

IAPMO PS 69-2019

# Bathwaste and Overflow Assemblies with Tub Filler Spout



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# ***IAPMO Standard***

## **IAPMO PS 69-2019**

### **Bathwaste and Overflow Assemblies with Tub Filler Spout**

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# IAPMO PS 69-2019

## Bathwaste and Overflow Assemblies with Tub Filler Spout

### 1 Scope

#### 1.1 Scope

This standard covers standard types of bathwaste and overflow assemblies such as rigid, swivelball, flexible-neck and also bathwaste and overflow assemblies with tub filler spouts which are installed on bathing vessels and specifies requirements for materials, physical characteristics, performance testing, and markings.

#### 1.2 Alternative Materials

The requirements of this standard are not intended to prevent the use of alternative materials or methods of construction provided such alternatives meet the intent and the requirements of this standard.

#### 1.3 Terminology

In this Standard,

- (a) “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy to comply with the Standard;
- (b) “should” is used to express a recommendation, but not a requirement;
- (c) “may” is used to express an option or something permissible within the scope of the Standard; and
- (d) “can” is used to express a possibility or a capability.

Notes accompanying sections of the Standard do not specify requirements or alternative requirements; their purpose is to separate explanatory or informative material from the text. Notes to tables and figures are considered part of the table or figure and can be written as requirements.

#### 1.4 Units of Measurement

SI units are the primary units of record in global commerce. In this Standard, the inch/pound units are shown in parentheses. The values stated in each measurement system are equivalent in application, but each unit system is to be used independently. All references to gallons are to U.S. gallons.

#### 1.5 Amendments

Proposals for amendments to this Standard will be processed in accordance with the standards-writing procedures of IAPMO.

## 2 Reference Publications

This Standard refers to the following publications and, where such reference is made, it shall be to the current edition of those publications, including all amendments published thereto.

|                           |                                                                                                                                             |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| ANSI/SAE J512             | Automotive Tube Fittings                                                                                                                    |
| ASSE 1001                 | Performance Requirements for Atmospheric Type Vacuum Breaker                                                                                |
| ASME A112.18.1/CSA B125.1 | Plumbing Fixture Fittings                                                                                                                   |
| ASME B16.18               | Cast Copper Alloy Solder Joint Pressure Fittings                                                                                            |
| ASME B16.22               | Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings                                                                              |
| ASME B16.26               | Cast Copper Alloy Fittings for Flared Copper Tubes                                                                                          |
| ASTM B86                  | Standard Specification for Zinc and Zinc-Aluminum (ZA) Alloy Foundry and Die Castings                                                       |
| ASTM B240                 | Standard Specification for Zinc and Zinc-Aluminum (ZA) Alloys in Ingot Form for Foundry and Die Castings                                    |
| ASTM D395                 | Standard Test Method for Rubber Property-Compression Set                                                                                    |
| ASTM D471                 | Standard Test Method for Rubber Property-Effect of Liquids                                                                                  |
| ASTM D573                 | Standard Test Method for Rubber-Deterioration in an Air Oven                                                                                |
| ASTM D1784                | Standard Test Method for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds                 |
| ASTM D2235                | Standard Test Method for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings                                 |
| ASTM D2240                | Standard Test Method for Rubber Property-Durometer Hardness                                                                                 |
| ASTM D2564                | Standard Test Method for Solvent Cement for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings                                           |
| ASTM D2661                | Standard Test Method for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings                 |
| ASTM D2665                | Standard Test Method for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings                                       |
| ASTM D3965                | Standard Classification System and Basis for Specifications for Rigid Acrylonitrile-Butadiene-Styrene (ABS) Compounds for Pipe and Fittings |
| ASTM D4101                | Standard Classification System and Basis for Specification for Polypropylene Injection and Extrusion Materials                              |
| ASTM F409                 | Standard Specification for Thermoplastic Accessible and Replaceable Plastic Tube and Tubular Fittings                                       |

### 3 Definitions

**Controlling Mechanism** — Those components of the waste and overflow assembly which regulate the flow of waste water from the bathing vessel.

**Bathwaste And Overflow Assembly** — A waste and overflow assembly which is intended for installation in the waste and overflow holes in bathing vessels and which consists of a drain, tee and overflow fitting and controlling mechanisms.

**Bathwaste and Overflows with Tub Filler Spout** — A waste and overflow assembly which contains an integral manifold within the overflow component for filling the tub with. This product is intended for installation in the waste and overflow holes in bathing vessels and consists of a drain, tee, and overflow fitting with integral manifold, backflow preventer and controlling mechanisms.

**Critical Level** — The critical level (C-L or C/L) marking on a back flow prevention device or vacuum breaker is a point conforming to approved standards and established by the testing laboratory (usually stamped on the device by manufacturer) which determines the minimum elevation above the flood level rim of the fixture or receptor served at which the device may be installed. When a backflow prevention device does not bear a critical level marking the bottom of the vacuum breaker, combination valve or bottom of any such approved device shall constitute the critical level.

**Backflow Prevention Device / Vacuum Breaker** — A device or means to prevent backflow into the potable water system.

### 4 General Requirements

#### 4.1 Materials

- 4.1.1 The virgin black ABS plastic shall conform to the requirements in ASTM D3965 with a minimum cell classification of 4-2-2-2-2.
- 4.1.2 The virgin PVC plastic shall conform to the requirements in ASTM D1784 with a minimum cell classification of 12454C.
- 4.1.3 The virgin PP plastic shall meet the requirements of specification ASTM D4101, cell classification PP010B55140 and PP0105G20A33350.
- 4.1.4 Clean reworked ABS or PVC generated from the manufacturer's own production may be used by the same manufacturer.
- 4.1.5 Solvent cement complying with ASTM D2235 (ABS) and D2564 (PVC) shall be used to join these assemblies.
- 4.1.6 Exposed parts shall be brass, zinc, stainless steel, plastic or any combination of these materials.

**4.1.6.1** Zinc alloy shall be UNS Z33520 (Common Alloy #3) and shall meet the requirements of ASTM B86. If in the form of ingot, it shall be UNS Z33521 and shall meet the requirements of ASTM B240.

**4.1.6.2** Brass shall be of an alloy of an ASTM grade with a minimum of 58% copper.

**4.1.6.3** Stainless steel shall be commercial grade, 300 series or better.

**4.1.7** Finishes shall be as specified and tested in accordance with ASME A112.18.1/CSA B125.1.

**4.1.8** Controlling mechanism shall be of corrosion resistant material.

**4.1.9** Threads for compression and union joints shall be a minimum of two one halves, with a minimum of two thread engagement. Non-coupling threads such as compression joints where the nut is part of the product must be made to a recognized thread standard. Union joint threads shall conform to American National Straight Mechanical joints (NPSM). Compression joints, other than those stipulated above, shall be compatible with SAE J512.

**4.1.10** Compression washers shall be made of a material suitable for its intended purpose and conforming to an appropriate ASTM standard.

**4.1.11** Drawn brass tubing shall be a wall thickness of  $1.143 \pm 0.08$  mm ( $0.045 \pm 0.003$  in) (17 gauge B&S) with plating optional.

**4.1.12** Lead content in material must not exceed 8%.

## **4.2 Assembly Components**

The assembly shall consist of a drain, a drainage tee, an overflow component, and any controlling mechanisms as necessary to control the water level in the bathing vessel.

## **4.3 Fittings Dimensions**

Fittings shall conform dimensionally to the requirements of ASTM D2661 for ABS, ASTM D2665 for PVC and ASTM F409 for tubular.

## **4.4 Fittings Workmanship**

Fittings shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions or other injurious defects.

## **4.5 Flexible Tubing**

Flexible tubing for the overflow assembly shall meet the performance test requirements of 5.2, 5.3, and 5.6 of this Standard. Internally corrugated flexible tubing shall not be used.

## **4.6 Accessibility**

The design of the supply fittings shall be such that, after installation, replacements of all wearing parts may be accomplished without disconnecting the fitting from the supply pipe or fixtures in accordance with Section 4.2, Servicing of ASME A112.18.1/CSA B125.1.

**4.7 Backflow Prevention**

Plumbing fixture fittings shall be designed to prevent backflow as required by ASME A112.18.3 or through an airgap in accordance with ASME A112.1.2 and in accordance with Section 5.9, Backflow Prevention of ASME A112.18.1/CSA B125.1.

**4.8 Mounting**

**4.8.1** Provision shall be made that the fitting may be connected and mounted without marring the finish or otherwise damaging the fitting of the surface on which it is to be mounted.

**4.8.2** Means shall be provided to securely mount the fitting to withstand loading normally encountered in service.

**4.9 Vacuum Breaker**

Vacuum breaker installed in the bathwaste and overflows with tub filler spouts must comply with ASSE 1001 specification requirements.

**4.10 Solder End Connections**

The dimensions of solder end for connection to copper or brass tube fittings, except factory assembled parts, shall conform with respect to length and diameter of the joint section to the dimensions given in ASME B16.18 or ASME B16.22 and in accordance with Section 4.5, Connections other than threaded connections of ASME A112.18.1/CSA B125.1.

**4.11 Flare Connections**

Flare connections shall be designed to conform with ASME B16.26.

**4.12 Coatings**

Coatings on visual components of product assembly shall comply with the minimum requirements in Section 5.2, Coatings of ASME A112.18.1/CSA B125.1.

**4.13 Flow Rate**

Flow rates will meet the requirements of ASME A112.18.1/CSA B125.1.

**4.14 Bath Fittings Servicing**

The bath fitting servicing shall have the following requirements:

- (a) The construction of the built in bath fitting shall be such that all wearing parts can be replaced from in front of the finished wall in which the supply valve is mounted; and
- (b) The escutcheons shall be of sufficient size to cover the openings in the wall necessary to service the fitting.

## 5 Testing Requirements

### 5.1 Cycle Testing of the Controlling Mechanism

#### 5.1.1 Test Method

The cycle test shall be conducted as follows:

- (a) The controlling mechanism shall be tested from the fully open to fully closed position
- (b) Subject the assembly to 10,000 cycles
- (c) Inspect the controlling mechanism

#### 5.1.2 Performance Requirements

The controlling mechanism shall show no major distortion and still function after the cycling and the leakage rate shall not be more than 5% of that required in Section 5.2 of this Standard.

### 5.2 Water Tightness of the Waste Assembly

#### 5.2.1 Test Procedure

The water tightness test shall be conducted as follows:

- (a) The assembly shall be fabricated and assembled to a bathtub or test vessel not less than 914.4 mm (36 in) in depth, as measured from the centerline of the waste assembly to the centerline of the overflow.
- (b) If the assembly incorporates a control mechanism which limits the length of the assembly to a specific depth of bathtub, then testing shall be conducted at that maximum length.
- (c) A container, which is calibrated in millimeters, shall be placed at the outlet of the assembly.
- (d) The controlling mechanism shall be activated to close the waste outlet.
- (e) The bathtub or test vessel shall be filled to the point of overflow.
- (f) The water shall remain in the vessel for a period of not less than 30 min.

#### 5.2.2 Performance Requirements

The allowable leakage shall be not more than 3.8 L/h (1.0 gph).

### 5.3 Strength Test Requirement for External Parts Fitted to Bathwaste and Overflow with Tub Filler Products such as Valves, Backflow Prevention Devices

#### 5.3.1 Test Procedure

The hydrostatic strength test shall be conducted as follows:

- (a) Assemble the test fittings in accordance with the manufacturer's instructions
- (b) Apply a minimum pressure of 172 kPa (25 psi)
- (c) Hold the pressure for at least 1 h
- (d) Inspect the test fitting

#### 5.3.2 Performance Requirements

Test Fittings shall withstand the hydrostatic test without permanent distortion or failure of the pressure envelope