

CERTIFIED PRODUCT PERFORMANCE STANDARDS FOR CULTURED MARBLE LAVATORIES

2. GENERAL REQUIREMENTS

2.1 Materials

2.1.1 **Filler Materials.** The filler materials shall be of grades suitable to produce the performance required in this standard.

2.1.2 . **Binders.** Binders used shall be of suitable grades to meet the performance requirements of this standard.

2.1.3. **Pigments.** Suitable grade pigments may be used in the surfaces or substrates.

2.1.4 **Finish.** The finished surface of the unit shall be of a quality which meets all of the applicable requirements of the standard.

Cultured marble is defined as Cast Filled Polyester-These units are characterized by their composition and manufacturing process; whereby polyester resin systems, highly filled with inorganic particulates, acting as both a structural and decorative element are cast into a complete lavatory with or without a precoated finish.

2.1.5. **Supporting Structure.** The material of the supporting structure integral with the unit and its attachment shall be adequate to meet the performance requirements of this standard.

2.2 **Dimensional Tolerances.** The finished trim dimensional tolerances shall be the manufacturer's stated dimensions.

2.3 **Units of Testing.** Units to be inspected and tested shall be taken from finished goods inventory.

2.4 **Installation Instructions.** Each unit shall be supplied with a copy of the manufacturer's written installation instructions.

2.5 **Care and Maintenance Instructions.** Each unit shall be supplied with a copy of the manufacturer's written care and maintenance instructions affixed to the unit in a conspicuous location and shall state, "To be removed by the homeowner."

2.6 **Identification.** Manufacturer's name or trademark, or both, shall be permanently and legibly marked on the unit so as to be visible after installation which is normally the front underside of the bowl.

3. WORKMANSHIP

3.1 **Unit Preparation.** The unit shall be installed according to the manufacturer's installation instructions so as to simulate conditions of permanent installation, excluding fittings and piping.

3.2 **Method of Inspection of Unit Surface.** The surface of the unit shall be inspected with the unaided eye for defects and blemishes.

3.3 Surface Test

3.3.1 **Ink Test.** Rub the entire finished surface of the unit with a sponge and 50% solution of tap water and water soluble black or blue ink. When inspecting colored units, use a contrasting colored ink.

3.3.2 **Appearance Requirements.** The units shall be free from cracks, chipped areas and blisters. The number and size of molding and other defects or blemishes shall not exceed those given in Table 1.

3.3.2.1 **Performance Requirements for Surface Porosity.** Any finished surfaces suspected of having surface porosity greater than the allowed in Table 1 Shall be subjected to the standard dirt test as outlined in 3.3.3 prior to abrasion.

3.3.3 **Standard Dirt Test.** One area of the unit, of approximately 16 square inches* inside the bowl, shall be conditioned by rubbing for 25 cycles with 600 grit wet silicon carbide abrasive paper.(*40.6 cm).

Following the abrasion, the conditioned areas shall be rinsed with tap water, dried and soiled by application of standard dirt.

3.3.3.1 **Performance Requirement.** There shall be no visible voids larger than 1/16 inch (1.59mm) in diameter below the original finished surface. The maximum allowable number of voids smaller than 1/16 inch (1.59 mm) for the conditioned area is 4.

4. STRUCTURAL INTEGRITY OF COMPLETE UNITS

4.1 **Unit Preparation.** These load tests are to be performed on complete full-size units installed according to manufacturer's installation instructions so as to simulate conditions of permanent installation excluding fittings and piping.

4.2 Drain Fitting Connection and Overflow

4.2.1 **Test Method.** A weight of 25 +/-1 pound (11.34 +/- .45 kg) shall be applied by means of a lever arm 24 inches (609.6 +/-1.01mm) in length connected to the drain fittings and extended horizontally.

4.2.2 **Performance Requirement.** There shall be no visible cracks in the unit interior surface when inspected with the load in place after again inking as described in 3.3.1.

4.2.3 **Performance Requirement.** While the load is reapplied in the three positions, the unit shall be inspected for leaks in the overflow. No leaks permitted.

4.3 Loads on Lavatory Tops

4.3.1 **Test Method.** Units with integral tops and wall hung units shall be subjected to a load weight of 300 pounds +/- 5 pounds (136.05 +/- 2.268 kg) which shall be applied to the top of the unit in each of two places with no loading point more than 15"(3.81 cm) from the rim of the bowl.

4.3.2 Performance Requirement. Following the test in 4.3.1, shall be no cracks in the surface of the unit when inspected after again inking as described in 3.3.1. The maximum residual deflection 10 minutes after removal of the load shall not exceed 0.010 inch (0.254 mm).

4.4.1 Test Method. A 1 1/2 inch (38.1mm) diameter, 1/2 pound (226.75g) steel ball shall be dropped three times from a height of 20 inches(50.8 cm) to strike three different points on flat areas on top of the unit and three times in different places inside the bowl.

4.4.2 Performance Requirement. The unit shall not show any cracks or chips. Inspect for cracks after again inking as described in 3.3.1.

5. PHYSICAL CHARACTERISTICS OF MATERIALS

5.1 Colorfastness

5.1.1 Test Method. Four specimens (one to be used as a control specimen) shall be cut from the inside or bottom of the unit below the rim. Three specimens shall be tested for 200 hours in accordance with ASTM D-2565-1970. Procedure A.

5.1.2. Performance Requirement. Tested specimens shall show no significant change in color or surface texture when compared with the control specimen.

5.2 Stain Resistance.

5.2.1 Test Method. Specimen(s) shall be cut from the inside or bottom of the unit(below the rim) and conditioned by wet rubbing with household scouring powder and cheesecloth using 20 scrub cycles. apply approximately 2 drops each of the liquid reagents listed in Table 2 and a similar amount of the solid reagents to the test specimen(s).The stain specimen(s) shall be subjected to cleansing tests immediately after the time period given in Table 2 and rated at that time. Each stain, both covered and uncovered, shall be given a number in accordance with the rating procedure given in 5.2.1.1 and 5.2.1.5

TABLE 2

STANDING` TIME FOR REAGENTS USED IN STAIN RESISTANCE TEST

<u>REAGENT</u>	<u>TIME</u>
Black crayon	16 hours
Black liquid shoe polish	16 hours
Blue washable ink	16 hours
Gentian violet solution	16 hours
Lipstick (contrasting color)	16 hours
Hair dye (contrasting color)	16 hours
Iodine solution	16 hours
(alcohol containing 1% iodine)	16 hours

5.2.1.1 A stain is defined as a change in surface texture or a change in color. Specimens not staining at this point shall have a rating of 1-non-staining.

5.2.1.2 Specimens not staining at this point shall have a rating of 2-removable by alcohol or naphtha.

5.2.1.3 Specimens whose stain is removed by household scouring powder shall have a rating of 3-removable by first application of household scouring powder.

5.2.1.4 Specimens whose stain is removed by this additional cleaning shall have a rating of 4-removable by two household scouring powder scrubblings.

5.2.1.5 Any specimens with stain remaining after the aforementioned cleanings shall have a rating of 5.

5.2.2 **Performance Requirement.** The maximum stain resistance rating is the sum of all the individual stain ratings for each of the covered and uncovered stain areas. The maximum stain resistance rating shall be 50. The maximum allowable thickness of material removed to eliminate the stain shall be 0.005 inch (0.127 mm).

Chemical Resistance Test

5.3.1 **Test Method.** Apply approximately 2 drops of each of the following liquid reagents to the surface finish.

- naphtha
- ethyl alcohol
- amyl acetate
- household ammonia solution, 10%
- citric acid solution, 10%
- urea, 6.0% (urine)
- hydrogen peroxide, 3% in water
- concentrated sodium hypochlorite solution
- phenol solution, 5% in water
- toluene
- ethyl acetate
- lye solution, 1% to 2% in water
- acetone

Allow the specimens to remain for a total of 16 hours.

5.3.2 **Performance Requirement.** The surface finish shall be unaffected by the reagents except for superficial surface changes which are removable by light sanding. Any resulting damage shall not impair the serviceability of the unit, and shall be repairable approximate to the original finish.

5.4 Cleanability and Wear

5.4.1 **Specimen Preparation.** Cut three test specimens from three different areas of the unit. if suitable flat specimens from the unit are not

obtainable from the unit, manufacturer will supply suitable flat specimen material made from the same material as the unit.

5.4.2 **Test Method.** The test equipment is a modification of a wear tester.

5.4.2.1 Mix abrasive slurry consisting of 3000 milliliters of tap water, 15 grams of sodium carboxy-methyl cellulose, 60 grams of tri-sodium phosphate and 2700 grams of 160-mesh pottery flint or ground quartz.

5.4.2.7 On completion of 10,000 cycles, all samples are removed, rinsed in tap water dried and measured for cleanability.

5.4.4 **Performance Requirement.** If a surface finish is used, it shall not be worn through in the middle third of the specimen. Each specimen after 10,000 cycles, shall pass the cleanability test with an absolute percentage loss of white-light reflectance of not more than 5% after cleaning with standard liquid detergent and an absolute percentage loss of white-light reflectance of not more than 2% after the additional cleaning with abrasive slurry.

5.5 Cigarette Test.

5.5.1 **Test Method.** The cigarette burn resistance of units shall be measured using either the complete top or on specimens approximately 6"x 6" (15.24 cm) cut from the bowl.

Select three popular brands of cigarette. Light one cigarette each from freshly opened packages of the three brands. Place the cigarettes on the specimen(s) with the lighted end approximately one inch* in from the edge. All the cigarettes to burn for two minutes +/- 2 seconds. Remove the cigarettes and allow the burned areas to cool. (* 25.4mm)

5.5.2. **Performance Requirement.** There shall be no ignition or progressive glow of the surface during or after contact with the lighted cigarettes. Any resulting damage shall not impair the serviceability of the unit and shall be repairable to approximate the original finish.

6. Hydro-Thermal Shock Resistance Test

6.1.1 **Test Method.** Impinge on bowl surface where faucet water would normally strike, hot water at 150 +/- 3 F(65.5 +/-1.6 C) for 1.5 minutes. Allow water to drain for 30 seconds. Follow immediately at the same point with cold water at 50+/- 3F (10 +/-1.6C) for 1.5 minutes. Allow water to drain for 30 seconds. This shall constitute one complete cycle. Continue test for a total of 500 cycles. Flow rates should 1 +/-0.2gpm (0.063 +/- 0.013 l/sec)

6.1.2 **Performance Requirement.** The lavatory shall show no evidence of cracking or crazing after the water cycling test.

GUIDE SPECIFICATION

Provide Cultured marble lavatory units of the size and type illustrated. Units shall be polyester resin base, inert mineral filled, one-piece, cast vanity types with integral bowl and shall meet or exceed all quality requirements of CMI LS 2-76, "Property and Performance Standard for Cultured Marble Lavatories," as published by the Cultured Marble Institute or American National Standard Z124.3 for Plastic Lavatories.

TABLE 1
APPEARANCE REQUIREMENTS*

Defects and Blemishes	Size	Maximum No. Allowed	Maximum No. Allowed Per Fixture	
		Within Any 3 in. (76.2 mm) Diameter Area	Bowl area Below Rim	Integral Top
Cracks	_____	0	0	0
Chipped Areas	_____	0	0	0
Blisters	_____	0	0	0
Surface Porosity	_____	0	0	0
Molding Irregularities	_____	1	8	16
Pits	1/64 in.(0.39 mm)	8	16	48
Pinholes and Small Specks	1/64-1/32in (0.39-0.79mm)	4	8	24
Medium Specks	1/32-1/16 in (0.79-1.59 mm)	2	4	12
Large Specks	1/16 in (1.588mm)	0	0	0

*Applicable to entire interior finished surface of installed units.

NOTE:

Cracks: actual fractures at or under the surface.

Chipped areas: Surface damage causing loss of material greater than 1/64" in two or more directions.

Blisters or Voids:any unsupported surface that fractures upon the application of manual pressure with a rounded plastic tool.

Surface Porosity: Presence of numerous voids in the surface not extending through to the substrate.

Molding irregularities: any visible distortions related to forming such as dimple,dome,short,let-go. or sink marks as defined in ASTM D883-78 Standard Definitions of Terms Relating to Plastics.

Pits: small craters in the surface with widths and depths being approximately equal.

Pinholes: Very small holes in the surface

Specks: particles of foreign matter which produce irregularities in the surface, not including specks or flecks incorporated in the surface to produce a decorative pattern.