](#).¹³ The panels are installed over wood-framed, steel-framed, masonry, or concrete walls capable of supporting the imposed loads in accordance with [IBC Section 1609](#).
- 5.1.2 Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with accepted engineering procedures, experience, and technical judgment.

5.2 *Structural Design*

- 5.2.1 Walls incorporating Vitrabond® shall be designed to resist wind loads per [IBC Chapter 16](#) and [ASCE 7 Chapter 30](#).
- 5.2.2 Vitrabond® panels are capable of resisting the loads shown in Table 1.

TABLE 1. VITRABOND® ALLOWABLE WIND LOAD RESISTANCE AND WIND SPEED

Product	Allowable Load ³ psf (kN/m ²)	Wind Speed ⁴ mph (km/h)
Vitrabond®	50 (2.4)	180 (290)

SI: 1 in = 25.4 mm, 1 psf = 0.0479 kN/m², 1 mph = 1.61 km/h

1. Tested in accordance with [ASTM E330](#)
2. Panels tested were 3' 11¹/₁₆" square.
3. Maximum allowable wind load are based on the average ultimate loads tested divided by 1.6.
4. Listed wind speed is V_{ult} per [ASCE 7-10](#) and [7-16](#) for Exposure B at h=30 ft.

¹³ [2015 IBC Section 1407](#)

5.3 High Velocity Hurricane Zone (HVHZ) – Wind and Impact Testing

- 5.3.1 Vitrabond® wall panels were tested in accordance with *TAS 201* and meet the missile impact test criteria for wind-borne debris in HVHZ in accordance with *FBC-B Section 1626*.
 - 5.3.1.1 Vitrabond® wall panels resisted the impact of the 9 lb. (40 N) missile propelled at 50 ft/s (15.2 m/s) without penetration, rupture, or opening of the panel.
- 5.3.2 Vitrabond® wall panels were tested in accordance with *TAS 202* and meet the uniform static air pressure criteria for HVHZ in accordance with *FBC-B Section 1620*.
 - 5.3.2.1 Vitrabond® wall panels resisted a static positive design pressure of 100 psf and a negative design pressure of -150 psf.
- 5.3.3 Vitrabond® wall panels were tested in accordance with *TAS 203* and meet the fatigue load test criteria for HVHZ in accordance with *FBC-B Section 1625*.
 - 5.3.3.1 The panels resisted cyclic loading per the *FBC-B Table 1625.4* for a design load (p_{max}) of +100/-150 psf.

5.4 Weather Resistance

- 5.4.1 Vitrabond® maybe be used in exterior cladding assemblies in accordance with *IBC Section 1402.2*¹⁴ where a water-resistive barrier (WRB) is properly installed behind the Vitrabond® per *IBC Section 1403.2*.¹⁵
- 5.4.2 The exterior wall envelope shall be properly flashed per *IBC Section 1404.4*¹⁶ prior to the installation of Vitrabond® using the Arrowhead® panel system.

5.5 Fire-resistance

- 5.5.1 Vitrabond® has not been evaluated for use as part of a fire-rated wall assembly.

5.6 Surface Burning Characteristics

TABLE 2. SURFACE BURNING CHARACTERISTICS OF VITRABOND®

Structural Sheathing Product	Flame Spread	Smoke Developed
Vitrabond®	≤ 25	≤ 450
1. Tested in accordance with <i>ASTM E84</i>		

5.7 Full Scale Tests

- 5.7.1 Vitrabond® was tested to assess performance of vertical and lateral fire propagation in accordance with *NFPA 285* and *IBC Section 1406.10.4*.¹⁷
- 5.7.2 Engineering analysis has been conducted to assess substitution of other products within the approved wall assemblies.
- 5.7.3 The wall assemblies in Table 3 are approved for use in buildings of Type I-IV construction.

¹⁴ 2015 IBC Section 1403.2

¹⁵ 2015 IBC Section 1404.2

¹⁶ 2015 IBC Section 1405.4

¹⁷ 2015 IBC Section 1407.10.4

TABLE 3. APPROVED NFPA 285 WALL ASSEMBLIES

Wall Component	Materials
<p>Base Wall Use either 1, 2, or 3</p> <p>Note: May use 4 optionally when FRTW framing is allowed by code.</p>	<ol style="list-style-type: none"> 1. Cast Concrete Walls 2. CMU Concrete Walls 3. 20 GA. (min.) 3⁵/₈" (min.) steel studs spaced 24" o.c. (max.) <ol style="list-style-type: none"> a. 5/8" type X Gypsum Wallboard Interior b. Bracing as required by code. 4. Where allowed in Types I, II, III, or IV construction, FRTW (Fire-retardant-treated wood) studs complying with <i>IBC</i> Section 2303.2, min. nominal 2x4 dimension spaced 24" o.c. (max.) <ol style="list-style-type: none"> a. 5/8" type X Gypsum Wallboard Interior b. Bracing as required by code.
<p>Fire-Stopping in Stud Cavity at floor lines As an option, use Item 2 with FRTW framing</p>	<ol style="list-style-type: none"> 1. 4 pcf mineral wool installed with z-clips 2. FRTW fire blocking at floor line in accordance with applicable code requirements
<p>Cavity Insulation Use any Item 1 – 15</p> <p>Note: Items 5 – 15 are SPF foam type and may only be used with 5/8" exterior gypsum sheathing</p> <p>EZ FLO may be used inside the box headers and jamb studs for NFPA 285 assemblies requiring SPF in stud cavities.</p>	<ol style="list-style-type: none"> 1. None 2. Any noncombustible insulation per ASTM E136 3. Any Mineral Fiber (Board type Class A ASTM E84 faced or unfaced) 4. Any Fiberglass (Batt Type Class A ASTM E84 faced or unfaced) 5. 5 1/2" (max.) Icynene LD-C-50 spray foam in 6" deep studs (max.) full fill without an air gap. Use with 5/8" exterior sheathing. 6. 5 1/2" (max.) Icynene MD-C-200 2 pcf spray foam in 6" deep studs (max.) full fill without an air gap. Use with 5/8" exterior sheathing. 7. 5 1/2" (max.) Icynene MD-R-210 2 pcf spary foam in 6" deep studs (max.) full fill without an air gap. Use with 5/8" exterior sheathing. 8. SWD Urethane QS 112 2 pcf spray foam in 6" deep studs (max.) partial fill with a maximum 2 1/2" air gap or full fill. Use with 5/8" exterior sheathing. 9. Gaco Western 183M (3 1/2" max.). Use with 5/8" exterior sheathing. 10. Gaco Western F1850 (3 1/2" max.). Use with 5/8" exterior sheathing. 11. Demilec Sealection 500 (3 5/8" max.). Use with 5/8" exterior sheathing. 12. Demilec HeatLok Soy 200 Plus (3.4" max.). Use with 5/8" exterior sheathing. 13. Bayer Bayseal (3" max.). Use with 5/8" exterior sheathing. 14. Lapolla FoamLok FL 2000 (3" max.). Use with 5/8" exterior sheathing. 15. BASF SprayTite 81206 or WallTite (US & US-N) (3 5/8" max.). Use with 5/8" exterior sheathing.
<p>Exterior Sheathing Use 1, 2, or 3</p>	<ol style="list-style-type: none"> 1. 1/2" or thicker exterior gypsum sheathing 2. 1/2" (min.) FRTW structural panels complying with <i>IBC</i> Section 2303.2 and installed in accordance with code allowances for Types I, II, III, or IV construction 3. None (only with 3" max. Rmax exterior insulation) <p>Note: exterior FRTW sheathing or gypsum board is optional for Base Walls 1 and 2. When SPF is used, 5/8" exterior gypsum sheathing must be used.</p>

Wall Component	Materials
<p>Weather-Resistive Barrier Applied to Exterior Sheathing or Base Wall Surface (under the exterior insulation) Select option 1 or 2 installed per manufacturer's installation instructions.</p> <p>Note: when using exterior sheathing, option 2 (no exterior sheathing) items 2 a-d may be applied directly to studs.</p> <p>NLA = No Longer Available. Replace with Spraywrap MVP</p>	<ol style="list-style-type: none"> 1. None 2. Any WRB tested in accordance with ASTM E1354 (at a minimum of 20 kW/m² heat flux) and shown by analysis to be less flammable (improved Tign, Pk. HRR) than the baseline WRB or exterior insulation foam core. The following WRB products are allowed (item t. based on NFPA 285): <ol style="list-style-type: none"> a. Pactiv Green Guard®Max Building Wrap b. Dupont Tyvek® (Various per ESR 2375) c. DOW WeatherMate™ d. DOW WeatherMate™ Plus e. Carlisle (CCW) Fire Resist 705FR-A f. Carlisle CCW Fire Resist Barritech NP g. Carlisle CCW Fire Resist Barritech VP h. BASF Enershield HP i. BASF Enershield I j. Henry Air Bloc 31MR k. Henry EnviroCap l. Henry Air Bloc 33MR m. Henry Air Bloc 21 FR n. Henry VP 160 o. Henry Air Bloc 17 p. Henry BlueSkin SA q. Henry FoilSkin r. Henry MetalClad s. Henry 32MR t. Soprema Stick VP or Soprasolin HD u. Soprema 1100T or Sopraseal Xpress G v. Prosoco R-Guard Spray Wrap (NLA) w. Prosoco R-Guard MVP (NLA) x. Prosoco Spraywrap MVP y. Prosoco R-Guard VB z. Prosoco R-Guard Cat 5 aa. Vaproshield Revealshield SA bb. Vaproshield Wrapshield SA cc. Pecora XL-PermULTRA VP (10 mil DFT) dd. W.R. Grace PAB NPL 10 ee. W.R. Grace PAB VPL ff. W.R. Grace PAB VPL LT gg. W.R. Grace PAB VPS hh. W.R. Grace PAB AWM ii. W.R. Grace PAB VPL 50 jj. Dryvit Backstop NT kk. WR Meadows Air-Shield LMP (Gray) ll. WR Meadows Air-Shield LMP (Black) mm. WR Meadows Air-Shield TMP nn. WR Meadows Air-Shield LSR oo. Sika SikaGard 530 <p>Special case – when exterior insulation #7 is used (2", 4 pcf mineral wool – min.) over the WRB, any WRB can be used on the base wall surface (under the mineral wool).</p>

Wall Component	Materials
<p>Exterior Insulation Use any Item 1 – 7</p> <p>IMPORTANT – when used no exterior sheathing, the maximum allowable Rmax insulation thickness is 3”.</p>	<ol style="list-style-type: none"> 1. 4½” (max. consisting of a single panel or multiple thinner panels) Rmax TSX-8500 2. 4½” (max. consisting of a single panel or multiple thinner panels) Rmax ECOMAXci 3. 4½” (max. consisting of a single panel or multiple thinner panels) Rmax TSX-8510 4. 1” thick (min.), 4 pcf density (min.) unfaced mineral wool meeting ASTM E136 as noncombustible 5. None [only with the WRB list below (See XXXXX for WRB over insulation) with the WRB applied direct to base wall surface] 6. 1” thick (min.), 4 pcf density (min.) unfaced mineral wool meeting ASTM E136 as noncombustible 7. 2” thick (min.), 4 pcf density (minimum) unfaced mineral wool that meets ASTM E136 (for use with any WRB under the mineral wool).

Wall Component	Materials
<p>Weather-Resistive Barrier Applied over Exterior Insulation (or FRTW) Use any item 2) a-w for claddings 1-6 with non-open joint installation technique, or any item 1) a-n for all approved claddings 1-13 below.</p> <p>Note: Exterior WRB items 1 b-d are not traditional WRB products but are insulation panel joint tapes. The insulation panel joints shall be staggered. These tapes are listed to allow use in both categories 1-6 OR 1-13.</p> <p>NLA = No longer available. Replaced with Spraywrap MVP</p>	<ol style="list-style-type: none"> 1. For use with all claddings <ol style="list-style-type: none"> a. None b. 6 in. (max.) Venture Tape CW over insulation joints c. 6 in. (max.) Rmax R-SEAL 3000 over insulation joints d. 6 in. (max.) asphalt or butyl based tape, or liquid flashing over insulation joints e. Pactiv Green Guard®Max Building Wrap f. Dupont Tyvek® (Various per 2375) g. Dow Weathermate™ h. Dow Weathermate™ Plus i. Henry FoilSkin j. Henry MetalClad k. Prosoco Spraywrap MVP l. Soprema Soprasolin HD m. Carlisle (CCW) Fire Resist 705FR-A n. W.R. Grace PAB AWM 2. For use with cladding options 1-6 (Brick Equivalent) with non-open joint installation techniques (ex. shiplap, etc.) <ol style="list-style-type: none"> a. Henry Air Bloc 31MR b. Henry Envirocap c. Henry Air Bloc 33MR d. Henry Air Bloc 21 FR e. Henry Air Bloc 17 f. Soprema Stick VP g. Carlisle (CCW) Fire Resist Barritech NP h. Carlisle (CCW) Fire Resist Barritech VP i. Prosoco R-Guard Spray Wrap (NLA) j. Prosoco R-Guard MVP (NLA) k. Prosoco R-Guard VB l. Prosoco R-Guard Cat 5 m. Vaproshield Revealshield SA n. Vaproshield Wrapshield SA o. Pecora XL-PermULTRA VP (10 mil DFT) p. W.R. Grace PAB VPL q. W.R. Grace PAB VPL LT r. W.R. Grace PAB VPS s. Dryvit Backstop NT t. WR Meadows Air-Shield LMP (Gray) u. WR Meadows Air-Shield LMP (Black) v. WR Meadows Air-Shield TMP w. WR Meadows Air-Shield LSR
<p>Exterior Cladding ACM with maximum 2½" air gap between panel and insulation.</p>	<ol style="list-style-type: none"> 1. Fairview 4 mm Vitrabond® FR ACM

SI: 1 in = 25.4 mm, 1 lb = 4.45 N, 1 lb/ft = 0.0146 kN/m, 1 psf = 0.0479 kN/m², 1 psi = 0.00689 MPa, 1 mph = 1.61 km/h

1. The assembly combinations created herein and the various substitutions of products are based on testing and professional thermal engineering analysis by Priest & Associates Consulting, LLC.
2. All WRBs must be installed at recommended application rates and per the manufacturer's installation instructions. Window headers for all assemblies shall incorporate 0.08" (min.) aluminum flashing to cover air gaps between the exterior insulation and exterior veneer. All fenestrations and penetrations shall be flashed in accordance with the applicable code using asphalt, acrylic, or butyl based flashing tape, liquid flashing, or R-SEAL 6000 polyethylene tape up to 12" maximum width.

6 INSTALLATION

- 6.1 Installation shall comply with the manufacturer's installation instructions and this TER. In the event of a conflict between the manufacturer's installation instructions and this TER, the more restrictive shall govern.
- 6.2 Vitrabond® MCM panels must be installed using the Arrowhead® panel system according to the manufacturer's installation instructions.
- 6.3 Component parts which are observed to be defective in any way, including warped, bowed, dented, abraded, and broken members, must not be installed. Members or parts which have been damaged during installation or thereafter before substantial completion of the project shall be removed and replaced.
- 6.4 No cutting, trimming, welding, or brazing of components which could in any way damage the finish, decrease the strength or result in visual imperfections or failure in performance shall be executed during installation. Components which require alteration shall be returned to the fabricator. If necessary, replace with new components.
- 6.5 *Tolerances*
 - 6.5.1 All components shall be installed visually flat, level, true to line with uniform joints and reveals.
 - 6.5.2 Maximum deviation for vertical members is $\frac{1}{8}$ " over 18' and $\frac{1}{4}$ " over 40'.
 - 6.5.3 Maximum deviation for horizontal members is $\frac{1}{8}$ " over 30'.
- 6.6 Anchorage of the cladding substructure to the building structure shall be by approved methods in strict accordance with the specified and approved shop and/or installation drawings. Supporting brackets shall be designed so as to provide three-dimensional adjustments and accurate location of wall components
- 6.7 All joints between panels shall be set at widths as shown on the drawings with tolerance of $\pm \frac{1}{16}$ ". No two adjacent or perpendicular joints shall have a difference in width of more than $\frac{1}{8}$ ". In addition, the tolerance between adjacent panels across any joint shall not exceed $\frac{1}{16}$ " locally.
- 6.8 *Repairs*
 - 6.8.1 Repair panels with minor damage so those repairs are not discernable at a distance of 120" (10 ft or 3.1 m).
 - 6.8.2 Remove and replace panels damaged beyond repair per Panel System's replacement instructions.
 - 6.8.3 Remove protective film immediately after installation of panels to avoid prolonged exposure to sunlight.
 - 6.8.4 Remove from project site damaged panels, protective film, and other debris attributable to work of this section.
- 6.9 *Protection*
 - 6.9.1 Final cleaning: when installation is complete, remove extraneous matter and marks off the façade components in a manner which leaves the completed installation free of any streaking, spotting, or non-uniform appearance.
 - 6.9.2 Protection: protect as necessary and leave the finished work undamaged on completion.
 - 6.9.3 Panels shall be stored in well-ventilated space and out of direct sunlight.

7 TEST ENGINEERING SUBSTANTIATING DATA

- 7.1 Test report for wind load resistance in accordance with *ASTM E330* by Intertek.
- 7.2 Test reports for use in high velocity hurricane zones per *TAS 201, 202, and 203* by Molimo.
- 7.3 Test report and data for determining weather resistance in accordance with *AAMA 2605* by Korea Testing & Research Institute (KTR).
- 7.4 Test reports and data for determining durability per *ASTM D1781* by Intertek and *AAMA 2605* by Korea Testing & Research Institute (KTR).
- 7.5 Test reports and data for determining surface burning characteristics in accordance with *ASTM E84* by Intertek.
- 7.6 Test reports and data for determining full scale fire resistance according to *NFPA 285* by Architectural Testing.

- 7.7 Test reports and engineering analysis for *NFPA 285* approved wall assemblies by Priest & Associates Consulting, LLC.
- 7.8 Fairview Architectural Quality Control Manual
- 7.9 Some information contained herein is the result of testing and/or data analysis by other sources which conform to *IBC Section 1703* and relevant professional engineering law. DrJ relies on accurate data from these sources to perform engineering analysis. DrJ has reviewed and found the data provided by other professional sources to be credible.
- 7.10 Where appropriate, DrJ's analysis is based on design values that have been codified into law through codes and standards (e.g., *IBC*, *IRC*, *NDS®*, and *SDPWS*). This includes review of code provisions and any related test data that aids in comparative analysis or provides support for equivalency to an intended end-use application. Where the accuracy of design values provided herein is reliant upon the published properties of commodity materials (e.g., lumber, steel, and concrete), DrJ relies upon the grade mark, stamp, and/or design values provided by raw material supplier to be accurate and conforming to the mechanical properties defined in the relevant material standard.

8 FINDINGS

- 8.1 When used and installed in accordance with this TER and the manufacturer's installation instructions, the product(s) listed in Section 1.1 are approved for the following:
 - 8.1.1 Use as a code-compliant MCM in exterior applications of Type I-IV construction.
- 8.2 *IBC Section 104.11* (*IRC Section R104.11* and *IFC Section 104.9* are similar) states:

104.11 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material, design or method of construction shall be *approved* where the *building official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code...Where the alternative material, design or method of construction is not *approved*, the *building official* shall respond in writing, stating the reasons the alternative was not *approved*.
- 8.3 This product has been evaluated in the context of the codes listed in Section 2 and is compliant with all known state and local building codes. Where there are known variations in state or local codes applicable to this evaluation, they are listed here.
 - 8.3.1 No known variations

9 CONDITIONS OF USE

- 9.1 The Vitrabond® described in this TER comply with, or are a code compliant alternative material as specified in the codes listed in Section 2, subject to the following conditions:
 - 9.1.1 Vitrabond® panels shall be separated from the interior of a building by an approved thermal barrier consisting of 1/2" (12.7 mm) gypsum wallboard or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of *NFPA 275*.
 - 9.1.2 Where required by the jurisdiction in which the project is to be constructed, this TER and the installation instructions shall be submitted at the time of permit application.
 - 9.1.3 Materials shall be stored in enclosed spaces, above ground, under protective covers. Extreme care shall be taken to avoid contact with moisture, condensation, or materials which might cause staining, such as lime, cement, fresh concrete, or chemicals.
 - 9.1.4 Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature condition recommended by the manufacturer/fabricator.
 - 9.1.4.1 Store panels in well-ventilated space out of direct sunlight.

- 9.1.4.2 Protect panels from moisture and condensation with tarpaulins or other suitably ventilated weather tight covering.
- 9.1.4.3 Slope panels to insure positive drainage and prevent water accumulation.
- 9.1.4.4 Do not store panels in any space where ambient temperatures can exceed 120°F (49°C).
- 9.1.5 Avoid contact with any other material that might cause staining, denting, scratching, or other surface damage.
- 9.1.6 To prevent adhesive transfer to the finish, Exterior Aluminum/Composite Wall Panels must not be stored for prolonged periods of time, be stored in direct sunlight or be subjected to high heat prior to installation.
- 9.2 Where required by the building official, also known as the authority having jurisdiction (AHJ) in which the project is to be constructed, this TER and the installation instructions shall be submitted at the time of permit application.
- 9.3 Any generally accepted engineering calculations needed to show compliance with this TER shall be submitted to the AHJ for review and approval.
- 9.4 Design loads shall be determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed and/or by the Building Designer (e.g., owner or registered design professional).
- 9.5 At a minimum, this product shall be installed per Section 6 of this TER.
- 9.6 This product is manufactured under a third-party quality control program in accordance with IBC Section 104.4 and 110.4 and IRC Section R104.4 and R109.2.
- 9.7 The actual design, suitability, and use of this TER, for any particular building, is the responsibility of the owner or the owner's authorized agent. Therefore, the TER shall be reviewed for code compliance by the building official for acceptance.
- 9.8 The use of this TER is dependent on the manufacturer's in-plant QC, the ISO/IEC 17020 third-party quality assurance program and procedures, proper installation per the manufacturer's instructions, the building official's inspection, and any other code requirements that may apply to demonstrate and verify compliance with the applicable building code.

10 IDENTIFICATION

- 10.1 The product(s) listed in Section 1.1 are identified by a label on the board or packaging material bearing the manufacturer's name, product name, TER number, and other information to confirm code compliance.
- 10.2 Additional technical information can be found at fairview-na.com.

11 REVIEW SCHEDULE

- 11.1 This TER is subject to periodic review and revision. For the most recent version of this TER, visit drjcertification.org.
- 11.2 For information on the current status of this TER, contact [DrJ Certification](#).