



CERTIFICATION



Approved. Sealed. Code Compliant.

Technical Evaluation Report

TER 1905-04

Vitrabond® – Canada

Fairview Architectural

Product:

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

Issue Date:

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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 *NBC—10, 15: National Building Code of Canada*

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 E330: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*
- 2.2.5 *CAN/ULC-S102: Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies*
- 2.2.6 *CAN/ULC-S134: Fire Test of Exterior Wall Assemblies*

¹ Building codes require data from valid certification, evaluation, and qualification reports be obtained from accredited third-party organizations. An accredited certifying organization (a type of accredited third-party organization) is a certification body that performs "certification of a product, process, or system." An accredited third-party organization is accomplished via accreditation using ISO/IEC 17065 evaluation procedures meeting code requirements of independence, accredited testing, and professional 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, such as Canada, 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. For more information about DrJ's accreditation, refer to this [letter](#) from the Standards Council of Canada (SCC).

For more information on any of these topics or our mission, product evaluation policies, product approval process, and engineering law, see drjcertification.org.

² Unless otherwise noted, all references in this TER are from the 2015 version of the NBC. This *alternative solution* is also approved for use with the 2010 NBC and the standards referenced therein (e.g., CAN/CSA, CAN/ULC). Where this TER is not approved, the AHJ shall respond in writing stating the reasons this TER was not approved. For any variations in provincial, territorial, and local codes, see Section 8.

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

3 PERFORMANCE EVALUATION

- 3.1 Vitrabond® was evaluated to determine the following properties for use as a cladding material in accordance with NBC Division B for *combustible* and *noncombustible construction*:
- 3.1.1 Structural design in accordance with NBC Division B Part 4 and Article 9.4.1.1
 - 3.1.1.1 Wind resistance in accordance with NBC Division B Subsection 4.1.7 and Article 4.1.7.3
 - 3.1.2 Weather resistance in accordance with NBC Division B Section 5.5 and Section 5.6 and Article 9.27.1.1
 - 3.1.3 Durability in accordance with NBC Division B Article 5.1.4.2
 - 3.1.4 Use in *combustible* and *noncombustible construction* in accordance with NBC Division B Article 3.1.5.1, Article 3.1.5.5, and Section 9.10
 - 3.1.5 Use as an interior finish in *noncombustible construction* in accordance with NBC Division B Article 3.1.5.12
 - 3.1.6 Surface burning characteristics in accordance with NBC Division B Subsection 3.1.12 and Article 9.10.3.2
- 3.2 Use of Vitrabond® as part of a *fire separation* is outside the scope of this TER.
- 3.3 Any code compliance issues not specifically addressed in this section are outside the scope of this TER.
- 3.4 Any engineering evaluation conducted for this TER 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).

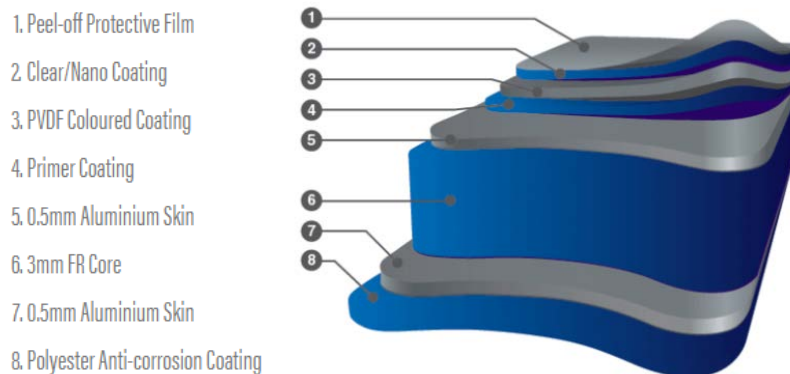


FIGURE 1. TYPICAL COMPOSITION OF VITRABOND® MCM PANEL

4.2 Material Availability

- 4.2.1 Thickness: 3 mm (0.188"), 4 mm (0.157"), and 6 mm (0.236")
 - 4.2.2 Width: Standard: 100 cm (39.4"), 125 cm (49.2"), and 157 cm (62")
 - 4.2.3 Length: 310 cm (122"), 371 cm (146"), and 498 cm (196")
 - 4.2.4 Custom sizes are available in widths between 91 cm (36") and 203 cm (80") and in lengths up to 6.50 m (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 a cladding material in accordance with *NBC* Article 3.2.3.7 and Section 9.27. The panels are installed over wood-framed, steel-framed, masonry, or concrete walls capable of supporting the imposed loads in accordance with *NBC* Division B Subsection 4.1.7.
- 5.1.2 Building occupancy classification should be determined in accordance with *NBC* Table 3.1.2.1.
- 5.1.3 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 *NBC* Division B Part 4.
- 5.2.2 Vitrabond® panels are capable of resisting the loads shown in Table 1.

TABLE 1. VITRABOND® SPECIFIED WIND PRESSURE RESISTANCE^{1,2}

Product	Specified Wind Pressure (kPa)
Vitrabond®	2.5
SI: 1 in = 25.4 mm, 1 psf = 0.0479 kPa 1. Tested in accordance with <i>ASTM E330</i> 2. Panels tested were 1.2 m (3' 11 ¹ / ₁₆ " square.	

5.3 Weather Resistance

- 5.3.1 Vitrabond® may be used in exterior cladding assemblies in accordance with *NBC* Division B Section 5.5 and Section 5.6 where a protective material is properly installed behind the Vitrabond® per *NBC* Article 5.6.1.2.(1) and sealed per *NBC* Article 5.6.2.1 and Note A-5.6.2.1.
- 5.3.2 The protective material shall be installed and sealed prior to the installation of Vitrabond® using the Arrowhead® panel system.

5.4 Fire-resistance

- 5.4.1 Vitrabond® has not been evaluated for use as part of a *fire separation*.

5.5 Surface Burning Characteristics

- 5.5.1 Vitrabond® has the surface burning characteristics shown in Table 2 and is approved for use as an interior finish in *noncombustible construction*.

TABLE 2. SURFACE BURNING CHARACTERISTICS

Product	Flame Spread Rating	Smoke Developed Classification
Vitrabond®	≤ 25	≤ 50
1. Tested in accordance with <i>CAN/ULC-S102</i>		

5.6 Full Scale Tests

- 5.6.1 Vitrabond® was tested to assess performance of vertical and lateral fire propagation in accordance with *CAN/ULC-S134* and *NBC* Division B Article 3.1.5.5 for use as a combustible cladding on exterior walls in *noncombustible construction* (Table 3).

TABLE 3. COMBUSTIBLE CLADDING ON EXTERIOR WALLS CONDITIONS OF ACCEPTANCE

Product	Flame Spread (m)	Heat Flux (kW/m ²)
Vitrabond®	≤ 5	≤ 35
SI: 25.4 mm = 1 in 1. Tested in accordance with <i>CAN/ULC-S134</i>		

5.6.2 The wall assemblies in Table 4 are approved for use in buildings of *noncombustible construction*.

TABLE 4. APPROVED CAN/ULC S-134 WALL ASSEMBLIES

Wall Component	Materials
Base Wall	CMU Concrete Walls
Exterior Sheathing	15.9 mm (⁵ / ₈ ") thick exterior gypsum sheathing
Weather Barrier Applied to Exterior Sheathing or Base Wall Surface (under the wall insulation)	SOPREMA® SOPRASEAL® Stick VP
Wall Brackets	ACS Clips spaced horizontally 610 mm (24") o.c. with 18 ga galvanized Z-girts
Wall Insulation	152 mm (6") nominal thick ROCKWOOL™ CAVITYROCK® Mineral Wool
Window Header and Floor Line Insulation	25.4 mm (1") nominal thick ROCKWOOL™ AFB®, 305 mm (12") wide x 1220 mm (48") length behind all horizontal base extrusions
Cavity Insulation	None
Weather-Resistive Barrier Applied over Exterior Insulation (or FRTW)	None
Exterior Cladding MCM with maximum 64 mm (2½") air gap between panel and insulation	4 mm Fairview Vitrabond® FR Core MCM

SI: 1 in = 25.4
 1. The assembly was tested in accordance with CAN/ULC S-134

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 3 mm (¹/₈") over 5.5 m (18') and 6 mm (¹/₄") over 12.2 m (40').
 - 6.5.3 Maximum deviation for horizontal members is 3 mm (¹/₈") over 9.1 m (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 +/- 1.5 mm (1/16"). No two adjacent or perpendicular joints shall have a difference in width of more than 3 mm (1/8"). In addition, the tolerance between adjacent panels across any joint shall not exceed 1.5 mm (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 report and data for determining weather resistance in accordance with *AAMA 2605* by Korea Testing & Research Institute (KTR)
- 7.3 Test reports and data for determining durability per *ASTM D1781* by Intertek and *AAMA 2605* by KTR
- 7.4 Test reports and data for determining surface burning characteristics in accordance with *CAN/ULC S102* by Intertek
- 7.5 Test reports and data for determining full scale fire resistance according to *CAN/ULC S134* by Architectural Testing
- 7.6 Fairview Architectural Quality Control Manual
- 7.7 Some information contained herein is the result of testing and/or data analysis by other sources which conform to *NBC* Volume I commentary on Conformity Assessment 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.
- 7.8 Where appropriate, DrJ's analysis is based on design values that have been codified into law through codes and standards (e.g., *NBC*, *NECB*, *CAN/CSA*). 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 suppliers 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 combustible cladding material in exterior applications of *combustible* and *noncombustible construction*.
 - 8.1.2 Use as a code-compliant finish material in interior applications of *combustible* and *noncombustible construction*.
- 8.2 *NBC* Article 1.2.1.1. states:
- 1.2.1.1. Compliance with this Code**
- 1) Compliance with this Code shall be achieved by
 - a) complying with the applicable acceptable solutions in Division B (see Note A-1.2.1.1.(1)(a)), or
 - b) using alternative solutions that will achieve at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the applicable acceptable solutions (see Note A-1.2.1.1.(1)(b)).
 - 2) For the purposes of compliance with this Code as required in Clause 1.2.1.1.(1)(b), the objectives and functional statements attributed to the acceptable solutions in Division B shall be the objectives and functional statements referred to in Subsection 1.1.2. of Division B.
- 8.3 *NBC* Division C Section 2.3 includes additional guidance for *alternative solutions*.
- 8.4 This product has been evaluated in the context of the codes listed in Section 2 and is compliant with all known provincial, territorial, and local building codes. Where there are known variations in provincial, territorial, or local codes applicable to this evaluation, they are listed here.
- 8.4.1 No known variations

9 CONDITIONS OF USE

- 9.1 The Vitrabond® panels described in this TER comply with, or are a code compliant alternative material to that 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 in accordance with *NBC* Division B Section 5.3.
 - 9.1.2 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.
 - 9.1.3 Storage and protection: Store materials protected from exposure to harmful weather conditions and at temperature condition recommended by the manufacturer/fabricator.
 - 9.1.3.1 Store panels in well-ventilated space out of direct sunlight.
 - 9.1.3.2 Protect panels from moisture and condensation with tarpaulins or other suitably ventilated weather tight covering.
 - 9.1.3.3 Slope panels to ensure positive drainage and prevent water accumulation.
 - 9.1.3.4 Do not store panels in any space where ambient temperatures can exceed 49°C (120°F).
 - 9.1.3.5 Avoid contact with any other material that might cause staining, denting, scratching, or other surface damage.
 - 9.1.3.6 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 *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 *designer* (e.g., *owner*).
- 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 with quality control inspections established by the governing legislation of the adopting province or territory, as described in *NBC* Volume 1 commentary on Conformity Assessment.
- 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 AHJ 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 AHJ'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](#).