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INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS

STANDARD FOR

PORCELAIN ENAMELED FORMED STEEL PLUMBING FIXTURES

IAPMO TS 22-97^{e1}

1. INTRODUCTION

- 1.1** This Standard shall apply to the manufacture of porcelain enameled formed steel bathtubs, sinks and lavatories which are specifically for use in manufactured homes¹ and recreational vehicles.

2. PURPOSE

- 2.1** The purpose of this Standard is to establish an acceptable quality standard for porcelain enameled formed steel plumbing fixtures. Its purpose is also to serve as a guide for producers, distributors, architects, engineers, code authorities and users; to promote understanding regarding materials, manufacture, and installation; and to provide a basis for identifying porcelain enameled formed steel plumbing fixtures that conform to this standard.

3. SCOPE

- 3.1** The Standard covers materials, construction, methods of inspection, testing and identification of porcelain enameled formed steel plumbing fixtures such as bathtubs, sinks and lavatories as commonly used in the manufactured home and recreational vehicle industries. Definitions are given for certain trade terms.

4. REQUIREMENTS

- 4.1** **Material.** The fixtures shall be made from sheet steel and coated with porcelain enamel in accordance with the requirements of 4.2 and 4.3.
- 4.2** **Sheet Steel.** For the purposes of this Standard, sheet steel is defined to include (1) special purpose "enameling iron or steel" of low metalloid and copper content, especially manufactured and processed for the production of porcelain enamel units; (2) special-type steels designed for special porcelain enamel application; and (3) conventional cold rolled sheets which can be satisfactorily porcelain enameled and which meet other requirements of this Standard.

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The thickness of the pre-formed sheet steel shall be No. 16 gauge or heavier when used for bathtub sumps, No. 18 gauge or heavier when used for sinks and lavatories with a span 30 in. or greater, and No. 20 gauge or heavier when used for sinks and lavatories with a span of less than 30 in.

Gauge number and corresponding thickness shall be as follows:

<u>Gauge</u>	<u>No. 16</u>	<u>No. 18</u>	<u>No. 20</u>
Standard thickness, in.	0.0598	0.0478	0.0359
Minimum thickness, in.	0.054	0.043	0.034

4.3 Porcelain Enamel. Porcelain enamel is substantially vitreous or glassy inorganic coating bonded to metal by fusion at a temperature above 800°F (ASTM² Designation C 286 (latest edition), Definitions of Terms Relating to Porcelain Enamel and Ceramic-Metal Systems).

4.3.1 Thickness. A porcelain enamel coating shall be applied to all surfaces and the surface that is normally visible after installation shall be a chemically resistant porcelain enamel. (See 4.3.4). The total thickness of the porcelain enamel on the visible surface shall be not less than 0.005 in. when measured in accordance with 6.1.1.

4.3.2 Appearance. The porcelain enamel surface normally visible after installation shall be free from imperfections that adversely affect the appearance or serviceability of the fixture, except that certain minor blemishes (See 5.1) are allowable as provided under the method of inspection described in 6.1.2.

4.3.3 Color, Specular Gloss and Reflectance. The fixture, when installed, shall be of uniform color. The porcelain enamel surface normally visible after installation shall be glossy to the extent that it will have a 45° specular gloss of not less than 45 when tested in accordance with 6.1.3. If white, the reflectance of the cover coat shall be not less than 72 percent when determined in accordance with 6.1.4.

4.3.4 Chemical Resistance. The porcelain enamel surface normally visible after installation shall be acid resistant so as to have a rating of not less than "A" when tested in accordance with 6.1.5, the weight loss shall not exceed 20 mg/sq. in. when tested in accordance with 6.1.6 for alkali resistance.

4.3.5 Abrasion Resistance. The surface abrasion index of the porcelain enamel surface normally visible after installation shall be 40 or higher when tested by the procedure given in 6.1.7.

4.4 Structural Requirements

4.4.1 Warpage. Warpage of the surfaces of fixtures that contact adjoining surfaces such as walls, floors, cabinets, or counter tops shall not exceed one-sixteenth (1/16) in. per linear foot, when tested in accordance with the method described in 6.2.1 Warpage of