

Internal Use Only

INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS

MATERIAL AND PROPERTY STANDARDS

FOR

CUSHIONED BATHTUBS AND WHIRLPOOL BATHTUB APPLIANCES

IAPMO PS 43- 2007

1. PURPOSE

- 1.1** The purpose of this Standard is to establish a generally acceptable Standard for verification of performance of cushioned bathing fixtures, such as bathtubs and whirlpool bathtub appliances. Its purpose is to serve as a guide for producers, distributors, architects, engineers, contractors, installers, inspectors and users; and to promote understanding regarding materials, manufacture and installation.
- 1.2** The provisions of this standard are not intended to prevent the use of any alternate material or method of construction, provided any such alternate meets the intent and requirements of this document and changes are amended to this standard.

2. SCOPE

- 2.1** This Standard covers the requirements for evaluation of performance of Cushioned Bathtubs and Whirlpool Bathtub Appliances.
- 2.2** Cushioned plumbing fixtures shall consist of an elastomeric surface, foam core, and fiberglass reinforced plastic structural layer. The purpose of the elastomeric surface and the foam core is to provide for a cushioned surface for the bather. These fixtures are intended for use in hospitals, therapy clinics, adult homes or for the elderly or others in residential applications as the need arises.
- 2.3** This Standard shall also supplement other requirements of the Uniform Plumbing Code.

3. REFERENCED STANDARDS

- 3.1** All standards referenced herein shall be the current edition of that standard.

ASTM C 297

Tension Test of Flat Sandwich Constructions in
Flatwise Plane

IAPMO/ANSI Z124.1.2

Plastic Bathtub and Shower Units

Copyright © 2007 by International Association of Plumbing and Mechanical Officials. All rights reserved. Printed in the United States of America. No part of this publication may be reproduced, stored in an electronic retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher.

Internal Use Only

4. GENERAL REQUIREMENTS

- 4.1 Materials.** The cushioned bathing fixtures shall be considered as Type 6 and comply with all the requirements of ANSI Z124.1.2 with the following modifications and additional tests (Puncture Resistance and Water Absorption).
- 4.1.1 Resistance to Cigarette Burn Test.** The fixtures shall withstand the application of burning cigarettes, in accordance with Section 5.4 of Z124.1.2 to the extent that when all of the damage has been removed, the resultant loss of material from the surface shall be such that the foam core layer is not exposed. The damaged surface shall be restorable by using filler, abrasive and polishing compounds to approximate the original finish and serviceability of the fixture.
- 4.1.2 Bond Test.** Five samples, each 1 in. sq. (25.4 mm x 25.4 mm) shall be tested in accordance with ASTM C 297 at a crosshead rate of 0.02 in. (0.5 mm) per minute. The average value shall be recorded. The bond strength between the surface finish and the reinforcement substructure shall be a minimum average of four (4) psi. All specimens tested shall exhibit failure in the reinforcement, not in the interface between the surface finish and the reinforcement.
- 4.1.3 Puncture Resistance Test**
- (a) Twenty four common dry wall nails shall be randomly distributed over the centermost 300 mm by 300 mm area on the floor of the bathtub. A 12" x 12" (305 x 305 mm) piece of 1" (25.4 mm) thick plywood shall be placed over the nails. A test load of 150 lbs. (0.65 kN) shall be applied for one minute. A test area shall be visibly inspected after removal of the test load. There shall be no punctures. Any resulting depressions on the surface shall disappear within twenty four (24) hours.
 - (b) A No. 2 Phillips screw driver weighing 3.3 oz. (0.094 kg) shall be raised until the tip of the screw driver is at a height of 5 ft. (1524 mm) above a flat area on the bottom of the bathtub. The screw driver shall be dropped from this height to strike the test area perpendicularly. There shall be no puncture of the elastomeric surface layer.
- 4.1.4 Water Absorption Test.** A total of three specimens shall be cut in accordance with Water Resistance Test in Section 6.1 of IAPMO/ANSI Z124.1.2. Those specimens shall be tested in accordance to the testing procedures stated within Section 6.1 of Z124.1.2 excluding the conditioning of the surface by a wet-rubbing for a 20 scrub cycle and subjecting them to distilled water maintained at $73.4 \pm 1.8^{\circ}\text{F}$ ($23^{\circ} \pm 1^{\circ}\text{C}$) and not the temperature mentioned in the Z124.1.2 standard.

Specimens shall be conditioned for twenty four (24) hours in an oven at $122 \pm 5.4^{\circ}\text{F}$ ($50 \pm 3^{\circ}\text{C}$), cooled in a desiccator, and weighed immediately. They shall then be placed in distilled water at $73.4 \pm 1.8^{\circ}\text{F}$ ($23 \pm 1^{\circ}\text{C}$), entirely immersed and resting on edge. At the end of twenty four (24) hours, the specimens shall be removed from the water one at a time, all surface water wiped off with a dry cloth, and the specimens weighed within thirty (30) seconds of removal from the water. Percentage increase in mass shall be calculated to the nearest 0.01%.