

Internal Use Only

INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS

MATERIAL AND PROPERTY STANDARD

FOR

MECHANICAL CAST IRON CLOSET FLANGES

IAPMO PS 97-2011

1. PURPOSE

- 1.1** The purpose of this Standard is to establish an acceptable standard for mechanical cast iron closet flanges. Its purpose is to serve as a guide for producers, distributors, architects, engineers, contractors, installers, inspectors and users; to promote an understanding regarding materials, manufacture and installation; and to provide for identifying mechanical cast iron closet flanges that conform to this Standard.
- 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 of this Standard.

2. SCOPE

- 2.1** This Standard covers definitions, general requirements, testing requirements and marking requirements.
- 2.2** This standard covers closet flanges which do not fall under ASTM A888 or ASTM A74 such as seen in Figure 1 which do not include typical slots for the mounting bolts.

3. DEFINITIONS

- 3.1** A closet flange that is dependent upon a mechanical joint to obtain its water tight seal. It shall have a minimum of three bolts and shall provide a means of securing it to the structure.
- 3.2** **Mechanical Joint.** A joint based upon the stuffing box principal where bolts are used to pull a flange against a elastomeric gasket contained in an annular space causing the elastomeric gasket to compress against the pipe inserted into the opening and the recessed wall of the hub or bell opening into which the gasket is inserted effectively sealing the joint.

4. GENERAL REQUIREMENTS

4.1 Material

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- 4.1.1 Cast Iron shall be gray iron with a minimum tensile strength of 21,000 psi (145 MPa).
- 4.1.2 Bolts shall be series 300 stainless steel.
- 4.1.3 Gasket shall comply with the requirements of ASTM C 564, Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
- 4.1.4 Flange and body thickness shall meet the minimum thickness requirements in Table 1 of CISPI 301 and Table 1 of ASTM A 888.
- 4.1.5 Flanges shall be permitted to be slotted, notched or a combination of slotted and notched.
- 4.1.6 The bolt circle for the mechanical joint (clamp ring bolts) shall be $5-15/16 \pm 7/16$ in. (150.8 ± 11.1 mm). The maximum outside diameter of the flange shall be $7-3/16$ in. (182.6 mm).
- 4.1.7 At the flange inlet, the minimum inside diameter shall be 4 inches (101.6 mm) for for a depth of at least 3/4 inch from the flange face (19.1 mm).
- 4.1.8 The flange shall have a maximum thickness of 3/8 inch (9.5 mm).
- 4.1.9 The bolt circle for the water closet mounting bolt holes shall have a centerline diameter of $6 \pm 1/4$ inches (152.4 ± 6.4 mm).

5. TESTING REQUIREMENTS

- 5.1 Cast iron shall meet the mechanical properties as specified in ASTM A 888 and CISPI 301.
- 5.2 Closet flange shall be installed on a pipe for which it is designed for assembly with (CI, ABS or PVC) and pressure tested with a 10 foot (3.0 m) head of water for fifteen (15) minutes. There shall be no leakage.

6. MARKINGS AND IDENTIFICATION

- 6.1 The closet flange shall be permanently marked with the following:
 - (a) Manufacturer's name or trademark;
 - (b) Model number; and
 - (c) Country of Origin.

Adopted: 1996

Revised: 1997, 12/2001

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