

CLIENT: Laticrete International, Inc
One Laticrete Park North
Bethany, CT 06524

Test Report No: TJ6955	Date: May 6, 2020
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SAMPLE ID: Sample Identified as; **HYDRO BAN Board 1/2"**

SAMPLING DETAIL: Test samples were submitted to the laboratory directly by the client. No special sampling conditions or sample preparation were observed by QAI.

DATE OF RECEIPT: Samples were received at QAI on January 30, 2020.

TESTING PERIOD: April 14 – April 30, 2020.

AUTHORIZATION: Testing was authorized by proposal 20DN011501 signed by Dustin Prevete on January 15, 2020

TEST PROCEDURE: Test and evaluate the submitted samples to *IAPMO PS 106-15e1. Tileable Shower Receptors and Shower Kits.*

TEST RESULTS: The samples **met** the criteria of *IAPMO PS 106-15e1*. Detailed test results are presented in the subsequent pages of this report.

Prepared By

**Signed for and on behalf of
QAI Laboratories, Inc.**



Rocky Hale
Materials Technician

Project Manager

4 General Requirements

4.1 General

Requirements: Shower receptors and shower kits made of polystyrene shall comply with Table 2; and Shower receptors and shower kits shall not leak through the wall-floor joints when tested in accordance with Section 5.1; be capable of being connected to the sanitary drainage system; drain to the waste outlet; and be capable of being partially or completely covered by materials such as ceramic or porcelain tiles, marble, natural stone, concrete slabs, and plastic.

Surfaces intended to be covered shall be free of imperfections and defects that can adversely affect the installation of the coverings.

Shower kits covered by this Standard may be used for wall and shower receptor applications.

4.2 Materials

Pass

Requirements: Polystyrene shall comply with or exceed the requirements of Table 2 and the applicable sections of this Standard. When liners or coatings are supplied by the manufacturer, the polystyrene/liner or polystyrene/coating composite shall be tested as a system, in accordance with the manufacturer's installation instructions.

Property	Test Method	Requirement as per PS 106 Table 2	Average of Specimens Tested	Pass / Fail
Compressive Strength	ASTM D1621	> 248 kPa (36 psi)	55.99 psi	Pass
Flexural Strength	IAPMO Z124	Sec. 5.8.2.2.2	Pass	Pass
Linear Expansion	ASTM D1037	≤ 0.07%	0.02%	Pass
Tensile Strength	ASTM D1623	> 228 kPa (33 psi)	103.7 psi	Pass

Compressive Strength-ASTM D1621-10

PASS

Procedure: Testing was conducted in accordance with ASTM D 1621-10. Five (5) - 2" inch square by panel thickness specimens were cut from samples and conditioned at 73 ° F and 50% relative humidity for not less than 40h prior to testing. Compressive testing was then conducted with a cross head speed of testing machine: 0.1 in/min.

Test Requirements

The minimum average compressive strength shall be **36 psi**

Test Results

Specimen #	Compressive Strength (psi)
1	55.99
2	57.87

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3	57.80
4	57.59
5	50.70
Average	55.99
Std Dev	0.77

Linear Expansion-ASTM D1037-12

PASS

Procedure: Testing was conducted in accordance with ASTM D1037-12, Section 24, *Linear Expansion with Change in Moisture Content*. Two 12"x3" specimens were cut from samples, one specimen with the long side parallel to the long dimension of the panel and the other specimen---perpendicular. Then conditioned to practical equilibrium at a relative humidity of 50±2% and a temperature of 68±6°F and the length of each specimen was measured. The specimens were then conditioned to practical equilibrium at a relative humidity 90±5% and a temperature of 68±6°F and the length of each specimen was measured.

Test Requirements: ≤0.07%

Test Results

Specimen	% Change
1	0.03
2	0.01
Average	0.02

Tensile Strength-ASTM D1623-09 Method C

PASS

Procedure: Three Specimens 2" x 2" were conditioned to 50±5% relative humidity and 73±3°F for more than 24 h prior to testing. Each specimen was then measured and recorded. The loading fixtures were bonded to: Type C Specimens. Crosshead speed of 0.05 in. /min was used.

Test Requirements: > 33 psi

Test Results

Specimen	Tensile Strength (psi)
1	108.9
2	120.0
3	91.0
4	114.0
5	85.8
Average	103.7
STD DEV	15.13807

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4.3 Wall Thickness

4.3.3 Polystyrene

PASS

Requirements: Except for those components intended to be installed on solid backing [e.g., concrete or brick walls, lath and plaster, or framing with gypsum wallboards at least 12.7 mm (0.5 in)], polystyrene vertical components shall have a nominal wall thickness of at least 12.7 mm (0.5 in).

Test Results

Specimen #	Thickness (in)
1	0.507
2	0.510
3	0.509
4	0.512
5	0.510
Average	0.510

4.4 Drains and Outlets

Not Applicable

4.5 Liners and Coatings

Not Applicable

4.6 Nailing Flanges

Not Applicable

4.7 Fiberglass Reinforced Polyester Mesh

Not Applicable

4.8 Adhesives

Not Applicable

4.9 Sealants

Not Applicable

4.10 Tiles

Not Applicable

4.11 Hardware

Not Applicable

4.12 Accessible Designs

Not Applicable

5 Testing Requirements

5.1 Load and Water Spray Test

PASS

Test Procedure: The specimen was installed securely in a test fixture as per the Manufacturer's instructions. A 300±5lb load was applied to the specimen through a 3 inch diameter load distribution disk on a 0.5 inch thick sponge rubber pad. The load was applied for 2-3 min to allow for settlement of the test apparatus and initial slip of fasteners, and then removed for 10-15 min.

The test load was then reapplied for 30 minutes while water was sprayed at a rate of 3.0 gpm through a 30° spray nozzle upon the joints of the specimen. The spray nozzle was placed 4 ft from the specimen and set in such a way as to impinge upon the specimen at a 45° angle.

After 30 minutes, the water spray was shut off, the test load was removed, and the specimen was inspected for cracks, damage, and water leakage.

Requirements: There shall be no cracks or damage; or water leakage through the wall-floor joints.

5.2 Adhesion Test for Shower Kits that use Adhesives

Not Applicable

5.3 Shear Strength Test

PASS

Test Procedure: Eight specimens measuring 6 inches by 6 inches were cut from the submitted samples (**HYDRO BAN Board**) and tested using Latex based Polymer Mortar. Each specimen was prepared in accordance with ASTM C482-02 as per ANSI A118.10-08 sec. 5.3 and 5.4.

Conditioning: All test specimens were left to condition in ambient laboratory conditions 70°-77°F (21°-25°C) @ 45%-55% Relative Humidity for seven days. The "Water Immersion" specimens were then placed in water for an additional seven days prior to testing as per ANSI A118.10-08.

Results:

Minimum 50 psi Requirement as per Table 1 of IAPMO PS106		
<u>Specimen Set (Wet/Dry)</u>	<u>Average Peak Stress (psi)</u>	<u>PASS/FAIL</u>
7-Day Dry	171.6	PASS
7-Day Water Immersion	121.9	PASS

5.4 Hydrostatic Pressure Test

PASS

Test procedure: Three specimens measuring 3 inch by 3 inch were cut from the submitted samples. Each specimen was secured in to a test fixture in such a manner that left one side of each specimen exposed to open air, and the opposite side of each specimen exposed to a 2 ft water column. The specimens are checked for leakage every 10 minutes for the first hour, then every hour for the next six hours, and then once more after forty eight hours of exposure.

Results: No leakage was detected at any point during the 48 hours of testing.

5.5 Fungus and Microorganism Growth Resistance Test

PASS

Test Procedure: Two specimens measuring 2 inch by 2 inch were cut from the submitted samples. 39 grams of Agar were dissolved in 1 liter of heated water. The agar medium was then introduced to the petri dishes. The entire surfaces of the test specimens and control specimen were then inoculated with Aspergillus Brasiliensis (Formally known as Aspergillus Niger). All samples and the control specimen were placed in a temperature and humidity controlled incubator for 14 days. During the 14 day period the temperature and humidity were monitored and maintained at 82.4-86°F and 85-96% relative humidity.

Following the 14 days, the samples were removed and evaluated for fungus and micro-organism growth.

Results: No Traces of Growth were found on any of the two Specimens.

5.6 Waste Fitting Connection Test

Not Applicable

5.7 Point Impact Load Test**PASS**

Test procedure: The point impact load test was conducted in accordance with the impact resistance test specified in Table 1 of this Standard. Impact Resistance ASTM D1037 Section 21,

A 2 in. (51mm) diameter steel ball weighing 1.18 lbs (535 g) was dropped from a height of 12 inches on three 12" x 12" samples. The specimens were then visually inspected for damage.

Requirement: No damage with a 305 mm (12 in) drop.

Results: No damage was found.

5.8 Area Impact Load Test for Shower Wall Surrounds**PASS**

Test procedure: The test specimen was mounted securely in a fixture. A 5 inch diameter sand bag weighing 10±1lbs was suspended from a cable such that the bag would impact a target area on the wall 4 feet above the bottom of the specimen. The bag was then raised 33 inches (measured vertically) and released. This procedure was performed on two locations, after which the specimen was inspected visually for damage.

Results: No damage was found.

5.9 Corrosion Test**Not Applicable****6 Markings and Accompanying Literature****PASS**

Requirements: Shower receptors and shower kits complying with this Standard shall be marked with the manufacturer's name or trademark or, in the case of private labeling, the name of the customer for whom the product was manufactured.

Markings shall be permanent, legible, and visible after installation but before installing the coverings.

Shower receptors and shower kits shall be accompanied by instructions for their installation. Such instructions shall clearly indicate, at least, the need to use waterproof-membrane liners or polymer cement coatings, when applicable.

IAPMO Z124/CSA B45.5 section 5.25 Tests for flexible (soft) construction fixtures**PASS****5.25.2 Puncture resistance test**

Procedure: Randomly distribute 24 common drywall nails over the centremost 12 x 12 in area on the bottom of the fixture. Place a 12 x 12 in piece of plywood, 1 in thick, over the nails. Apply a load of 650 N (146 lbf) for 1 min. Examine the test area in accordance with Clause 5.25.2.2. Drop a No. 2 Phillips screwdriver weighing 0.20 to 0.22 lbf from a height of 60 in (from tip) to strike a flat area on the bottom of the specimen perpendicularly. Examine the impact location in accordance with Clause 5.25.2.2. Repeat each procedure three times.

Performance: The surface of the specimen shall not be punctured. Any resulting depressions on the surface shall disappear within 24 h.

***** END OF TEST REPORT *****