



Standard Specification for Multilayer Polyethylene-Polyamide (PE-PA) Pipe for Pressure Piping Applications¹

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1. Scope

1.1 This specification covers requirements and test methods for ½ in. through 14 in. multilayer polyethylene-polyamide (PE-PA) pipe, which is a two-layer pipe (PE pipe layer bonded to an inner layer of PA). The multilayer pipe covered by this specification is intended for use in piping applications where the permeation and chemical resistance of polyamide (PA) compounds may be useful to protect the PE pipe layer, such as oil and gas producing applications that convey oil, dry or wet gas, and multiphase fluids.

NOTE 1—Permeability and chemical resistance depends on the type of PA used. The PA layer delays but does not prevent liquid hydrocarbons effects. Therefore, the hydrocarbon chemical design factor for this multilayer pipe should be the same as for PE pipe layer—see [X1.2](#).

1.2 Electrofusion and mechanical joints are typically used for this multilayer pipe.

1.3 Unless specified otherwise, all the pipe requirements in this standard are for the multilayer pipe.

1.4 The PA layer is not taken into consideration for the design pressure of multilayer pipe meeting this specification. Design pressure rating is determined from the PE pipe layer alone—see [Appendix X1](#).

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

1.6 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in figures and tables) shall not be considered as requirements of the standard.

1.7 The following precautionary caveat pertains only to the test method portion, Section 6, 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 limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards:²

- [D618 Practice for Conditioning Plastics for Testing](#)
- [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](#)
- [D1603 Test Method for Carbon Black Content in Olefin Plastics](#)
- [D2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings](#)
- [D2290 Test Method for Apparent Hoop Tensile Strength of Plastic or Reinforced Plastic Pipe](#)
- [D2837 Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products](#)
- [D3350 Specification for Polyethylene Plastics Pipe and Fittings Materials](#)
- [D4218 Test Method for Determination of Carbon Black Content in Polyethylene Compounds By the Muffle-Furnace Technique](#)
- [D6779 Classification System for and Basis of Specification for Polyamide Molding and Extrusion Materials \(PA\)](#)
- [F412 Terminology Relating to Plastic Piping Systems](#)
- [F1290 Practice for Electrofusion Joining Polyolefin Pipe and Fittings](#)

2.2 Federal Specifications:³

- [Fed. Std. No. 123 Marking for Shipment \(Civil Agencies\)](#)

¹ This test method 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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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 U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, <http://www.access.gpo.gov>.