

Fiber Cement Panels Performance Specifications

I General

GENERAL

1.1 Scope	1
1.2 Related Sections	1
1.3 Compliance	1
1.4 References	1
1.5 Submittals	2
1.6 Quality Assurance	2
1.7 Warranty	2

PRODUCTS

2.1 Manufacturer	3
2.2 Materials	3
2.3 Product Description	3
2.4 Accessories & Installation Components	3

EXECUTION

3.1 Handling	4
3.2 Job Conditions	4
3.3 Surface Conditions	4
3.4 Cutting	4
3.5 Fastening	5
3.6 Installation	5
3.7 Finishing & Maintenance	5

1.1 SCOPE

- A. Furnish and install fiber cement panels where shown on drawings or specified herein.

1.2 RELATED SECTIONS

- A. Division 06 - Wood and plastics.
- B. Section 13112 - Steel framing and bracing.
- C. Section 07210 - Insulation.
- D. Section 07915 - Sealants, caulking and seals.

1.3 REFERENCES

- A. ASTM C1185, Standard Test Methods for Sampling and Testing Non-Asbestos Fiber Cement Flat Sheet, Roofing and Siding, Shingles and Clapboards.
- B. ASTM E228, Standard Test Method for Linear Thermal Expansion of Solid Materials with a Vitreous Silica Dilatometer.
- C. ASTM G23, Standard Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) with and without Water for Exposure of Nonmetallic Materials, Replaced by G152 and G153.
- D. ASTM330, Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- E. ASTM331, Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- F. ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials.
- G. ASTM C518, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- H. UL-723 Standard Underwriters Laboratories Inc. for Test for Surface Burning Characteristics of Building Materials.

1.4 COMPLIANCE

Fiber cement panels shall meet or exceed requirement of the above-referenced testing.

I. General (continued)

1.5 SUBMITTALS

- A. Drawings: Submit detailed drawings showing installation details.
- B. Product Data: Submit manufacturer's product description, indicating material types and thicknesses, and installation details.
- C. Samples: Submit samples of each product type proposed for use.
- D. Certificates: Submit documents certifying that products meet or exceed requirements herein.

1.6 QUALITY ASSURANCE

- A. Performance requirements: Panels are fiber cement panel products with the following typical properties:
 - 1. Linear Variation with Change in Moisture Content: M.D.: -0.006 in./ft., C.D.: 0.003 in./ft.
 - 2. Wet Flexural Strength: Avg. 1155.51 psi.
 - 3. Water Tightness: No water droplets were observed on any specimen.
 - 4. Freeze-thaw: No damage or defects were observed.
 - 5. Warm Water: No evidence of cracking, delamination, swelling, or other defects were observed.
 - 6. Heat-Rain: No crazing, cracking, or other deleterious effects, surface or joint changes were observed in any specimen.
 - 7. Mean Coefficient of Linear Thermal Expansion: Avg. 3.18×10^{-6} in./in. F.
 - 8. Surface Burning: Flame Spread: 0, Smoke Developed: 5.
 - 9. Wind Load: Positive: Avg. 148.03 psf. Negative: Avg. 120.29 psf.
 - 10. Water Penetration: No water leakage was observed into wall cavity.
 - 11. Weather Resistant: No cracking, checking, crazing, erosion, or other detrimental effects were observed.
 - 12. Steady-State heat flux and thermal Transmission Properties Test: the test results show that Nichiha Fiber Cement Panels to have a thermal resistance of R Value of 1.23 F.
 - 13. Fire Resistant: The walls successfully endured a 60-minute fire exposure without developing excessive unexposed surface temperature or allowing flaming on the unexposed side of the assembly.

1.7 WARRANTY

- A. Provide manufacturer's 50-year warranty against manufactured defects in fiber cement panels.
- B. Provide manufacturer's 15-year warranty against manufactured defects in panel finish.

II. Products

2.2 MATERIALS

- A. Fiber cement panels are based on autoclaved, wood fiber reinforced cement panels.
- B. The panels are nominally 1.5 feet in height and 6 feet in length; actually 455mm in height and 1,818mm in length.
- C. The panel's surface is pre-finished and factory applied.
- D. The panels are profiled along all four edges, such that both horizontal and vertical joints between the installed panels are ship-lapped.
- E. A factory-applied sealant must be applied to panel edges, such that all joints will contain a factory sealant.

2.3 PRODUCT DESCRIPTION

- 1. Profile colors: Oyster, Patina, Sienna, Storm, Umber, or custom color.
- 2. Accessories: Corners for each profile color.
- 3. Dimensions: Nominal - 18" (h) x 6' (l) x 5/8" (t); Actual - 455mm (h) x 1,818mm (l) x 16mm (t).
- 4. Weight: 31.9 lbs. per panel.
- 5. Coverage: 9 sq. ft. per panel.
- 6. Factory sealed on six [6] sides.

2.4 ACCESSORIES AND INSTALLATION COMPONENTS

- A. Fiber cement panels use stainless steel clips and galvalume starter track to provide 1/4" modified rainscreen.
- B. Additional accessories for installation and designer aesthetics are available. Consult catalog or contact Nichiha USA Inc., for further details.

III. Execution

3.1 HANDLING

- A. Panels must be stored flat and kept dry before installation. A waterproof cover over panels and accessories should be used at all times prior to installation.
- B. If panels are exposed to water or water vapor prior to installation, allow to completely dry before installing. Failure to do so may result in shrinkage at ship lap joints, and such action may void warranty.
- C. Panels MUST be carried on edge. Do not carry or lift panels flat. Improper handling may cause cracking or panel damage.
- D. Direct contact between the panels and the ground should be avoided at all times. It is necessary to keep panels clean during installation process.

3.2 JOB CONDITIONS

- A. Fiber cement panels can be installed over braced wood, steel studs and sheathing including; plywood, OSB, plastic foam or fiberboard sheathing. Fiber cement panels can also be installed over Structural Insulated Panels (SIP's), Concrete Masonry Units (CMU's), and Concrete Block Structures (CBS's) with furring strips, and Pre-Engineered Metal Construction.
- B. Allowable stud spacing: 16" to 24" o.c.
- C. A weather resistive barrier is required when installing fiber cement panels. Use an approved weather resistive barrier [WRB] as defined by the 2006 IRC. Refer to local building codes.
- D. Appropriate metal flashing should be used to prevent moisture penetration around all doors, windows, wall bottoms, material transitions and penetrations. Please refer to local building codes for best practices.

3.3 SURFACE CONDITIONS

- A. Examine site to ensure substrate conditions are within specification for proper installation.
- B. Do not begin installation until unacceptable conditions have been corrected.

3.4 CUTTING

- A. Always cut panels outside or in a well ventilated area. Do not cut the products in an enclosed area.
- B. Always wear safety glasses and NIOSH/OSHA approved respirator, whenever cutting, drilling, sawing, sanding or abrading the products. Refer to manufacturer MSDS for more information.
- C. Use a dust-reducing circular saw with a diamond-tipped or carbide-tipped blade, for general cuttings. Recommended circular saw: Makita 7-1/4" Circular Saw with Dust Collector (#5057KB). Recommended blade: Tenryu Board-Pro Plus PCD Blade (#BP-18505). Shears (electric or pneumatic) or jig saw can be used for complicated cuttings, such as service openings, curves, radii and scrollwork.

III. Execution (continued)

- D. **Silica Dust Warning:** Nichiha products contain *crystalline silica* (a.k.a. sand, silicon dioxide), which is a common Earth's naturally occurring mineral. Inhalation of *crystalline silica* into the lungs and repeated exposure to silica can cause health disorders, such as silicosis, lung cancer, or potentially death depending on various factors. Users must observe the following safety practices: 1) Use best work practices (proper cutting blade) to reduce airborne dust concentrations. 2) Use a fiber cement circular saw with a dust collector for cutting (e.g., Makita 5057KB). The dust collector must be connected to a HEPA vacuum. 3) Do not use compressed air for cleaning dust. 4) Work outdoors where feasible; otherwise, use mechanical ventilation. 5) Everyone handling Nichiha products must wear safety glasses and properly fitted respirators prior to handling fiber cement panels. Users must wear a **NIOSH/OSHA approved respirator with a rating of N100, O100, P100, or R100** in accordance with applicable government regulations and manufacturer instructions. All employers must comply with the OSHA PEL and ACGIH TLV-TWA. 6) Warn others in area. These requirements are designed to help minimize exposure to crystalline silica.

3.5 FASTENING

- A. Corrosion resistant fasteners, such as hot-dipped galvanized nails and screws that are appropriate to local building codes and practices must be used. Stainless Steel fasteners are highly recommended in high-humidity and high-moisture regions. Do not use aluminum fasteners, staples, clipped head nails or fasteners that are not rated or designed for intended use. See manufacturer's detailed instructions for appropriate fasteners for construction method used.

3.6 INSTALLATION

- A. General: Install products in accordance with the latest installation guidelines of the manufacturer and all applicable building codes and other laws, rules, regulations and ordinances. Review all manufacturer installation, maintenance instructions and other applicable documents before installation.
1. Fiber cement panels can be installed on many types of construction methods, review individual installation details for specifics for each type of construction method. Fiber cement panels can be installed over Wood and Metal Stud Construction, Structural Insulated Panels (SIP's), Concrete Masonry Units (CMU's), Concrete Block Structures (CBS's), and Pre-Engineered Metal Construction. Install Nichiha panels in accordance with the manufacturer's detailed installation instruction for the construction method used.