

Internal Use Only

INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS

MATERIAL AND PROPERTY STANDARD

FOR

DIELECTRIC WATERWAY FITTINGS

IAPMO PS 66-2000

1. PURPOSE

- 1.1** The purpose of this standard is to establish a generally acceptable standard for dielectric waterway fittings. Its purpose is to serve as a guide for producers, distributors, architects, engineers, contractors, installers, inspectors and users; to promote understanding regarding materials, manufacture and installation; and to provide for identifying dielectric waterway fittings complying with 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 insulated, dielectric waterway fittings in sizes 1/2" (12.7 mm) thru 4" (101.6 mm) and configurations include male nominal pipe threads (MNPT), grooved ends and plain ends. This standard covers definitions, general requirements, in addition to general description on materials used and the method of marking and identification.

3. DEFINITIONS

- 3.0** Dielectric waterway fittings reduce cathodic corrosion in plumbing systems by isolating dissimilar metal piping sections through the use of an insulated waterway fitting.

4. GENERAL REQUIREMENTS

- 4.1** Unless otherwise specified, the electrically conductive portion of the fitting shall be constructed from Schedule 40 ASTM A 53 steel pipe, or using electroplating such as: nickel, chrome, tin, or zinc.
- 4.2** Unless otherwise specified, the insulator material shall be glass reinforced polyphenylene oxide (PPO) in accordance with ASTM D 4349.
- 4.3** Unless otherwise specified, the end configuration shall be of pipe or grooved end or plain end design.

Copyright © 2000 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

- 4.4 Material of construction for all steel fittings shall comply with ASTM A 53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless. Alternate material shall be acceptable, provided successful compliance with all performance requirements per Section 6 of this standard.
- 4.5 All MNPT threaded ends shall comply with ANSI/ASME B1.20.1 Pipe Threads, General Purpose Inch.

5. MATERIAL REQUIREMENTS

- 5.1 For lined insulator fittings, the thermoplastic liner material shall be fabricated from polypropylene thermoplastic material in compliance with ASTM D 4101, Specification for Propylene Plastic Injection and Extrusion Materials, it shall be Group 1, Class 1 and Grade 3. For molding materials, it shall be Group 1, Class 1 and Grade 4.
- 5.2 The insulator material shall comply with ANSI/NSF 14, Plastic Piping Components and Related Materials or ANSI/NSF 61.
- 5.3 The insulator shall fully line the interior of the fitting. In addition, for lined fittings the thermoplastic material shall be flared over at the ends of the fitting so as to shield the ends when threaded into a mating female threaded fitting. The flared ends shall not interfere with mating (female) fitting engagement during makeup using standard plumbing practice.

6. TESTING REQUIREMENTS

- 6.1 **Elevated Temperature Test:** Cycle representative production samples of the fittings from room temperature to $212^{\circ} \pm 5^{\circ} \text{ F}$ ($100 \pm 3^{\circ} \text{ C}$) to determine the ability of the components to withstand heat aging and temperature cycling. Test a minimum of two fittings by assembling them into mating fittings and immersing in boiling water. After three hours, remove and allow to cool to a maximum of 85° F (29° C). Repeat this for three cycles. Inspect the fittings after each cycle for cracking or gross deformation. At the completion of the third cycle, subject the specimens to the Dielectric/Electrostatic Test per Section 6.2.
- 6.2 **Dielectric/Electrostatic Test:** Test representative samples after the Temperature Test in Section 6.1. This dielectric/electrostatic, holiday detector test is a method for determining the continuity of the insulator after cycle testing. The holiday detector apparatus consists of a 67.5 volt DC source such as a battery; an exploring electrode having a cellulose sponge dampened with an electrically conductive liquid such as tap water; and an audio indicator to signal a defect in a highly dielectric material (insulator). A ground wire/clip connects the detector with the metal fitting.

Attach the electrode (sponge) clamps to the end of the wand and dampen the sponge with tap water. Attach the power source (67.5 volt DC) to the wand. Attach the ground wire from the power source to the external fitting body. Now touch the electrode to a