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INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS

IAPMO GUIDE CRITERIA FOR

CHLORINATED POLY (VINYL CHLORIDE) – ALUMINUM – CHLORINATED POLY (VINYL CHLORIDE) (CPVC-AL-CPVC) TUBING and FITTINGS

IAPMO IGC 243-2007

1. PURPOSE

- 1.1** This standard establishes general requirements for chlorinated poly (vinyl chloride) - aluminum - chlorinated poly (vinyl chloride) composite tubing and fittings, herein designated as "CPVC-AL-CPVC". Its purpose is to 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 CPVC-AL-CPVC tubing and fittings.
- 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 standard.

2. SCOPE

- 2.1** This standard establishes requirements for CPVC-AL-CPVC tubing and fittings made for water service up to and including 180°F (82.2°C). These components comprise pipe and tubing, chlorinated poly (vinyl chloride)-aluminum-chlorinated poly (vinyl chloride) composite tubing, socket type fittings, street fittings, plastic-to-metal transition fittings, internal fittings for CPVC-AL-CPVC composite tubing, solvent cements and adhesives.
- 2.2** The tubing and fittings produced under this standard are intended for use in hot-and-cold water distribution systems.

3. REFERENCED STANDARDS

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

ASTM D 1598	Time-to-Failure of Plastic Pipe Under Constant Internal Pressure
ASTM D 1784	Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
ASTM D 1898	Application of Basic Statistical Methods to Weathering Tests

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ASTM D 2122	Determining Dimensions of Thermoplastic Pipe and Fittings
ASTM D 2837	Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products
ASTM D 2846	Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Hot- and Cold-Water Distribution Systems
ASTM D 3167	Floating Roller Peel Resistance of Adhesives
ASTM E 8	Tension Testing of Metallic Materials
ASTM E 228	Linear Thermal Expansion of Solid Materials With a Push-Rod Dilatometer
ASTM F 1281	Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Pressure Pipe
AWWA C 901	Polyethylene (PE) Pressure Pipe and Tubing, 1/2 in. (13 mm) Through 3 in. (76 mm), for Water Service

4. GENERAL REQUIREMENTS

4.1 Classification

4.1.1 General. This specification classifies CPVC 4120 pipe, tubing and fittings comprised of CPVC 41 materials by maximum continuous use temperature and pressure condition which shall be 100 psi (0.7 MPa) at 180°F (82°C) and by nominal pipe and tubing diameters from ½ inch (13 mm) through 1 inch (25 mm).

4.1.2 Plastic-to-Metal Transition Fittings. This specification classifies CPVC plastic-to-metal transition fittings intended for use up to and including 180°F [82°C] as CPVC-180°F on the basis of resistance to failure by thermocycling.

4.2 Materials

4.2.1 General. The CPVC-AL-CPVC tube is composed of one metallic layer, two layers of the same adhesive, and two layers of the same CPVC compound.

4.2.2 Aluminum. The aluminum shall have a thickness as specified in Table 1. The material shall have minimum elongations and ultimate tensile strengths of 20% and 100 MPa (14 600 psi), respectively. The tests shall be conducted according with ASTM E 8.

4.2.3 CPVC. Chlorinated Poly (Vinyl Chloride) plastics used to make tube meeting the requirements of this specification are categorized by two criteria; namely, basic short-term properties, and long-term hydrostatic strength. Section 4.2.3.1 and 4.2.3.2 respectively define these categories.

4.2.3.1 Basic Short-Term Properties. This specification covers CPVC 41 tube, and fittings made from plastic materials meeting the mechanical strength, heat resistance, flammability, and chemical resistance requirements for CPVC 23447 in ASTM D 1784.

Note: CPVC 23447 was formerly designated as CPVC Type IV Grade I, and is herein designated as CPVC 41. This is also used in marking pipe, tubing or fittings.

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