



Standard Specification for Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene Tubing OD Controlled SDR9¹

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1. Scope

1.1 This specification covers establishes requirements for coextruded crosslinked polyethylene multi-layer pressure tubing with a continuously welded aluminum tube construction between inner and outer layers of plastic. The inner and outer crosslinked polyethylene layers are bonded to the aluminum by a melt adhesive. The tubing is outside diameter controlled and made in one standard dimension ratio, SDR9 and is intended to be used for hot and cold water conveyance in applications up to 180°F (82.2°C). Included in this specification is a system of nomenclature for crosslinked polyethylene-aluminum-crosslinked polyethylene (PEX-AL-PEX) tubes, and the requirements and test methods for materials, dimensions of component layers and the finished tubing, layer adhesion test, weld strength, short-term burst pressure, long-term sustained pressure and marking requirements. The tubing covered by this specification is intended for use in potable water distribution systems for residential and commercial applications, water service, hydronic radiant heating (HRH), radiant panel heating, baseboard, and snow melt systems.

1.2 This specification covers only plastic-metal-plastic multi-layer tubes incorporating a continuous welded aluminum tube. Tubing consisting of metallic layers not welded together is outside the scope of this specification.

1.3 *Units*—The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 Specifications for connectors for use with pipe meeting the requirements of this specification are given in **Annex A1**.

1.5 The following precautionary caveat pertains only to the test method portion, Section 9, of this specification. *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 requirements prior to use.

2. Referenced Documents

2.1 ASTM Standards:²

- D618 Practice for Conditioning Plastics for Testing
- D883 Terminology Relating to Plastics
- D1598 Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure
- D1599 Test Method for Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing, and Fittings
- D1600 Terminology for Abbreviated Terms Relating to Plastics
- D2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
- D2765 Test Methods for Determination of Gel Content and Swell Ratio of Crosslinked Ethylene Plastics
- D3350 Specification for Polyethylene Plastics Pipe and Fittings Materials
- F412 Terminology Relating to Plastic Piping Systems

2.2 NSF International Standards:

- NSF/ANSI 14 for Plastic Piping Components and Related Materials³
- NSF/ANSI 61 for Drinking Water System Components-Health Effects³

2.3 Federal Standard:

- Fed. Std. No. 123 Marking for Shipments (Civil Agencies)⁴

2.4 Military Standard:

- MIL-STD-129 Marking for Shipment and Storage⁴

2.5 Uniform Classification and Committee Standard: Uniform Freight Classification⁵

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140, <http://www.nsf.org>.

⁴ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://www.dodssp.daps.mil>.

⁵ Available from the Uniform Classification Committee, Suite 1106, 222 South Riverside Plaza, Chicago, IL 60606.

¹ This specification is under the jurisdiction of ASTM Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.11 on Composite.

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