

# Technical Evaluation Report™

**TER 1809-01**

Vitrabond®

**Fairview Architectural**

**Product:**

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

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COMPANY  
INFORMATION:

ADDITIONAL  
LISTEES:

Fairview Architectural  
75 Peters Rd  
Bloomfield, CT 06002-1332

P: 860-242-2711

[fairview-na.com](http://fairview-na.com)

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 Innovative Product Evaluated<sup>1,2</sup>

1.1 Vitrabond® Metal Composite Material (MCM)

## 2 Applicable Codes and Standards<sup>3,4</sup>

### 2.1 Codes

- 2.1.1 IBC—15, 18, 21: International Building Code®
- 2.1.2 IRC—15, 18, 21: International Residential Code®
- 2.1.3 FBC-B—17, 20: Florida Building Code – Building<sup>5</sup>
- 2.1.4 FBC-R—17, 20: Florida Building Code – Residential<sup>5</sup>
- 2.1.5 CBC—16, 19: California Building Code<sup>6</sup>
- 2.1.6 CRC—16, 19: California Residential Code<sup>6</sup>
- 2.1.7 LABC—20: City of Los Angeles Building Code<sup>7</sup>
- 2.1.8 LARC—20: City of Los Angeles Residential Code<sup>7</sup>

<sup>1</sup> For more information, visit [drjcertification.org](http://drjcertification.org) or call us at 608-310-6748.

<sup>2</sup> 24 CFR 3280.2 "Listed or certified" means included in a list published by a nationally recognized testing laboratory, inspection agency, or other organization concerned with product evaluation that maintains periodic inspection of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner. Listed. Equipment, materials, products or services included in a list published by an organization acceptable to the building official and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose Listing states either that the equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose. Labeled. Equipment, materials or products to which has been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, approved agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.

<sup>3</sup> This Listing is a code defined research report, which is also known as a duly authenticated report, provided by an approved agency (see IBC Section 1703.1) and/or an approved source (see IBC Section 1703.4.2). An approved agency is "approved" as an approved agency when it is ANAB accredited. DrJ Engineering, LLC (DrJ) is listed in the ANAB directory. A professional engineer is "approved" as an approved source when that professional engineer is properly licensed to transact engineering commerce. Where sealed by a professional engineer, it is also a duly authenticated report certified by an approved source. (i.e., Registered Design Professional). DrJ is an ANAB accredited product certification body.

<sup>4</sup> Unless otherwise noted, all references in this Listing are from the 2021 version of the codes and the standards referenced therein. This material, product, design, service and/or method of construction also complies with the 2000-2021 versions of the referenced codes and the standards referenced therein.

<sup>5</sup> All references to the FBC-B and FBC-R are the same as the 2018 IBC unless otherwise noted in the supplement at the end of this document.

<sup>6</sup> All references to the CBC and CRC are the same as the 2018 IBC unless otherwise noted in the supplement at the end of this document.

<sup>7</sup> All references to the LABC and LARC are the same as the 2018 IBC unless otherwise noted in the supplement at the end of this document.

## 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
- 2.2.4 ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials
- 2.2.5 ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
- 2.2.6 NFPA 285-12: Standard Fire Test Method for the Evaluation of Fire Propagation Characteristics of Exterior Nonload-bearing Wall Assemblies Containing Combustible Components<sup>8</sup>
- 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 Tests, testing, test reports, research reports, duly authenticated reports and related engineering evaluations are defined as intellectual property and/or trade secrets and protected by Defend Trade Secrets Act 2018 (DTSA).<sup>9</sup>
- 3.2 Testing and/or inspections conducted for this TER were performed at an ISO/IEC 17025 accredited testing laboratory,<sup>10</sup> an ISO/IEC 17020 accredited inspection body,<sup>11</sup> which are internationally recognized accreditations through International Accreditation Forum (IAF), and/or a licensed Registered Design Professional (RDP).
- 3.3 Vitrabond® was evaluated to determine the following properties for use as an exterior wall covering in accordance with IBC Section 1406<sup>12</sup> for Types I-IV construction:
  - 3.3.1 Structural design in accordance with IBC Section 1406.4<sup>13</sup>
  - 3.3.2 Weather resistance in accordance with IBC Section 1402.2<sup>14</sup>
  - 3.3.3 Durability in accordance with IBC Section 1406.7<sup>15</sup>
  - 3.3.4 NFPA 285 full scale tests in accordance with 2018 IBC Section 1406.10.4<sup>16</sup>

<sup>8</sup> References to NFPA 285-12 in this TER are code compliant through the 2018 version of the IBC.

<sup>9</sup> <https://www.law.cornell.edu/uscode/text/18/part-11/chapter-90>. As our professional duty to inform, please be aware that whoever, with intent to convert a trade secret (TS), that is related to a product or service used in or intended for use in interstate or foreign commerce, to the economic benefit of anyone other than the owner thereof, and intending or knowing that the offense will, injure any owner of that trade secret, knowingly without authorization copies, duplicates, sketches, draws, photographs, downloads, uploads, alters, destroys, photocopies, replicates, transmits, delivers, sends, mails, communicates, or conveys such information; shall be fined under this title or imprisoned not more than 10 years, or both. Any organization that commits any offense described in subsection (a) shall be fined not more than the greater of \$5,000,000 or 3 times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided. The federal government and each state have a public records act. As the National Society of Professional Engineers states, "Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve." Therefore, to protect intellectual property (IP) and TS, and to achieve compliance with public records and trade secret legislation, requires approval through the use of Listings, certified reports, technical evaluation reports, duly authenticated reports and/or research reports prepared by approved agencies and/or approved sources.

<sup>10</sup> Internationally recognized accreditations are performed by members of the International Accreditation Forum (IAF). Accreditation Body and Regional Accreditation Group Members of IAF are admitted to the IAF MLA only after a stringent evaluation of their operations by a peer evaluation team, which is charged to ensure that the applicant complies fully with both international standards and IAF requirements. Once an accreditation body is a signatory of the IAF MLA, it is required to recognize certificates and validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope.

<sup>11</sup> Ibid.

<sup>12</sup> 2015 IBC Section 1407

<sup>13</sup> 2015 IBC Section 1407.4

<sup>14</sup> 2015 IBC Section 1403.2

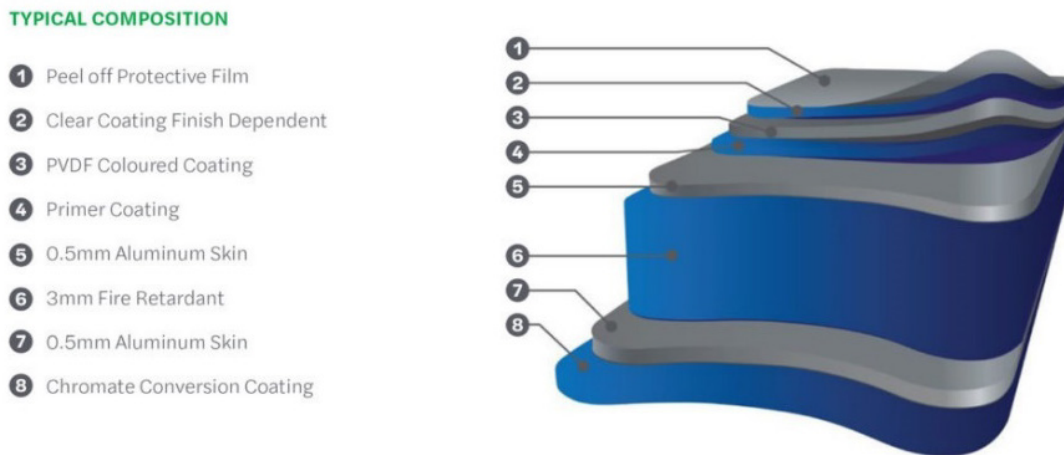
<sup>15</sup> 2015 IBC Section 1407.7

<sup>16</sup> 2015 IBC Section 1407.10.4

- 3.3.5 Thermal barrier requirement in accordance with [IBC Section 1406.10.2](#)<sup>17</sup>
- 3.3.6 Surface burning characteristics in accordance with [IBC Section 1406.10.1](#)<sup>18</sup>
- 3.4 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.
- 3.5 Use of Vitrabond® for interior applications is outside the scope of this TER.
- 3.6 Use of Vitrabond® as part of a fire-rated wall assembly is outside the scope of this TER.
- 3.7 Any building code and/or accepted engineering evaluations (i.e. research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ Engineering, LLC (DrJ), an [ISO/IEC 17065 accredited certification body](#) and a professional engineering company operated by RDPs / [approved sources](#). DrJ is qualified<sup>19</sup> to practice product and code compliance services within its scope of accreditation and engineering expertise, respectively.
- 3.8 Engineering evaluations are conducted with DrJ's ANAB [accredited ICS code scope](#), which are also its areas of professional engineering competence.
- 3.9 Any regulation specific issues not addressed in this section are outside the scope of this TER.

#### 4 Product Description and Materials

4.1 The product evaluated in this TER is shown in Figure 1.



**Figure 1.** Typical Composition of Vitrabond® MCM Panel

- 4.2 Vitrabond® is a lightweight Metal Composite Material (MCM) cladding panel manufactured in a continuous coil process by fusing metal skins to a composite core.
- 4.3 *Material Availability:*
  - 4.3.1 Thickness: 0.188" (3 mm), 0.157" (4 mm), and 0.236" (6 mm)
  - 4.3.2 Standard Width: 40" (102 cm), 49.2" (125 cm), and 62" (157 cm)
  - 4.3.3 Length: 122" (310 cm), 146" (371 cm), and 196" (498 cm)
  - 4.3.4 Custom sizes are available in widths between 36" and 80" and in lengths up to 256"

<sup>17</sup> [2015 IBC Section 1407.10.2](#)

<sup>18</sup> [2015 IBC Section 1407.10.1](#)

<sup>19</sup> Qualification is performed by a legislatively defined [Accreditation Body](#). [ANSI National Accreditation Board \(ANAB\)](#) is the largest independent accreditation body in North America and provides services in more than 75 countries. [DrJ](#) is an ANAB accredited [product certification body](#).

- 4.4 See [fairview-na.com](http://fairview-na.com) for available finishes.
- 4.5 The Vitrabond® panels are installed using the [Arrowhead® Panel System](#). The Arrowhead® panel system is outside the scope of this TER. For Arrowhead®, see [TER 2006-02](#).

## 5 Applications

### 5.1 General

- 5.1.1 Vitrabond® panels are used as exterior wall coverings in accordance with [IBC Section 1406](#).<sup>20</sup> 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](#).

### 5.2 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.** Allowable Wind Load Resistance and Wind Speed<sup>1</sup>

Product	Allowable Load <sup>3</sup> psf (kN/m <sup>2</sup> )	Allowable Components & Cladding Basic Wind Speed <sup>4</sup> mph (km/h)	
		ASCE 7-05 (V <sub>asd</sub> )	ASCE 7-10 and 7-16 (V <sub>ult</sub> )
Vitrabond®	50 (2.4)	145 (233)	185 (298)

SI: 1 in = 25.4 mm, 1 psf = 0.0479 kN/m<sup>2</sup>, 1 mph = 1.61 km/h

1. Tested in accordance with ASTM E330.
2. Panels tested were 3' 11 1/16" square.
3. Maximum allowable wind load are based on the average ultimate loads tested divided by 1.6.
4. Allowable wind speeds are based on the following: Mean roof height – 30', Exposure B, Zone 5, 10 sq. ft. effective wind area in accordance with ASCE 7-10 and 7-16.

### 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<sub>max</sub>) of +100/-150 psf.

<sup>20</sup> [2015 IBC Section 1407](#)

5.4 *Weather Resistance*

- 5.4.1 Vitrabond® may be used in exterior cladding assemblies in accordance with IBC Section 1402.2<sup>21</sup> where a water-resistive barrier (WRB) is properly installed behind the Vitrabond® per IBC Section 1403.2.<sup>22</sup>
- 5.4.2 The exterior wall envelope shall be flashed per IBC Section 1404.4<sup>23</sup> prior to the installation of Vitrabond® using the Arrowhead® panel system.

5.5 *Fire-Resistance*

- 5.5.1 Use as part of a fire-rated wall assembly is outside the scope of this evaluation.

5.6 *Surface Burning Characteristics*

- 5.6.1 The surface burn characteristics of Vitrabond® are provided in Table 2.

**Table 2.** Surface Burning Characteristics

Product	Flame Spread	Smoke Developed
Vitrabond®	≤ 25	≤ 450
1. Tested in accordance with ASTM E84		

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 2018 IBC Section 1406.10.4.<sup>24</sup>
- 5.7.2 Engineering analysis to assess substitution of other products within the approved wall assemblies has been conducted.
- 5.7.3 The wall assemblies in Table 3 and Table 4 are approved for use in buildings of Type I-IV construction.

<sup>21</sup> 2015 IBC Section 1403.2  
<sup>22</sup> 2015 IBC Section 1404.2  
<sup>23</sup> 2015 IBC Section 1405.4  
<sup>24</sup> 2015 IBC Section 1407.10.4

**Table 3.** Approved NFPA 285 Wall Assemblies for use with Rmax Exterior Insulation

Wall Component	Materials
<p><b>Base Wall</b> Use Item 1, 2, or 3</p> <p>Note: May use Item 4 optionally when FRTW framing is allowed by code</p>	<ol style="list-style-type: none"> <li>1. Cast Concrete Walls</li> <li>2. CMU Concrete Walls</li> <li>3. 20 ga. (min.) 3<sup>5</sup>/<sub>8</sub>" (min.) steel studs spaced 24" o.c. (max.)               <ol style="list-style-type: none"> <li>a. 5/8" Type X Gypsum Wallboard Interior</li> <li>b. Bracing as required by code.</li> </ol> </li> <li>4. Where allowed in Types I, II, III, or IV construction, FRTW (fire-retardant-treated wood) studs complying with IBC Section 2303.2, min. nominal 2x4 dimension spaced 24" o.c. (max.)               <ol style="list-style-type: none"> <li>a. 5/8" Type X Gypsum Wallboard Interior</li> <li>b. Bracing as required by code.</li> </ol> </li> </ol>
<p><b>Fire-Stopping in Stud Cavity at Floor Lines</b> As an option, use Item 2 with FRTW framing</p>	<ol style="list-style-type: none"> <li>1. 4 pcf mineral wool installed with z-clips</li> <li>2. FRTW fire blocking at floor line per applicable code requirements</li> </ol>
<p><b>Cavity Insulation</b> 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"> <li>1. None</li> <li>2. Any noncombustible insulation per ASTM E136</li> <li>3. Any Mineral Fiber (Board Type Class A ASTM E84 faced or unfaced)</li> <li>4. Any Fiberglass (Batt Type Class A ASTM E84 faced or unfaced)</li> <li>5. 5 1/2" (max.) Icynene LD-C-50 spray foam in 6" deep studs (max.) Use with 5/8" exterior sheathing.</li> <li>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.</li> <li>7. 5 1/2" (max.) Icynene MD-R-210 2 pcf spray foam in 6" deep studs (max.) full fill without an air gap. Use with 5/8" exterior sheathing.</li> <li>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.</li> <li>9. Gaco Western 183M (3 1/2" max.) Use with 5/8" exterior sheathing.</li> <li>10. Gaco Western F1850 (3 1/2" max.) Use with 5/8" exterior sheathing.</li> <li>11. Demilec Sealection 500 (3 5/8" max.) Use with 5/8" exterior sheathing.</li> <li>12. Demilec HeatLok Soy 200 Plus (3.4" max.) Use with 5/8" exterior sheathing.</li> <li>13. Bayer Bayseal (3" max.) Use with 5/8" exterior sheathing.</li> <li>14. Lapolla FoamLok FL 2000 (3" max.) Use with 5/8" exterior sheathing.</li> <li>15. BASF SprayTite 81206 or WallTite (US &amp; US-N) (3 5/8" max.) Use with 5/8" exterior sheathing.</li> </ol>
<p><b>Exterior Sheathing</b> Use Item 1, 2, or 3</p>	<ol style="list-style-type: none"> <li>1. 1/2" or thicker exterior gypsum sheathing</li> <li>2. 1/2" (min.) FRTW structural panels complying with IBC Section 2303.2 and installed in accordance with code allowances for Types I, II, III, or IV construction</li> <li>3. None (only with 3" max. Rmax exterior insulation)</li> </ol> <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><b>Water-Resistive Barrier Applied to Exterior Sheathing or Base Wall Surface (under the exterior insulation)</b>            Select Item 1 or 2 installed per manufacturer installation instructions.</p> <p>Note 1: 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"> <li>1. None</li> <li>2. Any WRB tested in accordance with ASTM E1354 (at a minimum of 20 kW/m<sup>2</sup> heat flux) and shown by analysis to be less flammable (improved T<sub>ign</sub>, 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"> <li>a. Pactiv Green Guard®Max Building Wrap</li> <li>b. Dupont Tyvek® (Various per ESR 2375)</li> <li>c. DOW WeatherMate™</li> <li>d. DOW WeatherMate™ Plus</li> <li>e. Carlisle (CCW) Fire Resist 705FR-A</li> <li>f. Carlisle CCW Fire Resist Barritech NP</li> <li>g. Carlisle CCW Fire Resist Barritech VP</li> <li>h. BASF Enershield HP</li> <li>i. BASF Enershield I</li> <li>j. Henry Air Bloc 31MR</li> <li>k. Henry EnviroCap</li> <li>l. Henry Air Bloc 33MR</li> <li>m. Henry Air Bloc 21 FR</li> <li>n. Henry VP 160</li> <li>o. Henry Air Bloc 17</li> <li>p. Henry BlueSkin SA</li> <li>q. Henry FoilSkin</li> <li>r. Henry MetalClad</li> <li>s. Henry 32MR</li> <li>t. Soprema Stick VP or Soprasolin HD</li> <li>u. Soprema 1100T or Soprseal Xpress G</li> <li>v. Prosoco R-Guard Spray Wrap (NLA)</li> <li>w. Prosoco R-Guard MVP (NLA)</li> <li>x. Prosoco Spraywrap MVP</li> <li>y. Prosoco R-Guard VB</li> <li>z. Prosoco R-Guard Cat 5</li> <li>aa. Vaproshield Revealshield SA</li> <li>bb. Vaproshield Wrapshield SA</li> <li>cc. Pecora XL-PermULTRA VP (10 mil DFT)</li> <li>dd. W.R. Grace PAB NPL 10</li> <li>ee. W.R. Grace PAB VPL</li> <li>ff. W.R. Grace PAB VPL LT</li> <li>gg. W.R. Grace PAB VPS</li> <li>hh. W.R. Grace PAB AWM</li> <li>ii. W.R. Grace PAB VPL 50</li> <li>jj. Dryvit Backstop NT</li> <li>kk. WR Meadows Air-Shield LMP (Gray)</li> <li>ll. WR Meadows Air-Shield LMP (Black)</li> <li>mm. WR Meadows Air-Shield TMP</li> <li>nn. WR Meadows Air-Shield LSR</li> <li>oo. Sika SikaGard 530</li> </ol> </li> </ol> <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><b>Exterior Insulation</b> Use any Item 1 – 7</p> <p>IMPORTANT – when using no exterior sheathing, the maximum allowable Rmax insulation thickness is 3".</p>	<ol style="list-style-type: none"> <li>1. 4½" (max. consisting of a single panel or multiple thinner panels) Rmax TSX-8500</li> <li>2. 4½" (max. consisting of a single panel or multiple thinner panels) Rmax ECOMAXci</li> <li>3. 4½" (max. consisting of a single panel or multiple thinner panels) Rmax TSX-8510</li> <li>4. 1" thick (min.), 4 pcf density (min.) unfaced mineral wool meeting ASTM E136 as noncombustible</li> <li>5. None (only with a WRB from the list below with the WRB applied direct to base wall surface)</li> <li>6. 1" thick (min.), 4 pcf density (min.) unfaced mineral wool meeting ASTM E136 as noncombustible</li> <li>7. 2" thick (min.), 4 pcf density (minimum) unfaced mineral wool that meets ASTM E136 (for use with any WRB under the mineral wool)</li> </ol>
<p><b>Water-Resistive Barrier Applied Over Exterior Insulation (or FRTW)</b> Use any item 1) a-n for cladding 1-6 with non-open joint installation technique, or any item 2) a-w 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>	<ol style="list-style-type: none"> <li>1. For use with all claddings               <ol style="list-style-type: none"> <li>a. None</li> <li>b. 6 in. (max.) Venture Tape CW over insulation joints</li> <li>c. 6 in. (max.) Rmax R-SEAL 3000 over insulation joints</li> <li>d. 6 in. (max.) asphalt or butyl based tape, or liquid flashing over insulation joints</li> <li>e. Pactiv Green Guard@Max Building Wrap</li> <li>f. Dupont Tyvek® (Various per 2375)</li> <li>g. Dow Weathermate™</li> <li>h. Dow Weathermate™ Plus</li> <li>i. Henry FoilSkin</li> <li>j. Henry MetalClad</li> <li>k. Prosoco Spraywrap MVP</li> <li>l. Soprema Soprasolin HD</li> <li>m. Carlisle (CCW) Fire Resist 705FR-A</li> <li>n. W.R. Grace PAB AWM</li> </ol> </li> </ol>
<p><b>Exterior Cladding</b> ACM with maximum 2½" air gap between panel and insulation</p>	<ol style="list-style-type: none"> <li>1. Fairview 4 mm Vitrabond® FR ACM</li> </ol>
<p>SI: 1 in = 25.4 mm</p> <ol style="list-style-type: none"> <li>2. The assembly combinations created herein are based on testing and professional thermal engineering analysis.</li> <li>3. All WRBs must be installed at recommended application rates and per the manufacturer 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.</li> </ol>	

**Table 4.** Approved NFPA 285 Wall Assemblies for use with Dupont Thermax™ Exterior Insulation

Wall Component	Materials
<b>Base Wall</b> Use Item 1, 2, 3, or 4	1. Cast Concrete Walls 2. CMU Concrete Walls 3. Standard Clay Brick Walls 4. 20 ga. (min.) 3 <sup>5</sup> / <sub>8</sub> " (min.) steel studs spaced 24" o.c. (max.) with lateral bracing every 4 ft. vertically a. 5/8" Type X Gypsum Wallboard Interior
<b>Fire-Stopping in Stud Cavity at Floor Lines</b>	1. 4 pcf mineral fiber insulation (mineral wool) installed with z-clips or equivalent
<b>Cavity Insulation</b> Use Item 1, 2, or 3	1. None 2. Full stud depth (max.) Dow Styrofoam Spray Polyurethane Foam CM2030, 2045, or 2060 complying with ESR-2670. Apply to the interior side of exterior sheathing. 3. Any Fiberglass Batt insulation (faced or unfaced) complying with the applicable code
<b>Exterior Sheathing</b> Use either Item 1 or 2	1. 1/2" Exterior Gypsum Sheathing 2. 5/8" Exterior Gypsum Sheathing
<b>Water-Resistive Barrier Applied Over Exterior Sheathing</b> Use either Item 1 or 2  Note: For use under exterior insulation only	1. None 2. Any of the following: a. WEATHERMATE™ - Dow Chemical (ESR-2862) b. WEATHERMATE™ Plus – Dow Chemical (ESR-3401) c. Tyvek® CommercialWrap® - DuPont (ESR-2375) d. Backstop® NT – Dryvit e. Barritech™ VP – Carlisle f. AIR-SHIELD™ LMP (black only) – W.R. Meadows g. Green Guard® Max Building Wrap – Pactiv h. Perm-A-Barrier® VPS – W.R. Grace  Note: All barriers to be installed in accordance with manufacturer installation instructions, the applicable ICC-ES evaluation report and the applicable code
<b>Exterior Insulation</b> Use any Item 1, 2, or 3	1. 5/8" (min.) to 3" (max.) DuPont Thermax Insulation 2. 1" thick (min.), 4 pcf density (min.) unfaced mineral wool meeting ASTM E136 as noncombustible 3. 2" thick (min.), 4 pcf density (min.) unfaced mineral wool that meets ASTM E136 (for use with any WRB under the mineral wool)  Note: Flashing tape to cover insulation joints and/or cladding ties and connections consisting of 4" (max.) Dow WEATHERMATE™ Flashing, or 4" (max.) asphalt or butyl based flashing tape.
<b>Window Perimeter Flashing</b>	1. 25 ga. Sheet Steel
<b>Exterior Cladding</b> ACM with maximum 1 3/4" air gap between panel and insulation	1. Fairview 4 mm Vitrabond® FR ACM
SI: 1 in = 25.4 mm 4. The assembly combinations created herein and the various substitutions of products are based on testing and professional thermal engineering analysis.	

5.8 Where the application falls outside of the performance evaluation, conditions of use and/or installation requirements set forth herein, alternative techniques shall be permitted in accordance with accepted engineering practice and experience. This includes but is not limited to the following areas of engineering: mechanics or materials, structural, building science, and fire science.

## 6 Installation

- 6.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this TER and the applicable building code.
- 6.2 In the event of a conflict between the manufacturer installation instructions and this TER, the more restrictive shall govern.
- 6.3 *Installation Procedure*
  - 6.3.1 Vitrabond® MCM panels must be installed using the Arrowhead® Panel System according to the manufacturer installation instructions.
  - 6.3.2 Component parts observed to be defective in any way, including warped, bowed, dented, abraded, and broken members, must not be installed. Members or parts that have been damaged during installation or thereafter before substantial completion of the project shall be removed and replaced.
  - 6.3.3 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.
  - 6.3.4 *Tolerances*
    - 6.3.4.1 All components shall be installed visually flat, level, true to line with uniform joints and reveals.
    - 6.3.4.2 Maximum deviation for vertical members is  $\frac{1}{8}$ " over 18' and  $\frac{1}{4}$ " over 40'.
    - 6.3.4.3 Maximum deviation for horizontal members is  $\frac{1}{8}$ " over 30'.
  - 6.3.5 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 to provide three-dimensional adjustments and accurate location of wall components.
  - 6.3.6 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.
  - 6.3.7 *Repairs*
    - 6.3.7.1 Repair panels with minor damage so those repairs are not discernable at a distance of 120" (10 ft. or 3.1 m).
    - 6.3.7.2 Remove and replace panels damaged beyond repair per Panel System's replacement instructions.
    - 6.3.7.3 Remove protective film immediately after installation of panels to avoid prolonged exposure to sunlight.
    - 6.3.7.4 Remove from project site damaged panels, protective film, and other debris attributable to work of this section.
  - 6.3.8 *Protection*
    - 6.3.8.1 Final cleaning: when installation is complete, remove extraneous matter and marks off the façade components in a manner that leaves the completed installation free of any streaking, spotting, or non-uniform appearance.
    - 6.3.8.2 Protection: protect as necessary and leave the finished work undamaged on completion.
    - 6.3.8.3 Panels shall be stored in well-ventilated space and out of direct sunlight.

## 7 Substantiating Data

- 7.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:
- 7.1.1 Wind load resistance testing in accordance with ASTM E330
  - 7.1.2 Wind and impact testing for use in a HVHZ in accordance with TAS 201, TAS 202, and TAS 203
  - 7.1.3 Weather resistance testing in accordance with AAMA 2605
  - 7.1.4 Durability testing in accordance with ASTM D1781 and AAMA 2605
  - 7.1.5 Surface burning characteristics testing in accordance with ASTM E84
  - 7.1.6 Full scale fire resistance testing and analysis in according to NFPA 285
- 7.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies (i.e., ANAB accredited agencies), approved sources (i.e., RDPs), and/or professional engineering regulations. Accuracy of external test data and resulting analysis is relied upon.
- 7.3 Where pertinent, testing and/or engineering analysis is based upon provisions that have been codified into law through state or local adoption of codes and standards. The developers of these codes and standards are responsible for the reliability of published content. DrJ's engineering practice may use a code-adopted provision as the control sample. A control sample versus a test sample establishes a product as being equivalent to the code-adopted provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.
- 7.4 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, Listings, certified reports, duly authenticated reports from approved agencies, and research reports prepared by approved agencies and/or approved sources provided by the suppliers of products, materials, designs, assemblies and/or methods of construction. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this TER, may be dependent upon published design properties by others.
- 7.5 Testing and engineering analysis: The strength, rigidity and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.<sup>25</sup>
- 7.6 Where additional condition of use and/or code compliance information is required, please search for Vitrabond® Metal Composite Material (MCM) on the DrJ Certification website.

## 8 Findings

- 8.1 As delineated in Section 3, Vitrabond® Metal Composite Material (MCM) has performance characteristics that were tested and/or meet pertinent standards and is suitable for use pursuant to its specified purpose.
- 8.2 When used and installed in accordance with this TER and the manufacturer installation instructions, Vitrabond® Metal Composite Material (MCM) shall be approved for the following applications:
- 8.2.1 Use as a code-compliant MCM in exterior applications of Type I-IV construction.
- 8.3 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Fairview Architectural.
- 8.4 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10<sup>26</sup> are similar) in pertinent part 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. 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.

<sup>25</sup> See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition.

<sup>26</sup> 2018 IFC Section 104.9

- 8.5 **Approved:**<sup>27</sup> Building codes require that the building official shall accept duly authenticated reports<sup>28</sup> or research reports<sup>29</sup> from approved agencies and/or approved sources (i.e., licensed RDP) with respect to the quality and manner of use of new products, materials, designs, services, assemblies, or methods of construction.
- 8.5.1 Acceptability of an approved agency, by a building official, is performed by verifying that the agency is accredited by a recognized accreditation body of the International Accreditation Forum (IAF).
- 8.5.2 Acceptability of a licensed RDP, by a building official, is performed by verifying that the RDP and/or their business entity is listed by the licensing board of the relevant jurisdiction.
- 8.5.3 Federal law, Title 18 US Code Section 242, requires that where the alternative product, material, service, design, assembly, and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved, as denial without written reason deprives a protected right to free and fair competition in the marketplace.
- 8.6 DrJ is an engineering company, employs RDPs and is an ISO/IEC 17065 ANAB-Accredited Product Certification Body – Accreditation #1131.
- 8.7 Through ANAB accreditation and the IAF Multilateral Agreements, this TER can be used to obtain product approval in any jurisdiction or country that has IAF MLA Members & Signatories to meet the Purpose of the MLA – “*certified once, accepted everywhere.*” IAF specifically says: “*Once an accreditation body is a signatory of the IAF MLA, it is required to recognise certificates and validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope.*”<sup>30</sup>

## 9 Conditions of Use

- 9.1 Material properties shall not fall outside the boundaries defined in Section 3.
- 9.2 As defined in Section 3, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.
- 9.3 Vitrabond® panels shall be separated from the interior of a building by an approved thermal barrier consisting of ½" (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 285.
- 9.4 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 that might cause staining, such as lime, cement, fresh concrete, or chemicals.
- 9.5 *Storage and Protection*
- 9.5.1 Store materials protected from exposure to harmful weather conditions and at temperature condition recommended by the manufacturer/fabricator.
- 9.5.2 Store panels in well-ventilated space out of direct sunlight.
- 9.5.3 Protect panels from moisture and condensation with tarpaulins or other suitably ventilated weathertight covering.
- 9.5.4 Slope panels to insure positive drainage and prevent water accumulation.
- 9.5.5 Do not store panels in any space where ambient temperatures can exceed 120°F (49°C).

<sup>27</sup> Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC Section 201.4 where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

<sup>28</sup> <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>

<sup>29</sup> <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1703.4.2>

<sup>30</sup> <https://iaf.nu/en/about-iaf-mla/#:~:text=required%20to%20recognise>

- 9.5.6 Avoid contact with any other material that might cause staining, denting, scratching, or other surface damage.
- 9.5.7 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.
- 9.6 When required by adopted legislation and enforced by the building official, also known as the authority having jurisdiction (AHJ) in which the project is to be constructed:
  - 9.6.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice, and, when prepared by an approved source, shall be approved when requirements of adopted legislation are met.
  - 9.6.2 This TER and the installation instructions shall be submitted at the time of permit application.
  - 9.6.3 This product has an internal quality control program and a third-party quality assurance program.
  - 9.6.4 At a minimum, this product shall be installed per Section 6 of this TER.
  - 9.6.5 The review of this TER, by the AHJ, shall be in compliance with IBC Section 104 and IBC Section 105.4.
  - 9.6.6 This product has an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.4, IBC Section 110.4, IBC Section 1703, IRC Section R104.4 and IRC Section R109.2.
  - 9.6.7 The application of this product in the context of this TER is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspection as required by IBC Section 110.3, IRC Section R109.2 and any other regulatory requirements that may apply.
- 9.7 The approval of this TER by the AHJ shall comply with IBC Section 1707.1, where legislation states in pertinent part, “*the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in Section 104.11”, all of IBC Section 104, and IBC Section 105.4.*
- 9.8 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 (i.e., owner or RDP).
- 9.9 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.



## 10 Identification

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

## 11 Review Schedule

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

## 12 Approved for Use Pursuant to US and International Legislation Defined in Appendix A

- 12.1 Vitrabond® Metal Composite Material (MCM) is included in this TER published by an approved agency that is concerned with evaluation of products or services, maintains periodic inspection of the production of listed materials or periodic evaluation of services, and whose TER Listing states either that the material, product, or service meets identified standards or has been tested and found suitable for a specified purpose. This TER meets the legislative intent and definition of being acceptable to the AHJ.

## Appendix A

### 1 Legislation that Authorizes AHJ Approval

- 1.1 **Fair Competition:** State legislatures have adopted Federal regulations for the examination and approval of building code referenced and alternative products, materials, designs, services, assemblies and/or methods of construction that:
  - 1.1.1 Advance Innovation,
  - 1.1.2 Promote competition so all businesses have the opportunity to compete on price and quality in an open market on a level playing field unhampered by anticompetitive constraints, and
  - 1.1.3 Benefit consumers through lower prices, better quality, and greater choice.
- 1.2 **Adopted Legislation:** The following local, state, and federal regulations affirmatively authorize Vitrabond® Metal Composite Material (MCM) to be approved by AHJs, delegates of building departments, and/or delegates of an agency of the federal government:
  - 1.2.1 Interstate commerce is governed by the Federal Department of Justice to encourage the use of innovative products, materials, designs, services, assemblies and/or methods of construction. The goal is to “protect economic freedom and opportunity by promoting free and fair competition in the marketplace.”
  - 1.2.2 Title 18 US Code Section 242 affirms and regulates the right of individuals and businesses to freely and fairly have new products, materials, designs, services, assemblies and/or methods of construction approved for use in commerce. Disapproval of alternatives shall be based upon non-conformance with respect to specific provisions of adopted legislation, and shall be provided in writing stating the reasons why the alternative was not approved, with reference to the specific legislation violated.
  - 1.2.3 The federal government and each state have a public records act. In addition, each state also has legislation that mimics the federal Defend Trade Secrets Act 2018 (DTSA).
    - 1.2.3.1 Compliance with public records and trade secret legislation requires approval through the use of listings, certified reports, Technical Evaluation Reports, duly authenticated reports and/or research reports prepared by approved agencies and/or approved sources.
  - 1.2.4 For new materials<sup>31</sup> that are not specifically provided for in any building code, the design strengths and permissible stresses shall be established by tests, where suitable load tests simulate the actual loads and conditions of application that occur.
  - 1.2.5 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design using accepted engineering practice.<sup>32</sup>
  - 1.2.6 The commerce of approved sources (i.e., registered PEs) is regulated by professional engineering legislation. Professional engineering commerce shall always be approved by AHJs, except where there is evidence, provided in writing, that specific legislation has been violated by an individual registered PE.
  - 1.2.7 The AHJ shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in IBC Section 104.11.<sup>33</sup>

<sup>31</sup> <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706.2>

<sup>32</sup> [IBC 2021, Section 1706.1 Conformance to Standards](#)

<sup>33</sup> [IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General](#)



- 1.3 **Approved<sup>34</sup> by Los Angeles:** The Los Angeles Municipal Code (LAMC) states in pertinent part that the provisions of LAMC are not intended to prevent the use of any material, device, or method of construction not specifically prescribed by LAMC. The Department shall use Part III, Recognized Standards in addition to Part II, Uniform Building Code Standards of Division 35, Article 1, Chapter IX of the LAMC in evaluation of products for approval where such standard exists for the product or the material and may use other approved standards, which apply. Whenever tests or certificates of any material or fabricated assembly are required by Chapter IX of the LAMC, such tests or certification shall be made by a testing agency approved by the Superintendent of Building to conduct such tests or provide such certifications. The testing agency shall publish the scope and limitation(s) of the listed material or fabricated assembly.<sup>35</sup> The Superintendent of Building roster of approved testing agencies is provided by the Los Angeles Department of Building and Safety (LADBS). The Center for Building Innovation (CBI) Certificate of Approval License is TA24945. Tests and certifications found in a CBI Listing are LAMC approved. In addition, the Superintendent of Building shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in the California Building Code (CBC) Section 1707.1.<sup>36</sup>
- 1.4 **Approved by Chicago:** The Municipal Code of Chicago (MCC) states in pertinent part that an Approved Agency is a Nationally Recognized Testing Laboratory (NRTL) acting within its recognized scope and/or a certification body accredited by the American National Standards Institute (ANSI) acting within its accredited scope. Construction materials and test procedures shall conform to the applicable standards listed in the MCC. Sufficient technical data shall be submitted to the building official to substantiate the proposed use of any product, material, service, design, assembly and/or method of construction not specifically provided for in the MCC. This technical data shall consist of research reports from approved sources (i.e., MCC defined Approved Agencies).
- 1.5 **Approved by New York City:** The NYC Building Code 2022 (NYCBC) states in pertinent part that an approved agency shall be deemed<sup>37</sup> an approved testing agency via ISO/IEC 17025 accreditation, an approved inspection agency via ISO/IEC 17020 accreditation, and an approved product evaluation agency via ISO/IEC 17065 accreditation. Accrediting agencies, other than federal agencies, must be members of an internationally recognized cooperation of laboratory and inspection accreditation bodies subject to a mutual recognition agreement<sup>38</sup> (i.e., ANAB, International Accreditation Forum (IAF), etc.).
- 1.6 **Approved by Florida:** Statewide approval of products, methods, or systems of construction shall be approved, without further evaluation, by 1) A certification mark or listing of an approved certification agency, 2) A test report from an approved testing laboratory, 3) A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, from an approved product evaluation entity; 4) A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a professional engineer or architect, licensed in Florida. For local product approval, products or systems of construction shall demonstrate compliance with the structural wind load requirements of the Florida Building Code (FBC) through one of the following methods; 1) A certification mark, listing, or label from a commission-approved certification agency indicating that the product complies with the code; 2) A test report from a commission-approved testing laboratory indicating that the product tested complies with the code; 3) A product-evaluation report based upon testing, comparative or rational analysis, or a combination thereof, from a commission-approved product evaluation entity which indicates that the product evaluated complies with the code; 4) A product-evaluation report or certification based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a Florida professional engineer or Florida registered architect, which indicates that the product complies with the code; 5) A statewide product approval issued by the Florida Building Commission. The Florida Department of Business and Professional Regulation (DBPR) website provides a listing of companies certified as a Product Evaluation Agency (i.e., EVLMiami 13692), a Product Certification Agency (i.e., CER10642), and as a Florida Registered Engineer (i.e., ANE13741).

<sup>34</sup> See Section 8 for the distilled building code definition of **Approved**

<sup>35</sup> Los Angeles Municipal Code, SEC. 98.0503. TESTING AGENCIES

<sup>36</sup> https://up.codes/viewer/california/ca-building-code-2022/chapter/17/special-inspections-and-tests#1707.1

<sup>37</sup> New York City, The Rules of the City of New York, § 101-07 Approved Agencies

<sup>38</sup> New York City, The Rules of the City of New York, § 101-07 Approved Agencies

- 1.7 **Approved by Miami-Dade County (i.e., Notice of Acceptance [NOA]):** A Florida statewide approval is an NOA. An NOA is a Florida local product approval. By Florida law, Miami-Dade County shall accept the statewide and local Florida Product Approval as provided for in Florida legislation [553.842](#) and [553.8425](#).
- 1.8 **Approved by New Jersey:** Pursuant to Building Code 2018 of New Jersey in [IBC Section 1707.1 General](#),<sup>39</sup> it states: “In the absence of approved rules or other approved standards, the building official shall accept duly authenticated reports from [approved agencies](#) in respect to the quality and manner of use of new materials or assemblies as provided for in the administrative provisions of the [Uniform Construction Code \(N.J.A.C. 5:23\)](#)”.<sup>40</sup> Furthermore N.J.A.C 5:23-3.7 states: Municipal approvals of alternative materials, equipment, or methods of construction. **(a) Approvals:** Alternative materials, equipment, or methods of construction shall be approved by the appropriate subcode official provided the proposed design is satisfactory and that the materials, equipment, or methods of construction are suitable for the intended use and are at least the equivalent in quality, strength, effectiveness, fire resistance, durability and safety of those conforming with the requirements of the regulations.
1. A field evaluation label and report or letter issued by a nationally recognized testing laboratory verifying that the specific material, equipment, or method of construction meets the identified standards or has been tested and found to be suitable for the intended use, shall be accepted by the appropriate subcode official as meeting the requirements of (a) above.
2. Reports of engineering findings issued by nationally recognized evaluation service programs, such as, but not limited to, the Building Officials and Code Administrators (BOCA), the International Conference of Building Officials (ICBO), the Southern Building Code Congress International (SBCCI), the International Code Council (ICC), and the National Evaluation Service, Inc., shall be accepted by the appropriate subcode official as meeting the requirements of (a) above. The [New Jersey Department of Community Affairs](#) has confirmed that technical evaluation reports, from any accredited entity listed by [ANAB](#), meets the requirements of item 2 given that the listed entities are no longer in existence and/or do not provide “reports of engineering findings”.
- 1.9 **Approved by the Code of Federal Regulations Manufactured Home Construction and Safety Standards:** Pursuant to Title 24, Subtitle B, Chapter XX, [Part 3282.14](#)<sup>41</sup> and [Part 3280](#),<sup>42</sup> the Department encourages innovation and the use of new technology in manufactured homes. The design and construction of a manufactured home shall conform with the provisions of Part 3282 and Part 3280 where key approval provisions in mandatory language follow: 1) “All construction methods shall be in conformance with accepted engineering practices”; 2) “The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur.”; and 3) “The design stresses of all materials shall conform to accepted engineering practice.”
- 1.10 **Approval by US, Local, and State Jurisdictions in General:** In all other local and state jurisdictions, the adopted building code legislation states in pertinent part that:
- 1.10.1 For [new materials](#) that are not specifically provided for in this code, the [design strengths and permissible stresses](#) shall be established by tests.<sup>43</sup>
- 1.10.2 For [innovative alternative products, materials, designs, services and/or methods of construction](#), in the absence of approved rules or other approved standards...the building official shall accept duly authenticated reports (i.e., listing and/or research report) from [approved agencies](#) with respect to the quality and manner of use of [new materials or assemblies](#).<sup>44</sup> A building official [approved agency](#) is deemed to be approved via certification from an [accreditation body](#) that is listed by the [International Accreditation Forum](#)<sup>45</sup> or equivalent.

<sup>39</sup> [https://up.codes/viewer/new\\_jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1](https://up.codes/viewer/new_jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1)

<sup>40</sup> <https://www.nj.gov/dca/divisions/codes/codereg/ucc.html>

<sup>41</sup> <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282/subpart-A/section-3282.14>

<sup>42</sup> <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>

<sup>43</sup> [IBC 2021, Section 1706 Design Strengths of Materials, 1706.2 New Materials](#). Adopted law pursuant to IBC model code language 1706.2.

<sup>44</sup> [IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General](#). Adopted law pursuant to IBC model code language 1707.1.

<sup>45</sup> Please see the [ANAB directory](#) for building official approved agencies.

- 1.10.3 The design strengths and permissible stresses of any structural material...shall conform to the specifications and methods of design of accepted engineering practice performed by an approved source.<sup>46</sup> An approved source is defined as a PE subject to professional engineering laws, where a research and/or a technical evaluation report certified by a PE, shall be approved.
- 1.11 **Approval by International Jurisdictions:** The USMCA and GATT agreements provide for approval of innovative materials, products, designs, services, assemblies and/or methods of construction through the Technical Barriers to Trade agreements and the International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA), where these agreements:
- 1.11.1 Permit participation of conformity assessment bodies located in the territories of other Members (defined as GATT Countries) under conditions no less favourable than those accorded to bodies located within their territory or the territory of any other country,
  - 1.11.2 State that conformity assessment procedures (i.e., ISO/IEC 17020, 17025, 17065, etc.) are prepared, adopted, and applied so as to grant access for suppliers of like products originating in the territories of other Members under conditions no less favourable than those accorded to suppliers of like products of national origin or originating in any other country, in a comparable situation.
  - 1.11.3 State that conformity assessment procedures are not prepared, adopted, or applied with a view to or with the effect of creating unnecessary obstacles to international trade. This means that conformity assessment procedures shall not be more strict or be applied more strictly than is necessary to give the importing Member adequate confidence that products conform to the applicable technical regulations or standards.
  - 1.11.4 **Approved:** The purpose of the IAF MLA is to ensure mutual recognition of accredited certification and validation/verification statements between signatories to the MLA, and subsequently acceptance of accredited certification and validation/verification statements in many markets based on one accreditation for the timely approval of innovative materials, products, designs, services, assemblies and/or methods of construction. Accreditations granted by IAF MLA signatories are recognised worldwide based on their equivalent accreditation programs, therefore reducing costs and adding value to businesses and consumers.

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<sup>46</sup> IBC 2021, Section 1706 Design Strengths of Materials, Section 1706.1 Conformance to Standards Adopted law pursuant to IBC model code language 1706.1.



Issue Date: December 10, 2021  
Subject to Renewal: January 1, 2024

## FBC Supplement to TER 1809-01

REPORT HOLDER: Fairview Architectural

### 1 Evaluation Subject

- 1.1 Vitrabond® Metal Composite Material (MCM)

### 2 Purpose and Scope

- 2.1 The purpose of this Technical Evaluation Report (TER) supplement is to show Vitrabond® Metal Composite Material (MCM), recognized in TER 1809-01, has also been evaluated for compliance with the codes listed below as adopted by the Florida Building Commission.
- 2.2 *Applicable Code Editions*
  - 2.2.1 *FBC-B—17, 20: Florida Building Code – Building*
  - 2.2.2 *FBC-R—17, 20: Florida Building Code – Residential*

### 3 Conclusions

- 3.1 Vitrabond® Metal Composite Material (MCM), described in TER 1809-01, complies with the FBC-B and FBC-R and is subject to the conditions of use described in this supplement.
- 3.2 Where there are variations between the IBC and IRC and the FBC-B and FBC-R applicable to this TER, they are listed here:
  - 3.2.1 FBC-B Section 104.4 and Section 110.4 are reserved.
  - 3.2.2 FBC-R Section R104 and Section R109.2 are reserved.
  - 3.2.3 FBC-B Section 1403.2 replaces IBC Section 1402.2
  - 3.2.4 FBC-B Section 1404.2 replaces IBC Section 1403.2
  - 3.2.5 FBC-B Section 1405.2 replaces IBC Section 1404.2
  - 3.2.6 FBC-B Section 1407 replaces IBC Section 1406
  - 3.2.7 FBC-B Section 1407.4 replaces IBC Section 1406.4
  - 3.2.8 FBC-B Section 1407.7 replaces IBC Section 1406.7
  - 3.2.9 FBC-B Section 1407.10.1 replaces IBC Section 1406.10.1
  - 3.2.10 FBC-B Section 1407.10.2 replaces IBC Section 1407.10.2
  - 3.2.11 FBC-B Section 1407.10.4 replaces IBC Section 1406.10.4

### 4 Conditions of Use

- 4.1 Vitrabond® Metal Composite Material (MCM), described in TER 1809-01, must comply with all of the following conditions:
  - 4.1.1 All applicable sections in TER 1809-01
  - 4.1.2 The design, installation, and inspections are in accordance with additional requirements of FBC-B Chapter 16 and Chapter 17, as applicable.



Issue Date: December 10, 2021  
Subject to Renewal: January 1, 2024

## CBC and CRC Supplement to TER 1809-01

REPORT HOLDER: Fairview Architectural

### 1 Evaluation Subject

- 1.1 Vitrabond® Metal Composite Material (MCM)

### 2 Purpose and Scope

#### 2.1 Purpose

- 2.1.1 The purpose of this Technical Evaluation Report (TER) supplement is to show Vitrabond® Metal Composite Material (MCM), recognized in TER 1809-01, has also been evaluated for compliance with the codes listed below.

#### 2.2 *Applicable Code Editions*

- 2.2.1 *CBC—16, 19: California Building Code (Title 24, Part 2, including DSA and OSHPD amendments)*
- 2.2.2 *CRC—16, 19: California Residential Code (Title 24, Part 2.5)*

### 3 Conclusions

- 3.1 Vitrabond® Metal Composite Material (MCM), described in TER 1809-01, complies with the CBC (including DSA and OSHPD amendments and CRC and is subject to the conditions of use described in this supplement.
- 3.2 Where there are variations between the IBC and IRC and the CBC and CRC applicable to this TER, they are listed here:
  - 3.2.1 No variations.

### 4 Conditions of Use

- 4.1 Vitrabond® Metal Composite Material (MCM), described in TER 1809-01, must comply with all of the following conditions:
  - 4.1.1 All applicable sections in TER 1809-01
  - 4.1.2 The design, installation, and inspections are in accordance with additional requirements of the CBC and CRC, as applicable.



Issue Date: May 5, 2022  
Subject to Renewal: January 1, 2024

## LABC and LARC Supplement to TER 1809-01

REPORT HOLDER: Fairview Architectural

### 1 Evaluation Subject

- 1.1 Vitrabond® Metal Composite Material (MCM)

### 2 Purpose and Scope

#### 2.1 Purpose

- 2.1.1 The purpose of this Technical Evaluation Report (TER) supplement is to show Vitrabond® Metal Composite Material (MCM), recognized in TER 1809-01, has also been evaluated for compliance with the codes listed below as adopted by the Los Angeles Department of Building and Safety (LADBS).

#### 2.2 *Applicable Code Editions*

- 2.2.1 2020 *City of Los Angeles Building Code (LABC), Including OSHPD amendments*
- 2.2.2 2020 *City of Los Angeles Residential Code (LARC)*

### 3 Conclusions

- 3.1 Vitrabond® Metal Composite Material (MCM), described in TER 1809-01, complies with the LABC (including OSHPD amendments) and LARC and is subject to the conditions of use described in this supplement.
- 3.2 Where there are variations between the IBC and IRC and the LABC and LARC are applicable to this TER, they are listed here:
  - 3.2.1 LABC Section 91.104.2.6 replaces IBC Section 104.11
  - 3.2.2 LARC Section 91.104.2.6 replaces IRC Section R104.11
  - 3.2.3 LABC Section 91.104.2.2 replaces IBC Section 104.4
  - 3.2.4 LABC Section 91.108 replaces IBC Section 110.4
  - 3.2.5 LARC Section 91.104.2.2 replaces IRC Section R104.4
  - 3.2.6 LARC Section 91.108 replaces IRC Section R109.2
  - 3.2.7 LABC Section 91.104 replaces IBC Section 104
  - 3.2.8 LABC Section 91.108.5 replaces IBC Section 110.3

### 4 Conditions of Use

- 4.1 Vitrabond® Metal Composite Material (MCM), described in TER 1809-01, must comply with all of the following conditions:
  - 4.1.1 All applicable sections in TER 1809-01.
  - 4.1.2 The design, installation, conditions of use, and identification of Vitrabond® Metal Composite Material (MCM) are in accordance with the 2018 International Building Code (IBC) provisions noted in TER 1809-01.
  - 4.1.3 The design, installation, and inspections are in accordance with additional requirements of LABC Chapter 16 and 17, as applicable.