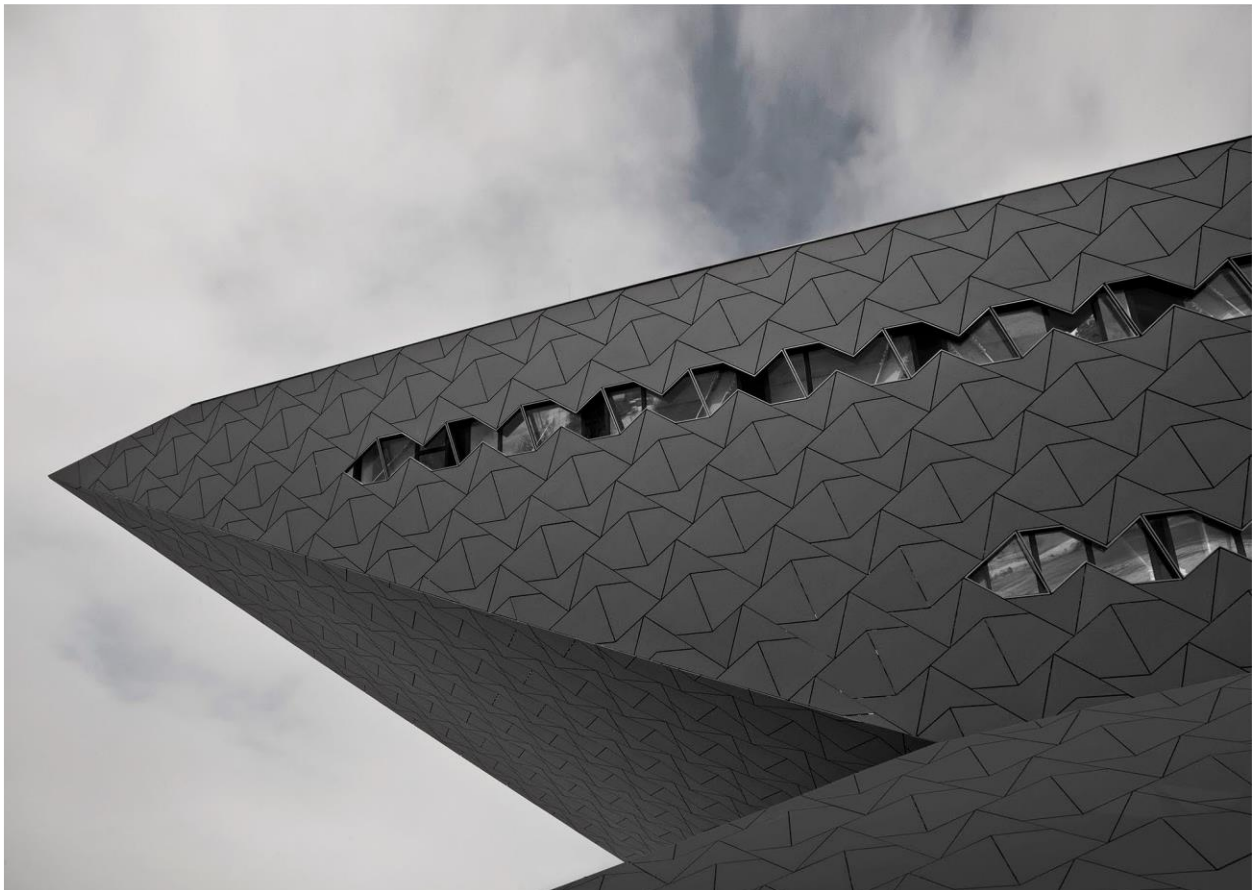




*This specification has been numbered, organized, and formatted in accordance with the MasterFormat, Section Format, and Page Format documents published jointly by Construction Specifications Institute (CSI) and Construction Specifications Canada (CSC). For convenience, all products are contained within Section 07 42 46 (Cementitious Wall Panels) but if desired may be edited/adapted to suit any other Section(s) of Work in accordance with project requirements.*

*EQUITONE is a material supplier of high-density fiber cement wall panels. The following is offered as a guide to experienced and knowledgeable construction professionals who must assume full responsibility for its interpretation and use. Square brackets [ ] containing texts indicate an option to be considered/inserted by the specifier. Text in red is hidden when printing this document. Remove unused options before printing.*



**Disclaimer**

The information in this Specification Guide is correct at the time of issuing. However, due to our committed program of continuous material and system development, we reserve the right to amend or alter the information contained therein without prior notice. Please visit [www.equitone.com](http://www.equitone.com) to download the most current version.



## SECTION 07 42 46

### HIGH-DENSITY FIBER CEMENT WALL PANELS

#### **PART 1 - GENERAL**

##### 1.1 GENERAL PROVISIONS

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this section of the specifications.

##### 1.2 DESCRIPTION OF WORK

- A. The work of this section includes fiber cement panels of the following types:
  - 1. Through color high-density fiber cement EQUITONE [natura] panels.
    - a. EQUITONE [natura] is a high-density fiber cement panel with a through-colored core and a colored semi-transparent double-layer acrylic finish which results in the structure (fibers) of the material shining through. For further information refer to the relevant Material Information Sheet (MIS).
  - 2. Fixed with either
    - a. [Visible EQUITONE UNI-Rivets colored to match the panel]
    - b. [Visible EQUITONE UNI-Metal Screws colored to match the panel]
    - c. [Visible EQUITONE UNI-Wood-Screws colored to match the panel]
    - d. [Concealed Fischer Tergo+ Anchors]
    - e. [Concealed SFS TUF-S Anchors]
    - f. [Other fixing options only when approved by EQUITONE]

##### 1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine Contract Documents for requirements that affect the work of this section.
- B. Other specifications sections that directly relate to the work of this section include, but are not limited to, the following:
  - 1. Section 05 40 00 - Cold-Formed Metal Framing.
  - 2. Section 06 10 00 - Mechanically Graded Lumber.
  - 3. Section 07 21 00 - Thermal Insulation; exterior insulation, if required for NFPA 285 compliance, is not included in the scope of Section 07450.
  - 4. Section 07 27 29 - Air Barriers Coatings: Exterior wall air and moisture barrier.

##### 1.4 REFERENCES

- A. [International Code Council (ICC):
  - 1. [AC90 Fiber Cement Siding Used as Exterior Wall Siding]
- B. [American Society for Testing and Materials (ASTM):

1. [ASTM C 518-10 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus]
  2. [ASTM C 1185-08 - Standard Test Methods for Sampling and Testing Non-Asbestos Fiber-Cement Flat Sheet, Roofing and Siding Shingles, and Clapboards]
  3. [ASTM C 1186-08 - Standard Specification for Flat Fiber-Cement Sheets]
  4. [ASTM D 2244-09A - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates]
  5. [ASTM E 84-07 - Surface Burning Characteristics of Building Materials.]
  6. [ASTM E 119-12A - Standard Test Method for Fire Tests of Building Construction and Materials]
  7. [ASTM E 136-19A - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C]
  8. [ASTM E 2226-12 - Standard Practice for Application of House Stream]
  9. [ASTM G 115-05A - Standard Practice for operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials]
- C. [CAN/ULC]:
1. [ULC S102 - Standard Method of Testing for the Surface Burning Characteristics of Building Materials and Assemblies]
  2. [ULC S114 - Standard method of Testing for the Determination of Non-Combustibility in Building Materials]
- D. European Committee For Standardization (CEN):
1. [EN 12467 - Fiber-cement Flat Sheets Product Specification and Test Methods]
  2. [EN 13501 - Fire Classification of Construction Products and Building Elements]
  3. EN 15804 - Sustainability of Construction Works. Environmental Product Declarations
- E. Cradle to Cradle Product Innovation Institute (C2CPPI):
1. Certificate Program Version 3.1

## 1.5 SUBMITTALS

- A. Products Submittals shall be per Section 01 33 00 - Submittal Procedures.
- B. Product Data: Manufacturer's literature on each product to be used, including, but not limited to:
1. Appearance, composition, dimensions, physical properties, and usage.  
[Can be found in EQUITONE MIS sheets]
  2. Sustainability information.  
[Can be found in EQUITONE EPD and MSD sheets]
  3. Preparation instructions and recommendations for EQUITONE [natura].  
[Can be found in EQUITONE Planning and Application Guide and UNI-rivet/UNI-screw manual]
  4. Storage and handling requirements and recommendations.  
[Can be found in EQUITONE Planning and Application Guide and UNI-rivet/UNI-screw manual]
  5. Installation methods for the supporting framework and the EQUITONE [natura] panels.  
[Can be found in EQUITONE Planning and Application Guide and UNI-rivet/UNI-screw manual]
  6. Operation and maintenance information.  
[Can be found in EQUITONE Planning and Application Guide]
- C. Shop Drawings: Provide detailed drawings of non-standard applications of fiber cement materials that are outside the scope of the standard details and specifications provided by the manufacturer.
- D. Code Compliance: Documents showing product compliance with local building code shall be submitted before the bid. These documents shall include, but not be limited to, appropriate Evaluation Reports and/or test reports supporting the use of the product.

- E. Engineering Calculations: Submit engineering calculations as required by the local building code, showing that the installed panels and attachment system meet the wind load requirements for the project.
- F. Selection Samples: For each finished product specified, two complete sets of 5 7/8 x 2 3/8 inches (149 x 60 mm) color chips representing the manufacturer's full range of colors and patterns available in the US shall be provided upon request.
- G. Verification Samples: For each finished product specified, two samples, minimum size A4 11 11/16" x 8 17/64 inches (297 x 210 mm), representing the actual product, color, and patterns.

#### 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: All products listed in this section are to be installed by a single installer trained by the manufacturer or representative.
  - 1. It is the full responsibility of the installer to ensure the installation of EQUITONE materials are in accordance with the relevant manufacturer's guidelines and recommendations.
- B. Color Evaluation: Insignificant change after 2000 hours of accelerated QUV weathering test (ASTM G155-05A).
- C. Mock-Up: Provide a full-size mock-up [minimum \_\_\_ by \_\_\_] for evaluation of surface preparation techniques and application workmanship. [Mock-up shall include a corner, windowsill, jamb and head condition, wall base, and wall-roof intersection.]
  - 1. Finish areas designated by the Architect.
  - 2. Do not proceed with the remaining work until workmanship, color, and sheen are approved by the Architect.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Follow all the manufacturer's instructions for safe handling and storage of high-density fiber cement panels.
- B. Deliver the panels on stable, flat pallets that are at least the same dimensions as the panels. Materials shall be packaged to minimize damage of the material by using such items as wooden sideboards/sheathing, spacers, and lids to protect the panel surface and edges. Panels must arrive separated from the manufacturer's or fabricator's original protective interleavings or spacers between the panel's decorative surfaces. Materials must also arrive onsite transported under a waterproof cover.
- C. Moving panels that are stacked on pallets should be done with a forklift or a crane. Ensure the panels are secured to the pallet in a way that will not cause damage. Panels should be transported under a waterproof cover.
- D. Material stored on site should be laid flat on pallets. Panel pallet stacks should also be limited to five high. Panels must be stored in a dry and temperature-controlled environment. Where this is not possible, the panels may be placed under a waterproof tarp that is used in such a manner that allows for cross ventilation. A tarp draped over the pallet(s) does not provide the needed ventilation. The material must be protected from weather, direct sunlight, and other trades while allowing for material ventilation. If moisture penetrates between the stored sheets, permanent surface staining in the form of efflorescence may occur. Any plastic protection directly surrounding the panels should also be removed. Hot conditions can cause condensation to form within the packaging which can lead to permanent surface staining in the form of efflorescence.
- E. Always lift panels off each other, never slide them over one another, since scratching may occur. Carry panels upright on their back edge and lift with two people, protecting the face from damage.

- F. Once removed from the pallet, panels not installed should not be left out without cover. Material may be stored on edge for very short durations of time during staging maximum of 1 hour, otherwise, material should be stored flat. Panels should never be leaned or stacked directly against one another. The material edges and decorative surfaces should always be protected with spacers or films in between. When restacking panels, follow the manufacturer's instructions on the direction of the panel faces within the stack.

## 1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by the manufacturer for optimum results. Do not install products under environmental conditions outside the manufacturer's absolute limits or which could involve life safety situations.
- B. Field Measurements: Verify actual measurements/openings by field measurements performed by the installer before release for fabrication. The General Contractor or Installer shall be responsible for existing site dimensions. Recorded measurements shall be indicated on shop drawings based on field measurements provided by the installer. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

## 1.9 WARRANTY

- A. At project closeout, provide the manufacturer's limited ten (10) year product warranty.

## **PART 2 – PRODUCTS**

### 2.1 MANUFACTURER

- A. As a basis of design, Fiber Cement Panels shall be manufactured by:

EQUITONE Inc.  
1731 Fred Lawson Drive, Maryville, TN 37801  
Tel: +1 865-268-2705  
E-mail: info.usa@equitone.com  
Web: <http://www.equitone.com/en-us/>

- B. Substitutions: [Not permitted] [Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.]

### 2.2 WALL PANELS

- A. Through-Color High-Density Fiber Cement Panels:

- 1. Product: EQUITONE [natura] Fiber Cement Panel

- a. Application: Exterior and Interior
- b. Nominal Thickness: [5/16 inch (8 mm)] or [1/2 inch (12 mm)]
- c. Finish: EQUITONE [natura] is a high-density fiber cement panel with a through-colored core and a colored semi-transparent double-layer acrylic finish which results in the structure (fibers) of the material shining through. Irregularities, differences in shade, and traces of the manufacturing process are part of the natural characteristics of the material. The rear receives a transparent back-sealing coating.
- d. Color:
  - 1) **[N073 – Charcoal]**
  - 2) **[N074 – Obsidian]**

- 3) [N154 – Cream White]
- 4) [N161 – Pale Mist]
- 5) [N162 – Chalk Grey]
- 6) [N163 – Soft Grey]
- 7) [N164 – White]
- 8) [N211 – Classic Grey]
- 9) [N250 – Natural Grey]
- 10) [N251 – Anthracite]
- 11) [N252 – Ash Grey]
- 12) [N281 – Nimbus]
- 13) [N294 – Portland]
- 14) [N331 – Agate Red]
- 15) [N359 – Ruby]
- 16) [N411 – Sea Mist]
- 17) [N412 – Blue Grey]
- 18) [N593 – Green Mist]
- 19) [N594 – Jadeite Green]
- 20) [N661 – Muted Yellow]
- 21) [N662 – Summer Haze]
- 22) [N861 – Tawny Hue]
- 23) [N891 – Beach Stone]
- 24) [N891 – Fossil Grey]
- 25) [N961 – Ecru]
- 26) [N972 – Sepia]
- 27) [N991 – Autumn Dusk]

e. Physical Characteristics:

- 1) [ASTM C1185, ASTM C1186, ASTM C518]
  - a) [Strength classification] Grade III]
  - b) [Mean density (dry)] 111.8 lb/ft<sup>3</sup>
  - c) [Ultimate bending strength (dry)] 3358 psi]
  - d) [Ultimate bending strength (wet)] 2160 psi]
  - e) [Moisture content] 3.9%]
  - f) [Water absorption] 14.5%]
  - g) [Moisture movement] 0.05%]
  - h) [Water tightness] PASS]
  - i) [Freeze-thaw resistance] PASS]
  - j) [Warm water resistance] PASS]
  - k) [Thermal conductivity] 0.236 BTU/h ft °F]
  - l) [Thermal movement] 5.5E-6 in/in-F]
  
- 2) [EN 12467, ASTM C518]
  - a) [Strength classification] Grade IV]
  - b) [Durability classification] Category A]
  - c) [Mean density (dry)] 1750kg/m<sup>3</sup>
  - d) [Characteristic bending strength (dry)] ≥ 22 Mpa]
  - e) [Characteristic bending strength (wet)] ≥ 18 Mpa]
  - f) [Mean modulus of elasticity] 12000 Mpa]
  - g) [Moisture content] <6%]
  - h) [Moisture movement] 0.1%]
  - i) [Water tightness] PASS]
  - j) [Freeze-thaw resistance] PASS]
  - k) [Heat-rain resistance] PASS]
  - l) [Warm water resistance] PASS]
  - m) [Soak-dry test] PASS]
  - n) [Thermal conductivity] 0.407 W/mK]
  - o) [Thermal movement] 0.01 mm/mK]

- a. Fire performance:
  - 1) [ASTM E84 - Flame spread index 0]
  - 2) [ASTM E84 - Smoke development index 0]
  - 3) [ASTM E119 - Assembly fire resistance rating 1hr]
  - 4) [ASTM E119 - Assembly house stream test PASS]
  - 5) [ASTM E136 (Opt B) - Material combustibility Non-combustible]
  - 6) [ULC S102 - Flame spread rating 0]
  - 7) [ULC S102 - Smoke development classification 5]
  - 8) [ULC S114 - Material combustibility Non-combustible]
  - 9) [EN 13501 - Material fire classification A2-s1, d0]
  
- b. [Building Code Compliance]:
  - 1) [AC90 - ESR 3910]
  
- c. Certifications:
  - 1) **EN 15804**
    - a) EQUITONE [natura] is certified with an Environmental Product Declaration (EPD). This life cycle assessment includes raw materials and energy production information throughout the manufacturing and use phases of the fiber cement panels.
  
  - 2) **Cradle to Cradle Version 3.1**
    - a) EQUITONE fiber cement products have achieved a **Bronze** rating according to the Product Innovation Institute certification. The assessment considers 5 main categories: material health, product circularity, clean air and carbon, water and soil stewardship, and social fairness.

### 3.2 MISCELLANEOUS CLADDING MATERIALS

- A. Perforated Insect/Vermin Screen: The perforation pattern should allow the same volume of air to pass through as the specified continuous inlet/outlet gap from section 3.4.A.2. At a minimum, the screen should allow 4.75 in<sup>2</sup>/ft of open area. Maximum thickness of perforated insect/vermin screen to be 1/32" or 21 gauge between fiber cement panel and subframing elements.
  
- B. Building Wrap: [air], [water], [vapor] resistive barrier in accordance with section [07 1X XX] [07 2X XX].
  
- C. Insulation: exterior insulation in accordance with section [07 2X XX].
  
- D. [Aluminum Joint Closures] [Decorative Corner Profiles]: Products as detailed. Maximum thickness of non-structural finishing profile to be 1/32" or 21 gauge between fiber cement panel and subframing elements.
  
- E. Panel Fastening Options: [UNI-Rivet visible fixing], [UNI-Metal Screw visible fixing], [UNI-Wood-Screw visible fixing], [Fischer Tergo+ invisible fixing], [SFS TUF-S invisible fixing], [Other Fixing Options only when approved by EQUITONE].
  
- F. All third-party components should be installed in accordance with the relevant manufacturer's guidelines and recommendations.

## **PART 4 – EXECUTION**

### 4.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
  
- B. If substrate preparation is the responsibility of another installer, notify the Architect of unsatisfactory preparation before proceeding.

- C. Inspect panels for any visual defects before installation per the manufacturer's recommendation.

#### 4.2 PREPARATION

- A. Fabricate in accordance with all manufacturer instructions and use manufacturer-specific tools and accessories when applicable.
- B. Prepare and treat panel surfaces and edges using the methods and materials recommended by the manufacturer.
- C. Clean panel surfaces thoroughly prior to installation. Remove any cutting, drilling, or sanding dust from the surface of the panel using a clean microfiber cloth.
- D. Comply with local codes and structural engineer's fastening calculations along with manufacturer's recommendations for fastener spacing.

#### 4.3 INSTALLATION

- A. Install in accordance with all manufacturer instructions and approved submittals.
- B. When applicable, use manufacturer-specific tools and accessories.
- C. Visible fixings should be installed starting from the center of the panel outward. Comply with the manufacturer's instructions for locations of fixed and sliding connections, if applicable.
- D. When possible, install the panels starting from the top of the building and work down the façade. Additionally, start at either an inside corner or center of the elevation and work outward.
- E. Care should be taken to protect the panels from damage when removing spacers and shims.
- F. The use of adhesives or tapes on the finished surface of the panel must be avoided.
- G. Clean the panels after installation in accordance with the manufacturer's cleaning and maintenance guidelines.

#### 4.4 EXTERIOR CLADDING FOR RAINSCREEN APPLICATIONS

- A. Detailing Requirements:
  - 1. Air space inlets and outlets are required at the top and bottom of a building or a wall termination. The minimum openings required are dependent upon the distance (height) between air inlets and outlets. Air outlets at the top of a building or a wall termination should not exceed 2x the size of the air inlets. The air outlets can be as much as 1/8" less than the air inlets. Do not block vertical airflow at windows, doors, eaves, or at the base of the building. The guidelines below should be followed regarding air inlet and outlet sizes.
    - a. **[0 to 16 feet:** air inlets and outlets min 3/8"]
    - b. **[16 to 33 feet:** air inlets and outlets min 1/2"]
    - c. **[33 to 66 feet:** air inlets and outlets min 3/4"]
    - d. **[66 to 165 feet:** air inlets and outlets min 1"]
  - 2. Airflow behind the panels shall be vertically continuous between openings. The minimum continuous vertical air gap required is dependent upon the distance (height) between air



inlets and outlets and can be found below. Airflow behind the fiber cement panels is critical to the performance of the rainscreen construction.

- a. [0 to 33 feet: air gap min 3/4"]
  - b. [33 to 66 feet: air gap min 1"]
  - c. [66 to 165 feet: air gap min 1 3/16"]
3. For narrow panels with only two rows of fixings, a control joint should be designed in the subframing system every 10 feet.
  4. Panels should not be fixed across subframing joints or building control joints.
  5. Additional material between the subframing and the panels should be avoided. Details where this is required the material thickness should be limited to 1/32" or 21 gauge.
  6. Rainscreen system detailing should be in accordance with all manufacturer's guidelines.

#### 4.5 PROTECTION

- A. Protect installed products until completion of the project in accordance with the manufacturer's guidelines. Tapes or adhesives should not be used on the surfaces of the panels.
- B. Touch-up, repair, or replace damaged products before substantial completion in accordance with the manufacturer's guidelines.

#### **PART 3 - END OF SECTION**



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