

**INTERNATIONAL ASSOCIATION OF PLUMBING
AND MECHANICAL OFFICIALS**

IAPMO GUIDE CRITERIA

FOR

**SOLDERLESS BONDING ADHESIVE FOR
COPPER PIPING WATER SYSTEMS**

IAPMO IGC 215-2005b (R2014)

1. PURPOSE

- 1.1** The purpose of this standard is to establish a generally acceptable standard for solderless bonding adhesive for copper piping water systems. Its purpose is to serve as a guide for producers, distributors, architects, engineers, contractors, installers, inspectors and users; to promote understanding regarding adhesive materials for copper piping water systems; and to provide for identifying adhesive materials 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 or exceeds the intent and requirements of this document and changes are amended to this standard.

2. SCOPE

- 2.1** This standard covers minimum standards for the manufacture and performance of solderless bonding adhesive for copper piping water systems and is intended to prescribe minimum test performance and test requirements for solderless bonding adhesive for copper piping water systems.
- 2.2** This standard does not cover design or testing of solderless bonding adhesive for use with fire sprinkler piping system.
- 2.3** The solderless bonding adhesive is an insulator and will not conduct electricity.

3. REFERENCE STANDARDS

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

ASTM D 4541	Pull-Off Strength of Coatings Using Portable Adhesion Testers
IAPMO PS 117	Press Type or Plain End Rubber Gasketed with Nail Connection Copper and Copper Alloy Fittings for Installation on Copper Tubing

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4. GENERAL REQUIREMENTS

- 4.1 Materials.** The adhesive material shall meet or exceed the following property requirements:

Material/CAS Reg. No.	Percentage
Polyglycol Dimethacrylate	50 – 80 %
Bisphenol A Fumarate Resin	10 – 40 %
Insoluble Saccharin	2 – 8 %
Cumene Hydroperoxide	1 – 5 %
N, N-Dialkytolueneamines	0.1 – 1 %
Acrylic Acid	0.1 – 0.9 %

- 4.2** When applied to potable water systems, solderless bonding adhesive shall meet the requirements of NSF/ANSI Standard 61, Section 5 for the intended field application.

5. TESTING REQUIREMENTS

- 5.1 Samples.** The test assemblies shall consist of type L copper tubing for both hard and annealed types and a fitting, unless otherwise specified with the testing requirements. The samples shall be adhered and cured in accordance with the manufacturer's specifications. All tests shall be conducted 24 hours after each sample was assembled.
- 5.2 Pull-off Strength Test.** The sample shall be tested in accordance with ASTM D 4541 using a portable adhesion tester. The adhesive shall have a minimum pull-off force of 1300 lbf.
- 5.3 Unrestrained Hydrostatic Pressure Test.** The sample shall be tested in accordance with Sections 5.1.1 and 5.1.2 in IAPMO PS 117. No leakage shall occur at the joints.
- 5.4 Static Torsion Test.** Apply a torsion as specified in Table 2 in IAPMO PS 117 to an adhered test sample. After applying the torsion, remove the sample and subject it to a leak test at 400 ± 7 psi (2759 ± 48 kPa) test pressure for a period of 48 hours at a temperature of $68 \pm 5^\circ\text{F}$ ($20 \pm 3^\circ\text{C}$). There shall be no leakage of the joints.
- 5.5 Bending Test.** Two (2) 40" (1016 mm) long hard copper tubes shall be joined with a coupling with an internal stop and tested in accordance with Section 5.1.4 in IAPMO PS 117. There shall be no leakage at the joint.
- 5.6 Hydraulic Shock (Water Hammer) Test.** The sample shall be tested in accordance with Sections 5.1.6 in IAPMO PS 117. No leakage shall occur at the joints.