

Internal Use Only

Installation Standard For POLYETHYLENE (PE) FOR GAS YARD PIPING

IAPMO IS 12-2006

1.0 SCOPE

1.1 This standard shall govern the installation of polyethylene (PE) natural and liquified petroleum gas yard piping. 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 following sections of the Uniform Plumbing Code apply to PE gas piping:

218.0	Definition of PE
310.0	Workmanship
313.0	Protection of Piping, Materials, and Structures
314.0	Hangers and Supports
315.0	Trenching, Excavation, and Backfill
316.2.3	Plastic Pipe to Other Materials
Chapter 12	Fuel Piping
1204.3.2	Final Piping Inspection
1211.0	Gas Piping Installation
1211.1.7	Tracer Wire
1213.0	Liquified Petroleum Gas Facilities and Piping
Table 14-1	Materials:
	Pipe and Tube:
	PE3408
	PE2406
	ASTM D 2513
	Fittings:
	Copper Alloy
	ANSI B16.26
	PE3408
	PE2406
	ASTM D 2513
	Plastic Mechanical
	ASTM F 1924
	Metallic Mechanical
	ASTM F 1948

ABBREVIATIONS

ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
IAPMO	International Association of Plumbing and Mechanical Officials
UPC	Uniform Plumbing Code published by IAPMO

2.0 PRODUCT REQUIREMENTS

2.1 Minimum Standards

2.1.1 Materials. Pipe, tubing and fittings shall conform to the appropriate standards in Table 14-1 of the Uniform Plumbing Code. See note ahead of Chapter 2 of this standard. [UPC 301.1]

2.2 Pipe. PE pipe is plastic of 1/2 inch (12.7 mm) or larger size. One-half inch (12.7 mm) pipe shall be SDR 9. Pipe sizes less than 3 inches (76 mm) shall be SDR 11. Pipes 3 inches (76 mm) and larger shall be SDR 11.5 or lower*.

2.13 Tubing. PE tubing is plastic and shall be limited to the following:

Tubing Size

Inches	(mm)	SDR*
1/4	(6.4)	6
3/8	(9.5)	8
1/2	(12.7)	7

***Note:** The lower the SDR number, the thicker the wall.

2.1.4 Fittings. Heat fusion fittings shall be PE 2406, PE 3408, or other listed materials. Mechanical connectors for PE pipe and tubing and for transition fittings shall be approved compression type couplings or other special listed joints.

2.2 Markings

2.2.1 Pipe and Tubing. Pipe and tubing markings shall be in accordance with D 2513. [UPC 301.1.2]

- 2.2.2 Fittings.** Fitting markings shall be in accordance with ASTM D 1924, D 1948, D 2513 or ASME B16.26. [UPC 301.1.2]
- 2.2.3 Position of Markings.** The identifying markings on pipe, tubing and fittings shall be visible for inspection without moving materials.
- 2.3 Protection of Piping**
- 2.3.1 Storage.** Unprotected pipe should not be stored in direct sunlight. The pipe shall be stored in a way to protect it from mechanical damage (slitting, puncturing, etc.). Exposure to sunlight during normal construction periods is not harmful.
- 2.4 Thermal Expansion**
- 2.4.1 Snaking.** The pipe and tubing shall be "snaked" in the trench bottom with enough slack to provide for thermal expansion and contraction before stabilizing. The normal slack created by residual coiling is generally sufficient for this purpose. If, however, the pipe has been allowed to straighten before it is placed in the trench, 6 inches (152 mm) per 100 feet (30480 mm) of pipe length shall be allowed for this purpose.
- 2.4.2 Stabilizing.** Pipe and tubing temperature shall be stabilized by one of the following methods:
- (a) Shade backfill. Leave all joints exposed so they can be examined during the pressure test.
 - (b) Allow to stand overnight.
- 2.5 Trenching and Backfill**
- 2.5.1 Trenching.** Trenching bottoms shall be smooth and regular of either undisturbed soil or a layer of compacted backfill so that minimum settlement will take place. Pipe or tubing shall not be wedged or blocked. Voids shall be filled and compacted to level of trench bottom. The minimum cover shall be 18 inches (457 mm) below finish grade. [UPC 315.0, 1211.1.2]
- Exceptions:**
- (1) *Tubing for gas lights shall be buried a minimum of 12 inches (305 mm) below finish grade where gas flow is restricted to 10 cubic feet per hour ($8 \times 10^{-5} \text{m}^3/\text{s}$) at its source by a mechanical means or a fixed orifice.*
- Note:** Local climatic conditions may affect required burial depth.
- (2) *Piping may terminate a maximum of one foot above ground when encased in a listed anodeless transition riser.*
- 2.5.2 Backfill.** The pipe and tubing temperature shall be stabilized before backfilling. See Section 2.4.2. [UPC 315.4, 1211.1.2]
- 2.6 Types of Joints**
- PE joints shall be made as follows:
- 2.6.1 Heat Fusion Joints.** Heat fusion joints shall be made according to the manufacturer's procedures using recommended heat times, temperature and joining pressures. [UPC 1209.5.9]
- 2.6.2 Mechanical Joints.** Mechanical joints shall be assembled in an approved manner with tools recommended by the fitting manufacturer. Mechanical joints shall be made with listed mechanical fittings. [UPC 1209.5.9]
- 2.7 Special Joints**
- 2.7.1** Listed transition fittings or listed mechanical fittings shall be used when making joints between PE and steel or PE and copper.
- 2.7.2** Transition fittings shall be installed outside of meter vaults with metallic piping extending into the vaults a sufficient distance to permit the use of backup wrenches.
- 2.8 Inspections**
- 2.8.1 Temperature.** Pipe temperatures shall be stabilized before testing. See Section 2.4.2. [UPC 1204.0]
- 2.8.2** Piping shall be subjected to the pressure test required in Section 1204.0 of the Uniform Plumbing Code. [UPC 1204.3.2]
- 2.9 Materials**
- 2.9.1 Location.** PE pipe and tubing shall be installed only outside the foundation of any building or structure or parts thereof. It