TEST REPORT

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Report Number: 1033-07001-002

Report Issued: October 2, 2007 **IAPMO R&T Lab Project No.:** 14290

Client: Aquassure Bath Products, Inc.
549A Lawrence Avenue
Kelowna, BC V1Y 6L

Source of Samples: The sample was sent to IAPMO R&T Lab from Aqua Sure Bath Products, Inc. The sample was received in good condition on August 23, 2007.

Date of Testing: September 1 to 26, 2007.

Sample Description: Plastic Whirlpool Bathtub with Pressure Sealed Doors

Model: E&M
60" x 35-1/2" x 19-1/4"

Unit tested is a plastic whirlpool bathtub with one pressure sealed door. The bathtub Is made from gel coat with fiberglass reinforced backing. The whirlpool system consists of one pump and Vico thin suction fitting and seven jets with rigid PVC piping as well as flexible hoses as plumbing.

Scope of Testing: The purpose of the testing was to determine if the sample tested of model Whirlpool Walk In Bath Tub met the applicable requirements of ASME A112.19.15-2005, entitled "Bathtub/Whirlpool Bathtubs with Pressure Sealed Doors".

Conclusion: The sample tested of the Whirlpool Walk In Bath Tub with Pressure Seal Door Model E&M from Aqua Sure Bath COMPLIED with the applicable requirements of ASME A112.19.15-2005

By our 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,

Larry Owen Test Engineer

Reviewed by,

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

LO:bp

Primary Standards: ASME A112.19.15-2005, Sections Tested / Evaluated:

2.1	Materials*	2.2	Doors
2.3	Electrical Components	2.4	Door and Seals
2.5	Primary Seal Materials	3.1	Secondary Seal
3.2	Door Load Test	3.3	Door Cycle with Primary Seal
3.4	Door Cycle Test for Secondary Seal		
4.0	Markings		

* Section 2.1 of ASME A112.19.15-2005 refers to ANSI Z124.1-95 supeceded by ANSI Z124.1.2-2005, entitled “Plastic Bathtubs and Shower Base” and ASME A112.18.7 -2005, entitled “Whirlpool Bathtub Appliances”.

ANSI Z124.1.2-2005

2.1	Materials	2.2	Dimensional
2.4	Installation Instructions	2.5	Care and Maintenance
2.7	Grab Bars	2.8	Raised Flange
3.3	Surface Test	3.4	Subsurface Test
4.2	Drain Fitting Connection	4.3	Point Impact Loads
4.4	Loads on seats	4.5	load on Rim and Bottom
4.6	Area Impact Load on Wall Surrounds		
4.7	Loads on Wall Surround	4.8	Radii Load Test
4.9	Loads on Unsupported Area	5.1	Colorfastness Test
5.2	Stain Resistance Test	5.3	Wear and Cleanability Test
5.4	Cigarette Test	5.5	Chemical Resistance Test
5.6	Ignition Test	6	Additional Material Tests

ASME A112.18.7M-1995

4.1.1	Bathtub	4.1.2	Piping
4.1.3	Joints	4.1.4	Pumps
4.1.5	Suction Fittings	4.2	Circulation Piping and Air Line Installation
4.3	Installation Instructions		
4.4	Operation, Use and Care Instructions	5	Water Retention
6	Marking and Labeling	7	Hair Entrapment

ICC/ANSI A117.1-2003

309.4 Control Operation
607.4 Control Location

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

2.1 Materials

Seal – COMPLIED.

The materials incorporated in the door and components of the seals were made of rubber and must be suitable for application in plumbing fixtures or devices and were in accordance with the standards referenced in the standard.

Bathing Shell – COMPLIED.

The bathing shell met the requirements of ANSI Z124.1.2 Refer to ANSI Z124.1.2 section of this report.

Whirlpool Bathtub – COMPLIED.

Refer to ASME A112.19.7M section 3 of this report.

2.2 Door – COMPLIED.

The bathtub door met the performance criteria as specified in section 3 of the standard.

Refer to Section 3 in this report.

2.3 Electrical Components – COMPLIED.

Electral comonents met the applicable requirements of UL 1795, see manufacturer's supplied information.

2.4 Door and Seals – COMPLIED.

The door had a seal with adequate means for drainage. The door drain was designed as an integral part of the bathing unit.

2.5 Primary Seal Materials – COMPLIED.

The primary seal met the requirements of ASTM D2000

3.1 Secondary Seal – NOT APPLICABLE.

The unit did not contain a secondary seal.

3.2 Door Load Test – NOT APPLICABLE

Unit tested utilized a pocket type door and is exempt form 300 lb vertical load test.

3.3 Door Cycle With Primary Seal – COMPLIED.

The door was cycled opened and closed sufficiently to break and affix the seal 20,000 times with the primary seal activated. At the end of the 20,000 cycles, the primary seal was water tight and showed no signs of leakage with the tub filled to the overflow.

3.4 Door Cycle Test for Secondary Seal – NOT APPLICABLE.

The door did not contain a secondary seal.

4. Markings – COMPLIED.

The bathtub was permanently and legibly marked with manufacturer‘s name, model number and other required

ANSI Z124.1.2- 2005

2.1 Materials - COMPLIED.

2.1.1 Composition – 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 – The finish surface was of a quality which met all the applicable requirements of the standard. The unit qualified as a Type 4.

2.1.3 Supporting Structure – 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.

2.4 Installation Instructions – COMPLIED.

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

2.5 Care & Maintenance Instructions – COMPLIED.

The unit was supplied with a copy of care and maintenance instructions attached to the unit. The wording “To be provided to the owner”.was on the unit.

2.7 Grab Bars – COMPLIED.

The grab bars complied with the requirements of ASTM F446.

2.8 Raised Flange and Tiling Beads – NOT APPLICABLE.

The bathtub tested did not incorporated an integral raised flange and not intended to be installed against the wall.

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 was no void 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 (+/- 1/4) inches in length connected to the drain fitting and extending horizontally for one minute in each of three radial position as prescribedby the standard. With the weight in place 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 drain connection area

4.3 Point Impact Loads – COMPLIED.

A 1-1/2 inch diameter, 1/2 pound steel ball from dropped from a height of 36 inches to strike three different points on the bottom of the unit and three different points on the rim. The 1-1/2 inch diameter, 1/2 pound steel ball was then dropped from a height of 24 inches to strike three different points on radii in the bottom of the unit. The unit was inked again per Section 3.3.1 and inspected for cracks and chips.

Findings: There were no visible cracks or chips.

4.4 Loads on Seats – NOT APPLICABLE

No seat was present on unit tested.

4.5 Loads on Rim and Bottom – COMPLIED.

4.4.1 A preload weight of 300 (+/-5) lbs was applied to the center of the bottom of the unit on a weight distribution disk 43 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 three 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 and the deflection measured. The load was then removed and the residual deflection measured.

4.4.3 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 4.4.1 and 4.4.3 there were no cracks in the surface of the unit when inked per Section 3.3.1 and inspected again.The deflection of the applied load did not exceed 0.150 inch and the maximum residual deflection did not exceed 0.008 inch.

Findings: The deflection under the load was 0.032 inch. The residual deflection was 0.002 inch. In addition, no cracks were found.

4.6 Area Impact Load on Wall Surround – NOT APPLICABLE.

The bathtubs tested did not contain wall surrounds.

4.7 Loads on Wall Surrounds – NOT APPLICABLE.

The bathtubs tested did not contain wall surrounds.

4.8 Radii Load Test – COMPLIED

The outside radii was 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` near the edge.

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.

Findings: The deflection under the applied load did not exceed 0.125 inch at any individual point. The maximum deflection measured was 0.007 inch.

There were no cracks in the bathtub surface after being inked again as described in 3.3.1 of the standard.

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 souce as specified in section 3.2 of the standard. The average color different between tested specimen and untested specimen was 0.52 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 weree 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 towl. 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.

Findings:

Reagents	Covered Samples	Uncovered Samples
Black Crayon	2	2
Black Liquid Shoe Polish	1	1
Blue Washable Ink	1	1
Lipstick	2	2
Hair Dye	1	1
Iodine Solution	5	5
Genetian Violet Solution	3	3
Total Points	15	15

The total rating was 15. Thickness of material removed to eliminate was less than 0.001 inch.

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.

5.3 Wear and Cleanability – COMPLIED.

Three specimens cut from three different locations on the bathtub were subjected to 10,000 scrubing 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 switch 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.

Findings: The absolute percentage loss of white light reflectance of the samples were less than 2%. For sample 1 loss was 1.13 %, 2 loss was 1.26 % and 3 loss was 1.56% after cleaning with standard liquid detergent.

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

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.
(a) The absolute percentage loss of white light reflectance after cleaning with abrasive slurry shall be less than 2%.

5.4 Cigarette Test – COMPLIED.

There was no ignition or progressive glow of the surface of the 6 inch x 6 inch test specimens, either during or after contact, of three lighted cigarettes from freshly opened packages of three popular brands of cigarettes. 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)%.

The surfaces of the specimens were unafffected by the reagents.

5.6 Ignition Test – COMPLIED.

Five test specimens, each approximately 12 x 12 inches were cut from the service wall and drain end of the sump. With the specimens mounted in a draft free hood, a propane torch was adjusted to give a blue flame whose visible portion was 1 inch long. The torch was positioned such that the flame inclined upward at a 45 degree angle so that the tip of the blue portion of the flame touched the center of the specimen on the opposite side of the surface finish. After 30 seconds, the torch was removed and the burning period timed until evidence of flame or progressive glow was no longer seen. One minute later the torch was again applied to the same position of the specimen for an additional 30 seconds. The torch was again removed and the burning time noted.

Findings: 1st 30 seconds:

Sample 1: 10 sec., Sample 2: 0 sec., Sample 3: 4 sec., Sample 4: 10 sec., Sample 5: 0 sec.

2nd 30 seconds:

Sample 1: 0 sec., Sample 2: 0 sec., Sample 3: 0 sec., Sample 4: 0 sec., Sample 5: 0 sec.

The maximum allowable burning time is 30 seconds.

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 ws 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

6.1.1 Water Resistance Test – NOT APPLICABLE

The samples of the Type 4 bathtubs

ASME A112.19.7 -2006

2.1.1 Bathtubs – COMPLIED

The plastic bathtub conformed to ANSI Z124.1.2. Refer to ANSI Z124.1.2 above.

2.1.2 Piping – COMPLIED .

(b) PVC plastic tubing on unit tested is "UPC" listed under file 3463

(d) flexible hose used on uit tested is "UPC" listed to PS 33 listed under file number SP-1069

2.1.3 Joints – COMPLIED

(a) No steel pipe was used on unit tested.

(b) Coupling used to the circulating pump to the system utilized a plastic threaded fitting and is accessible.

(c) Unit tested is not a air jetted system

2.1.4 Pumps – COMPLIED.

Pump met the applicable requirements of UL 1795, see manufacturer's supplied information. Note: the Mundial Pump met UL 1081 standard and listed in file E2515551 for swimming pool pumps, filters and chlorinators which also cover usage for hydromassage pump (UL 1795).

2.1.5 Suction Fittings – COMPLIED.

Vico thin suction fitting is UL listed and IAPMO listed . The suction fitting rating met the flow requirements of the whirlpool bathtub appliance circulation system. Refer to Section 7 of this report.

2.2 Circulation Piping and Air Line Installation – COMPLIED

(a) All piping was installed to provide drainage of water in accordance with para 3.1

(b) Water pump was connected to the circulation system utilizing an o-ring fitting and provides for removal of pump.

(c) Unit is a self draining pump the volute was a 3/16" opening.

(d) Only one suction is present on untl tested.

(e) The circulation system was water tight. There was no leakage of the system during testing.

2.3 Installation Instructions – COMPLIED.

Installation Instructions were provided with the bathtub and contain the following information:

2.3.1 Roughing-In Reference – The installation instructions contained the manufacturer's suggested rough-in specifications.

2.3.2 Service Access – Service access with recommended minimum size was included in the installation instructions through removable panels in the skirt.

2.3.3 Electrical – Information was provided pertaining to the safe installation of electrical components. The instructions included a warning relative to the installation of a ground fault circuit interrupter protector in accordance with the local codes.

2.3.4 Installation Precautions – The installation instructions contained precaution statements that warned of danger or damage to the whirlpool bathtub during installation.

2.4 Operation, Use, and Care instructions – COMPLIED.

2.4.1 Operating and Use Instructions – The "Operating Instructions" contained information and precautionary warnings on the general operation and use with the whirlpool bathtub by the consumer.

2.4.2 Flushing Instructions – Flushing instructions included with the unit and required for the unit to be flushed periodically.

2.6 Backflow Protection-COMPLIED

Unit tested was supplied with a backflow valve . that is inline with the drain and is UPC listed under file # 2134.

2.7 Suction Fitting Assembly Requirements-COMPLIED

Unit tested had phillips head correct screw to affix grate/cover

2.8 Suction Fittings Design-COMPLIED

Suction fittings is designed so that the cover does not allow passage of a 0.031" circular rod at 5-lbf.

3.1. Water Retention – COMPLIED.

The whirlpool bathtub appliance was of such design as to prevent retention of water in excess of 1-1/2 fl. oz. for each jet and suction fitting, when tested in accordance with Sections 5.1 and 5.2 of the standard.

Findings: Actual cumulative residual water retention on the back uo unit was 0.51 fl.oz. per jet or suction fitting.

3.2 Physical testing on Suction Fittings – NO TESTING

Vico thin suction fitting is UL listed and IAPMO listed in file # SP-1069 .

4. Markings and Labeling – COMPLIED

The whirlpool bathtub was factory assembled. The label was affixed to the exterior of the tub with the wording "NOTE: TUB SHALL BE TESTED FILL THE TUB WITH WATER TO OVERFLOW DURING ROUGH INSPECTION AND INSPECT FOR LEAKS".

ICC/ANSI A117.1-2003

309.4 Control Operation-COMPLIED

All controls were operable with one hand and did not require tight grapsing, pinching or twisting of the wrist to perate. All controls shell be operable with a maximum for of 5.0 pounds.

Findings: Shower Diverter-4 lbs, volume control-0.5 lbs, temperature control-2.5 lbs.

607.05 Control Location-COMPLIED

Unit complies with explanation. Section 607.5 states " Controls other than drain stoppers shall be located between the open side of the bathtub and the midpoint of the width of the bathtub" This section of the standard applies to bathtubs designed to step over or down into . The united tested has an access door with controls aopposite the door and are at the mid-point of the length and when the occupant is in the seated position with the door closed the controls are fully accessible and all within arms reach.

PHOTOGRAPH OF SAMPLE TESTED: