

TEST REPORT

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Report Number: 1376-09001

Report Issued: December 18, 2009

Project No. 16961

Client: Baths of Distinction Inc.
5843 Carrier Street
St. Petersburg, FL 33714

Contact: Bill Hamilton

Source of Samples: The samples were shipped to IAPMO R&T Lab from Baths of Distinction Inc., and received in good condition on November 30, 2009.

Date of Testing: December 3, 2009 through December 17, 2009

Sample Description: Acrylic/ plastic Free Standing Bathtubs with overflow and outlet drain holes

Models: HLFL53 – overall dimensions 53” x 30”x 19”
CLDBL73 – overall dimensions 73” x 32”x 22-7/8”

Please refer to drawing and photo for detail

Scope of Testing: The purpose of the testing was to determine whether the samples submitted of the Acrylic plastic Bathtubs met the applicable requirements of ANSI Z124.1.2 – 2005 entitled, “American National Standard for Plastic Bathtub and Shower Units”.

Conclusion: **The samples submitted of the Acrylic plastic Bathtubs, models listed above from Baths of Distinction COMPLIED with the applicable requirements of ANSI Z124.1.2 – 2005 except section 2.6 Marking Pending.**

By the signatures below we certify that all the testing and sample preparation for this report was performed under continuous, direct supervision of IAPMO R&T Lab unless otherwise stated.

Tested by,

Handwritten signature of Larry Owens in black ink.

Larry Owens, Test Technician

Reviewed by,

Handwritten signature of Kris Adilukito in black ink.

Kris Adilukito, P.E., Manager Testing and QA

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Primary Standards: ANSI Z124.1.2 – 2005 / Sections tested:

2.1	Materials	2.2	Dimensional Tolerances
2.3	Units for testing	2.4	Installation Instructions
2.5	Care and Maintenance instructions	2.6	Identification
2.8	Raised Flanges and Tiling beads	3.3	Surface test
3.4	Subsurface Test	4.2	Drain Fitting Connection
4.3	Point Impact Loads and	4.5	Loads on Rim and Bottom of Bathtubs Threshold and Bottom of Showers
4.8	Radii Load Test	4.9	Loads on Unsupported Bathtub Area
5.1	Colorfastness	5.2	Stain Resistance
5.3	Wear and Cleanability	5.4	Cigarette Test
5.5	Chemical Resistance Test	5.6	Ignition Test
5.7	Thermal Shock Resistance	6.1	Water Resistance Test

Test Results: All tests and evaluations were conducted per the written procedures specified in the standard.

ANSI Z124.1.2 – 2005

2.1 Materials

2.1.1 Composition – COMPLIED.

The bathtubs were made of suitable grades of plastic resins and other filling. Coloring, reinforcing, and coating materials which met the performance requirements of the standard.

2.1.2 Finish – COMPLIED.

The finish surface was of a quality which met all the applicable requirements of the standard. The unit qualified as a Type 3.

2.1.3 Supporting Structure – COMPLIED.

The material of the supporting structure was adequate and met the performance requirements of the standard.

2.2 Dimensional Tolerances – COMPLIED.

The finished trim dimensional tolerances were the manufacturer's rough-in dimensions.

2.3 Units for Testing – COMPLIED.

Units tested are assumed to be taken from finished goods inventory

2.4 Installation Instructions – COMPLIED.

The bathtub was supplied with a copy of the manufacturer's installation instructions.

2.5 Care & Maintenance Instructions – COMPLIED.

The samples submitted provided with Care and Maintenance Instructions however the standard required wording “TO BE REMOVED FOR USE BY THE OCCUPANT” was not present. The wording was as follows:

WARNING

This Instruction & Installation manual shall be removed only by the final user, prior to using this unit.

2.6 **Identification – PENDING.**

Manufacturer’s name should be permanently and legibly marked and was visible after installation, and should be specified in submitted drawings.

2.8 Raised Flange and Tiling Beads – NOT APPLICABLE.

2.8.2 – The samples submitted were free standing unit and not intended for installation against a vertical surface (wall) therefore the samples submitted did not provide an integral flange.

Note: See drawings and photos for details.

3.3 Surface Test – COMPLIED.

The units were free from cracks, chipped areas, blisters molding defects and blemishes after rubbing the entire surface of the unit with a sponge and a 50% solution of tap water and black ink, then rinsing the surface and inspecting the unit as described in Section 3.2 of the standard.

3.4 Subsurface Test – COMPLIED.

There were no voids below the original finish surface.

4.2 Drain Fitting Connection – COMPLIED.

A weight of 50 (± 1) lb was applied by means of a lever arm 24 ($\pm 1/4$) inches in length connected to the drain fitting and extending horizontally for one minute in each of three radial position as prescribed by the standard. The unit was inked again, per Section 3.3.1, and inspected for cracks in the floor surface.

Findings : There were no visible cracks in the tub surface when inspected with the inking method as described in 3.3.1. and the load in place as described in 4.2.2.

4.3 Point Impact Loads – COMPLIED.

A 1-1/2 inch diameter, 1/2 pound steel ball shall be dropped from a height of 36 in. to strike three different points on flat areas in the bottom of the unit and three different points on the rim. The 1-1/2 inch diameter 1/2 pound ball shall be dropped from 24 inches to strike 3 different points on the radii in the bottom of the unit. Inspect for damage using inking method as described in Section 3.3.1.

Finding: There were no visible cracks or chips observed after load and inking

4.4 Load on seats – NOT APPLICABLE.

The samples submitted did not incorporate a seat

4.5 Loads on rim and bottom – COMPLIED.

4.5.2 A preload weight of 300 (± 5) lbs was applied to the center of the bottom of the unit on a weight distribution disk 3 inches in diameter covered by 1/2 inch thickness of sponge rubber between the disk and the surface being loaded. The load was left in place for 3 minutes to allow for settlement of the test frame. Ten minutes after removing the preload, the 300 (± 5) lbs load was reapplied with the center being placed in the approximate center of the bottom of the unit for 2 minutes and the deflection measured. The load was then removed and the residual deflection measured.

4.5.4 The 300 (± 5) lbs load was then applied to two other points on the bottom of the bathtub and at two points on the top of the rim, one at the midpoint and one near the back end. Following the testing in 4.5.2 and 4.5.5 the unit was inked per Section 3.3.1 and inspected. The deflection under the applied load did not exceed 0.150" and the maximum residual deflection, after 10 minutes did not exceed 0.008".

Findings:

<u>Location</u>	<u>Load Deflection</u>	<u>Residual Deflection</u>
<u>Bottom</u>	0.021"	No residual deflection was observed
<u>Rim</u>	0.072"	0.001"
<u>Requirement</u>	0.150"	0.008"

In addition, no cracks were found.

4.8 Radii Load Test – COMPLIED.

All outside radii were loaded by applying a 1/2 inch diameter nylon rod using approximately 10 lbs pressure at an angle tangent to the radius.

Findings: The surface showed no cracks, chips or voids on all outside radii.

4.9 Loads on Unsupported Areas – COMPLIED.

A load of 10 (± 0.1)lb was applied at the central point of all unsupported tub wall areas below the rim of the bathtub by means of a 1 inch diameter steel rod rounded to a 1/2 inch radius at the end in contact with the bathtub. The deflection was measured opposite the applied load. The deflection under the applied load shall not exceed 0.125 inch at any individual point.

Findings: There were no cracks in the bathtub surface after being inked again as described in 3.3.1 of the standard. In addition, no deflection was observed

5.1 Colorfastness Test – COMPLIED.

One specimen of the material was tested for 200 hours in accordance with ASTM D2565 with a back panel temperature maintained at 145 (± 9) degrees Fahrenheit. After the completion of the test the specimen showed no significant change in color or surface texture when compared with a control specimen using a light source as specified in section 3.2 of the standard.

Findings: The average color different between tested specimen and untested specimen was 1.03 CIE units.

5.2 Stain Resistance – COMPLIED.

Specimens were cut from the inside of the unit (below the rim) and conditioned by wet-rubbing a scouring compound and cheesecloth for 20 scrub cycles. Two drops of each reagent were applied to the test specimens. One drop of each reagent was covered with a small watch glass and the other left uncovered. The specimens were allowed to remain for sixteen hours at a temperature of 74.3 (± 3.6) degrees Fahrenheit in a room with a relative humidity of 50 (±5)%. At the end of the test, the excess reagents were removed by blotting with a paper towel. The specimens were then subjected to cleansing tests and rated in accordance with the procedures given in 5.2.1.1 through 5.2.1.5 and when inspected per Section 3.2 of the standard.

Requirement: The maximum stain resistance rating shall be the sum of all 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.

Findings: The total rating was 17. No loss of thickness of material was observed.

<u>Reagents</u>	<u>Covered Samples</u>	<u>Uncovered Samples</u>
<u>Black Crayon</u>	1	1
<u>Black Liquid Shoe Polish</u>	2	2
<u>Blue Washable Ink</u>	1	1
<u>Lipstick</u>	1	1
<u>Hair Dye</u>	1	1
<u>Iodine Solution</u>	2	1
<u>Genetian Violet Solution</u>	1	1
<u>Total Individual Points</u>	9	8

5.3 Wear and Cleanability – COMPLIED.

Three specimens cut from three different locations on the bathtub were subjected to 10,000 scrubbing cycles of abrasive slurry with a flow rate of 3.5 mL per minute and a scrub cycle rate of 60 cycles per minute. At 2,500, 5000, and 7,500 cycles, respectively, the wear tester was stopped and excess slurry was washed from the specimen trays and scrub brushes.

At the completion of the 10,000 cycles, the three samples were removed, rinsed in tap water, dried and measured for cleanability using the procedures outlined in 5.3.3.1, 5.3.3.2 and 5.3.3.3 of the standard.

Requirement: The absolute percentage loss of white light reflectance shall be as follows:

- a) After cleaning with standard liquid detergent, less than 5%.
- b) If the absolute percentage loss of white light reflectance is greater than 2% but less than 5%, the specimens shall be additionally cleaned with abrasive slurry.
- (c) The absolute percentage loss of white light reflectance after cleaning with abrasive slurry shall be less than 2%.

Findings: The absolute percentage loss of white light reflectance after cleaning with standard liquid detergent was as followed:

Sample 1 – 1.04 %

Sample 2 – 1.23 %

Sample 3 – 1.16 %

In addition, the surface finish was not worn through the middle third of the specimens.

5.4 Cigarette Test – COMPLIED.

There shall be no ignition or progressive glow of the surface of the 6 inch x 6 inch test specimens, either during or after contact, with three lighted cigarettes from freshly opened packages of three popular brands of cigarettes. The resulting damage shall not impair the serviceability of the unit and shall be easily repairable by using abrasive and polishing compounds to approximate the original finish.

Findings: There was no ignition or progressive glow of the surface of the test specimens, either during or after contact, with the lit cigarettes. In addition, the resulting damage did not impair the serviceability of the unit and was easily repairable by using abrasive and polishing compounds to approximate the original finish.

5.5 Chemical Resistance Test – COMPLIED.

Two drops each of Naphtha, Ethyl Alcohol, Amyl Acetate, Household Ammonia, Citric Acid, Urea, Hydrogen Peroxide, Concentrated Sodium Hypochlorite Solution, Phenol, Toluene, Ethyl Acetate, Lye, and Acetone were applied to specimens from the bathtub taken from the inside bottom of the unit, and conditioned as indicated in Section 3.1. One set of the reagents was covered with a small watch glass and one set remained uncovered for a total of 16 hours. At the end of the 16 hours the watch glass and excess reagents were removed and the sample held for 24 hours at a temperature of 74.3 (± 3.6) degrees Fahrenheit and a relative humidity of 50 (± 5)%.

Findings: The surfaces of the specimens were unaffected by the reagents, except for superficial surface changes which were removeable by sanding with 600 grit sandpaper and water. The resulting damage did not impair the serviceability of the unit and was easily repairable by using abrasive and polishing compounds to approximate the original finish.

5.6 Ignition Test – NOT APPLICABLE.

The samples submitted are free-standing designed units, which require coated finish exposed plumbing components. These components do not require soldering as part of the installation process. In addition the free standing units have no servicewall to be exposed to soldering using a propane torch. Therefore, the ignition test was considered to be not applicable.

5.7 Thermal Shock Resistance – COMPLIED.

Hot water, at a temperature of 150 (± 3) degrees Fahrenheit was impinged on the bathtub surface for a period of 1.5 minutes then allowed to drain for 30 seconds. Cold water, at a temperature at 50 (± 3) degrees Fahrenheit was then immediately applied for 1.5 minutes and then allowed to drain for 30 seconds. The flow rate for the water was set at 1 (± 0.2) gpm. This constituted one cycle.

At the end of 250 cycles there was no cracking, crazing, blistering, spalling, or delamination when inspected per Section 3.3.1 of the standard.

6.0 Additional Material Tests

6.1 Water Resistance Test – COMPLIED.

6.1.1 Water Resistance Tests (types 1, 2, and 3)

Three samples were cut from prepared flat samples submitted by the manufacturer. The samples were identified as type 1 which were subjected to distilled water maintained at $65^{\circ} \pm 1^{\circ} \text{C}$ ($150^{\circ} \pm 2^{\circ} \text{F}$). The samples were then rated by three individuals, using the procedure outlined in Section 3.2 for blisters, color change, change in surface profile, cracks and loss of visible gloss.

6.1.1.2 The water resistance rating did not exceed the maximum requirement of 9 when specimens were evaluated for blisters, color change, change in surface profile, cracks and loss of visible gloss. For any one of the five types of defects, the maximum average change of any specimen did not exceed the maximum requirement of 4.

Findings: The three specimens of the type 3 material had a water resistance rating was 0.0.

PHOTOGRAPHS OF SAMPLES SUBMITTED





HLFL53



CLDBL73

Clawfoot Designs

