

**INTERNATIONAL ASSOCIATION OF PLUMBING
AND MECHANICAL OFFICIALS**

IAPMO GUIDE CRITERIA

FOR

**ALUMINUM-POLYPROPYLENE MULTILAYER PIPING SYSTEMS
FOR HOT- AND COLD- WATER**

IAPMO IGC 239-2007

1. PURPOSE

- 1.1** The purpose of this standard is to establish a generally acceptable standard for Aluminum-Polypropylene Multilayer Piping Systems for Hot and Cold Water, made up by pipes and fittings. Its purpose is to also serve as a guide for producers, distributors, architects, engineers, contractors, installers, inspectors and users; to promote understanding regarding materials and manufacture; and to provide for identifying Aluminum-Polypropylene Multilayer Piping Systems for Hot and Cold Water.
- 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 and requirements of this document and changes are amended to this standard.

2. SCOPE

- 2.1** Aluminum-Polypropylene Multilayer pipe is produced using a butt-welded aluminum pipe as a core, with an extruded inside layer of polypropylene (PP).
- 2.2** The Aluminum-Polypropylene Multilayer Piping Systems for Hot and Cold Water, covered by this standard, is intended for use in all installations when installed in compliance with the Uniform Plumbing Code and the manufacturer's installation instructions.

3. REFERENCE STANDARDS

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

ASME B120.1	Pipe Threads, General Purpose, Inch
ASTM D 1505	Test Method for Density of Plastics by the Density-Gradient Technique
ASTM D 3139	Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
ASTM D 4101	Polypropylene Injection and Extrusion Materials
ASTM D 3418	Transition Temperatures and Enthalpies of Fusion and Crystallization of Polymers by Differential Scanning Calorimetry

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ASTM F 1986	Multilayer Pipe Type 2, Compression Fittings, and Compression Joints for Hot and Cold Drinking-Water Systems
NSF/ANSI 61	Drinking Water System Components – Health Effects

4. GENERAL REQUIREMENTS

- 4.1 Polypropylene (PP) Material.** The polypropylene material shall meet the requirement of ASTM D 4101 and shall equal or exceed a minimum cell classification of PP0300B66153. PP material shall be able to withstand a temperature of 60-70°C for bonding purposes.
- 4.2 Aluminum Pipe.** The composition of aluminum shall comply with Table 1 of this standard. The pipe dimensions shall comply with Section 5 of this standard.

Table 1: Aluminum Alloy Composition

Composition %				
Cu (max)	2.0 – 4.0	2.0 – 4.0	1.5 – 3.5	1.5 – 3.5
Si (max)	7.5 – 9.5	7.5 – 9.5	9.6 – 12.0	9.6 – 12.0
Mg (max)	0.3	0.3	0.3	0.3
Zn (max)	1.0	3.0	1.0	3.0
Fe (max)	1.3	1.3	1.3	1.3
Mn (max)	0.5	0.5	0.5	0.5
Ni (max)	0.5	0.5	0.5	0.5
Sn (max)	0.2	0.2	0.2	0.2
Al (max)	overmeasure	overmeasure	overmeasure	overmeasure

- 4.3 Toxicity.** The material used for making the inner layer and the fittings shall comply with the regulations in NSF/ANSI 61.
- 4.4 Threads.** Body and cap of the fitting shall be connected by use of general purpose threads complying with ASME B1.20.1 or per manufacturer's specifications and shall have a minimum five thread engagement.
- 4.5 Compression Fittings.** The dimensional requirements of compression fittings shall comply with the requirements in Section 5 of this standard. The material requirements of the fittings shall comply with Table 2 of this standard.

Table 2

Si 0.37-0.41% Fe 0.20-0.35%
Mg 0.4-0.58% Ti <0.1%