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INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS

IAPMO GUIDE CRITERIA FOR

CHLORINATED POLY (VINYL CHLORIDE) (CPVC) PIPE AND FITTINGS FOR LIMITED CHEMICAL WASTE DRAINAGE SYSTEMS

IGC 210 – 2005a

1. PURPOSE

- 1.1 The purpose of this standard is to establish a generally acceptable standard for non-pressure Chlorinated Poly (Vinyl Chloride) (CPVC) pipe and fittings and solvent cements for use in chemical waste drainage systems. 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.
- 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 This standard serves to supplement the provisions of the Uniform Plumbing Code, Section 811.0 for chemical wastes.
- 2.2 This standard covers Chlorinated Poly (Vinyl Chloride) (CPVC) pipe made from CPVC materials in Schedule 40 iron pipe sizes and also includes molded fittings, and in larger sizes (8, 10, 12 in.), fabricated fittings.
- 2.3 The interchangeability of pipe and fittings made by different manufacturers is not addressed in this specification.
- 2.4 The following safety hazards caveat pertains only to the test methods specified in this standard. This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

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3. REFERENCED STANDARDS

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

ASTM D 543	Resistance of Plastics to Chemical Reagents
ASTM D 570	Water Absorption of Plastics
ASTM D 618	Conditioning Plastics and Electrical Insulating Materials for Testing
ASTM D 1600	Terminology for Abbreviated Terms Relating to Plastics
ASTM D 1784	Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
ASTM D 2122	Determining Dimensions of Thermoplastics Pipe and Fittings
ASTM D 2412	Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
ASTM D 2444	Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Other Gravity-Flow Applications
ASTM D 3311	Drain, Waste, and Vent (DWV) Plastic Fitting Patterns
ASTM D 412	Terminology Relating to Plastic Piping Systems
ASTM F 493	Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe and Fittings
ASTM F 1498	Taper Pipe Threads 60° for Thermoplastic Pipe and Fittings

4. DEFINITIONS

- 4.1 Definitions used in this standard shall be in accordance with the definitions given in ASTM F 412 and abbreviations shall be in accordance with ASTM D 1600, unless otherwise indicated.
- 4.2 CW – Abbreviations for Chemical Waste.
- 4.3 Limited Chemical Waste – Those chemical waste reagents, which are clearly recommended as being suitable for use with the material according to the manufacturer's printed chemical resistance information and chemicals listed within Table 4 of this standard based on their concentrations.

5. GENERAL REQUIREMENTS

- 5.1 **CPVC.** Chlorinated Poly (Vinyl Chloride) (CPVC) virgin material for pipe and fittings shall be manufactured from CPVC material that meets or exceeds the cell classification requirements of 23447 in accordance with ASTM D 1784.
- 5.1.2 The CPVC materials contain stabilizers, lubricants, and pigments not detrimental to pipe and fittings provided the pipe and fittings produced meet the requirements of this standard.

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- 5.2 Rework Material.** Clean rework material, generated from the manufacturer's pipe and fittings products shall only be used by the same manufacturer, provided that the pipe or fittings produced meet the requirements of this standard.
- 5.3 Solvent Cements.** CPVC solvent cements used to join CW system pipe and fittings shall be that recommended by the CW piping system manufacturer and shall comply with the requirements of ASTM F 493. When solvent cement is supplied by CW manufacturer, the cement shall be mustard yellow in color and the container shall be marked "CW" and include the words "For Use Only on CPVC – CW".
- 5.4 Piping.** Dimensions and tolerances for pipe shown in Table 1 and Table 2 shall be measured in accordance with ASTM D 2122. The tolerance for out-of-roundness shall apply only to pipe prior to shipment.
- 5.4.1** The outside diameter when measured in accordance with ASTM D 2122 shall meet the requirements of Table 1 and Table 2 when measured at any point within 1.5 pipe diameters or 11.8 in. (300 mm), whichever is less, to the cut end of the pipe length.

TABLE 1: Outside Diameters and Tolerances for CPVC Pipe Schedule 40, in. (mm)

Nominal Pipe Size	Average Outside Diameter	Tolerance	Out-of-Roundness (maximum minus minimum)
1-1/4	1.660 (42.16)	$\pm .005$ ($\pm .013$)	0.050 (1.27)
1-1/2	1.900 (48.26)	$\pm .006$ ($\pm .015$)	0.060 (1.52)
2	2.375 (60.32)	$\pm .006$ ($\pm .015$)	0.070 (1.78)
3	3.500 (88.90)	$\pm .008$ ($\pm .020$)	0.080 (2.03)
4	4.500 (114.30)	$\pm .009$ ($\pm .023$)	0.100 (2.54)
6	6.625 (168.28)	$\pm .011$ ($\pm .028$)	0.100 (2.54)
8	8.625 (219.08)	$\pm .015$ ($\pm .038$)	0.150 (3.81)
10	10.750 (273.05)	$\pm .015$ ($\pm .038$)	0.150 (3.81)
12	12.750 (323.85)	$\pm .015$ ($\pm .038$)	0.150 (3.81)

TABLE 2: Wall Thickness and Tolerances for CPVC Pipe Schedule 40, in. (mm)

Nominal Pipe Size	Minimum Tolerance	
1-1/4	0.140 (3.56)	+0.020 (+0.51)
1-1/2	0.145 (3.68)	+0.020 (+0.51)
2	0.154 (3.91)	+0.020 (+0.51)
3	0.216 (5.49)	+0.026 (+0.66)
4	0.237 (6.02)	+0.028 (+0.71)
6	0.280 (7.11)	+0.034 (+0.86)
8	0.322 (8.18)	+0.039 (+0.99)
10	0.365 (9.27)	+0.044 (+1.12)
12	0.406 (10.31)	+0.049 (+1.24)

Note: For fittings, the wall thickness is a minimum value, except that a 10 % variation resulting

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