

Internal Use Only

Installation Standard For PVC BUILDING DRAIN, WASTE AND VENT PIPE AND FITTINGS

IAPMO IS 9-2006

1.0 SCOPE

- 1.1** This installation standard shall apply to PVC building drain, waste, and vent systems as governed by the Uniform Plumbing Code. Material Standard ASTM D2665, "Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste and Vent Pipe and Fittings", shall form part of this installation standard.
- 1.2** Installation, material and inspection shall comply with the current edition of the Uniform Plumbing Code [UPC]TM published by the International Association of Plumbing and Mechanical Officials and shall also comply with this standard.

Note: The Building Official shall be consulted about penetration of fire separations, height and area, or other limitations.

Note: The following sections of the Uniform Plumbing Code apply.

101.4.1.1	Repair and Alterations
103.5	Inspections
103.5.3	Testing of Systems
218.0	Definition PVC
301.1	Minimum Standards
311.8	Screwed Fittings
310.0	Workmanship
311.0	Prohibited Fittings and Practices
313.0	Protection of Piping, Materials, and Structures
314.0	Hangers and Supports
316.1.6	Type of Joints – Solvent Cement Plastic Pipe Joints
316.2	Special Joints
316.3	Flanged Fixture Connections
316.4	Prohibited Joints and Connections
317.0	Increases and Reducers

701.0	Materials (Drainage)
704.4	Closet Flanges
707.1	Cleanout Fittings
903.0	Materials (Venting)
903.4	Straining or Bending Pipe
1003.0	Traps Described
1101.3	Materials Uses
Table 14-1	Pipe and Fittings
ASTM D 2665	D 2122
ASTM D 3311	

ABBREVIATIONS

ASTM	American Society for Testing and Materials
IAPMO	International Association of Plumbing and Mechanical Officials
UPC	Uniform Plumbing Code

2.0 PRODUCT REQUIREMENTS

2.1 Minimum Standards

- 2.1.1 Pipe.** PVC pipe markings shall be in accordance with D 2665. [UPC 301.1.2]
- 2.1.2 Fittings.** PVC fitting markings shall be in accordance with D 2665 or D 3311. [UPC 301.1.2]
- 2.1.3 Solvent Cement.** Solvent cement label markings shall be in accordance with D 2564.
- 2.1.3.1** Solvent cements shall not be purple in color.
- 2.1.4 Primers.** Primer container markings shall be in accordance with F 656.
- 2.1.4.1** Primer shall be purple.

2.2 Workmanship

2.2.1 Alignment

All piping systems components shall be aligned properly without strain. Pipe shall not be bent or pulled into position. Vertical piping shall be maintained in straight alignment between floors with midstory

¹ Although referenced in this standard, some of the fittings shown in the standard are not acceptable under the Uniform Plumbing Code.

² It is common practice to dual mark Schedule 40 DWV and potable water piping in which compliance with each applicable standard is met.

guides.

Pipe and fittings shall be so positioned that identifying markings shall be readily visible for inspection. [UPC 310.0]

2.3 Protection of Piping

2.3.1 Storage

Pipe and fittings should not be stored in direct sunlight; however, exposure to sunlight during normal construction periods is not considered harmful. Pipe shall be stored in such a manner as to prevent sagging or bending.

2.3.2 Expansion and Contraction

Thermal expansion and contraction of plastic drain waste and vent systems shall be taken into consideration. Thermal expansion and contraction may be controlled by several methods: offset, expansion joints, or restraints.

Regardless of method utilized, certain conditions shall be met:

- (a) Support, but do not rigidly restrain piping at changes of direction.
- (b) Do not anchor pipe rigidly in walls.
- (c) Holes through framing members must be adequately sized to allow for free movement.

DWV installation with frequent changes in direction will compensate for thermal expansion and contraction.

Expansion joints may be utilized in vertical straight runs in excess of 30 feet (9144 mm) provided they are installed per manufacturer's installation instructions.

Except piping buried below ground, horizontal and vertical piping should be installed with restraint fittings or a minimum of 24 inches (610 mm) 45° offset every 30 feet (9144 mm). Thermal expansion for installation subject to temperature changes may be determined from Table 3-1. The linear expansion shown is independent of the diameter of the pipe. [UPC 313.0]

2.3.3 Exposed Piping

Piping shall not be exposed to direct sunlight. Exception: Vent piping through roof. Plumbing vents through roof, exposed to sunlight, shall be protected by water base

synthetic latex paints.

Adequate support shall be provided where PVC piping is exposed to wind, snow, and ice loading.

2.3.4 Protection from Damage

Piping passing through wood studs or plates shall be protected from puncture by minimum 1/16 inch (1.6 mm) thick steel plate.

Piping shall be protected from concrete form oil. [UPC 313.9]

2.3.5 Anti-Freeze Protection

PVC pipe and traps can be protected from freezing by the use of one of the following solutions of mixtures:

- (a) 4 quarts (3.8 liters) of water mixed with 5 quarts (4.8 liters) of glycerol
- (b) 2-1/2 lbs. (1.1 kg) of magnesium chloride dissolved in one (1) gallon (3.8 liters) of water
- (c) 3 lbs. (1.4 kg) of table salt dissolved in one (1) gallon (3.8 liters) of water.

The salt solutions are effective to approximately 10°F (-12°C). If lower temperatures are anticipated, the pipe should be drained or the glycerol solution should be used. [UPC 313.0]

2.4 Piping Installed in Fire Resistive Construction

Where piping is installed and penetrates required fire resistive construction, the fire resistive integrity of the construction shall be as required by the Administrative Authority, or when not established by the Building Code, by qualified testing methods approved by the Administrative Authority. Approval shall be obtained prior to installing any such piping. [UPC 313.7]

2.5.0 Hangers and Supports

2.5.1 Abrasion

Hangers and straps shall not compress, distort, cut, or abrade the piping and shall allow free movement of pipe. Pipe, exposed to damage by sharp surfaces, shall be protected. [UPC 314.0]

2.5.2 Support

Support all horizontal piping at intervals of