LISTING REPORT

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RENCo MINERAL COMPOSITE FIBER REINFORCED (MCFR) BUILDING SYSTEM

CSI Section:
06 71 00 Structural Composite Shapes and Plates

1.0 RECOGNITION SCOPE OF LISTING

Compliance with the following standards:

- ASTM E84-11a: Standard Test Methods for Surface Burning Characteristics of Building Materials.
- ASTM E119-08a: Standard Test Methods for Fire Tests of Building Construction Materials.
- ASTM D6117-16: Standard Test Methods for Mechanical Fasteners in Plastic Lumber and Shapes.
- ASTM E72-10: Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
- ASTM D635-06 Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
- ASTM D1929-96 (2000): Standard Test Method for Determining Ignition Temperature of Plastics.
- ASTM D2843-99 (2004)$^{\epsilon 1}$: Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics.
- NFPA 286-15: Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

2.0 FINDINGS

2.1 ASTM E84-11a: When tested in accordance with ASTM E84, RENCo Fiber Composite Block adhered with ISOGRIP 3030D and cladded with National Gypsum ½-inch board with 2 coats of Sherwin Williams ProMar® 200 Interior Latex Paint. exhibited Flame Spread Index of 25 or less and Smoke Developed Index of 50 or less.

2.2 ASTM E119-08a

2.2.1 One-hour Fire-Resistance-Rated Exterior Walls: The following assembly was tested and achieved a 60-minute fire resistance rating in accordance with ASTM E119. The tested assembly consisted of RENCo MCFR wall line unit components, 7.87 inches (200 mm) wide, stacked in a running bond pattern with each course adhered to the lower course using Plexus MA530 adhesive. The interior face of the line unit components had one layer of ⅝-inch-thick (16 mm) Type X gypsum wallboard oriented vertically and attached using 6d x 1¼-inch-long (31.7 mm) bugle-head screws spaced at 12 inches (305 mm) on-center around the perimeter and in the field. The outside face of the line unit components had one layer of ⅝-inch-thick (16 mm) Type X exterior gypsum sheathing board oriented horizontally and attached using 6d x 1¼-inch-long (31.7 mm) bugle-head screws spaced at 12-inches (305 mm) on center around the perimeter and in the field. Screw heads and joints of the wallboard were taped and treated with joint compound in accordance with IBC Section 2508.4, ASTM C840, and GA-216. A water-resistive barrier and approved cladding shall be applied as described in ER-508. The allowable axial load is 4,133 plf (60 kN/m).

2.2.2 Two-hour Fire-Resistance-Rated Exterior Wall: The following assembly was tested and achieved a 120-minute fire-resistance rating in accordance with ASTM E119. The tested assembly consisted of RENCo MCFR wall line unit components, 7.87 inches (200 mm) wide, stacked in a running bond pattern with each course adhered to the lower course using Plexus MA530 adhesive. The interior face of the line unit components had two layers of ⅝-inch-thick (16 mm) Type X gypsum wallboard oriented vertically and attached using 6d x 1¼-inch-long (31.7 mm) bugle-head screws spaced at 12-inches (305 mm) on center around the perimeter and in the field. The outside face had two layers of ⅝-inch-thick (16 mm) Type X exterior gypsum sheathing board oriented horizontally and attached using 6d x 1¼-inch-long (31.7 mm) bugle-head screws spaced at 12-inches (305 mm) on center around the perimeter and in the field. Screw heads and joints of the wallboard shall be taped and treated with joint compound in accordance with IBC Section 2508.4, ASTM C840, and GA-216. A water-resistive barrier and approved cladding shall be applied as described in ER-508. The allowable axial load is 4,133 plf (60 kN/m).

2.3 ASTM D6117-16: When tested in accordance with ASTM D6117 using No.10-16 Concealor screws having a 0.187-inch (4.75 mm) thread diameter, manufactured by Triangle Fastener Corporation, in 0.16-inch-thick (4 mm) MCFR material, the connections achieved the values in Table 1.

TABLE 1 –ASTM D6117 RESULTS

Test Procedure	Average Maximum Load Lbf	Average Fastener Displacement Inches
Fastener Withdrawal[1]	255	0.077
Fastener Lateral Resistance[1]	481	0.341

For **S.I.**: 1 lbf = 4.4 N; 1 inch = 25.4 mm

1. Tested with 2 inch edge distance

2.4 ASTM E72-10

2.4.1 ASTM E72 Section 10 - Tensile Testing: The test specimens were 7⅞ inches thick by 47⅛ inches wide by 119$^{3}/_{4}$ inches tall (200 mm by 1196 mm by 3041 mm). The base of the specimens started on 8-inch by 8-inch by 48-inch starter units (203 mm by 203 mm by 1220 mm). These were topped with a course of three 8-inch by 8-inch by 16-inch blocks (203mm by 203 mm by 406 mm), then by 8-inch by 8-inch by 48-inch line units (203 mm by 203 mm by 1220 mm). The course layout alternated between three 8-inch by 8-inch by 16-inch line units and 8-inch by 8-inch by 48-inch line units until a nominal height of 10 ft (3048 mm) was achieved. Plexus® 530 adhesive was used to adhere each course, using a "full grid" gluing method. The average maximum test load was 20,372 pounds (90.6 kN). The test was stopped upon reaching the maximum allowable load of the test apparatus.

2.4.2 ASTM E72 Section 12 - Transverse Loading: The test specimens were 7⅞ inches thick by 47⅛ inches wide by 119$^{7}/_{8}$ inches tall (200 mm by 1196 mm by 3045 mm). The base of the specimens started on 8-inch by 8-inch by 48-inch starter units (203 mm by 203 mm by 1220 mm). These were topped with a course of three 8-inch by 8-inch by 16-inch blocks (203mm by 203 mm by 406 mm), then by 8-inch by 8-inch by 48-inch line units (203 mm by 203 mm by 1220 mm). The course layout alternated between three 8-inch by 8-inch by 16-inch line units and 8-inch by 8-inch by 48-inch line units until a nominal height of 10 ft (3048 mm) was achieved. A course of 4-inch by 2-inch by 16-inch (101.6 mm by 50.8 mm by 406.4 mm) caps followed. Plexus® 530 adhesive was used to adhere each course, using a "full grid" gluing method. The average Ultimate Load was 282 psf (13.5 kN/m^2).

2.5 ASTM D635-06: When tested in accordance with ASTM D635, the RENCo MCFR material exhibited a rate of burn of 0.075 mm/s (0.003 inches/sec).

2.6 ASTM D1929-96 (2000): When tested in accordance with ASTM D1929, the RENCo MCFR material exhibited a Self-ignition Temperature and a Flash Ignition Temperature of 824º F (440º C).

2.7 ASTM D2843-99 (2004)$^{\epsilon 1}$: When tested in accordance with ASTM D2843, the RENCo MCFR material exhibited a smoke density rating of 71.9 percent.

2.8 NFPA 286-15: The NFPA 286 test setup consisted of walls composed of RENCo's MCFR units with the interior fully clad with ½-inch-thick (12.7 mm) gypsum wallboard fastened using No.6 x 1¼-inch-long (31.2 mm) drywall screws, spaced at 8 inches (203 mm) o.c. around the perimeter and 12 inches (305 mm) o.c. in the field. This configuration met the requirements.

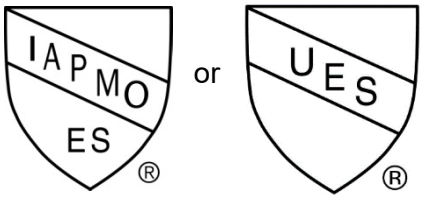
3.0 PRODUCT USE

The RENCo MCFR Building System recognized in this report consists of RENCo MCFR building components installed and erected with RENCo adhesives and fasteners to construct interior and exterior, unreinforced load-bearing or non-load-bearing walls and shear walls. The proprietary building components are mineral calcite, glass fiber reinforcement, and additives compression molded into blocks and accessories that fit together and interconnect to form building walls. The components include starter units, line units, caps, plugs and fenestration opening channels.

RENCo MCFR Building System shall be designed and installed in accordance with ER-508. The manufacturer's published installation instructions, a copy of ER-508, and this listing report shall be available on the jobsite during installation.

4.0 IDENTIFICATION

RENCo Mineral Composite Fiber Reinforced Building System is identified with labels bearing the manufacturer's name (RENCo USA Inc.), a numeric code indicating the production plant and date of production, and the IAPMO Uniform ES Listing Report Number (UEL-5025). Either IAPMO Uniform Evaluation Service Mark of Conformity may also be used as shown below:



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For additional information about this evaluation report please visit www.uniform-es.org or email us at info@uniform-es.org