



Standard Specification for Polyethylene (PE) Thermoplastic High-Pressure Irrigation Pipeline Systems¹

This standard is issued under the fixed designation F 771; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers polyethylene (PE) thermoplastic pipelines used to convey, at rated pressures of 80 to 200 psi, water that is to be used for irrigation purposes. This specification includes criteria for classifying the pipe materials, a system of nomenclature for plastic pipe, requirements for pipe, test methods, joints, fittings, certification, and marking.

1.2 The values stated in inch-pound units are to be regarded as the standard.

1.3 The following safety hazards caveat pertains only to the test method portion, Section 7, 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

- D 1238 Test Method for Flow Rates of Thermoplastics by Extrusion Plastomer
- D 1248 Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
- D 1505 Test Method for Density of Plastics by the Density-Gradient Technique²
- D 1598 Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure
- D 1599 Test Method for Short-Time Hydraulic Failure Pressure of Plastic Pipe, Tubing, and Fittings
- D 1600 Terminology for Abbreviated Terms Relating to Plastic
- D 2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings

D 2239 Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Control Inside Diameter

D 2609 Specification for Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe

D 2683 Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing

D 2837 Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products

D 3035 Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter

D 3261 Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing

D 3350 Specification for Polyethylene Plastics Pipe and Fittings Materials

F 412 Terminology Relating to Plastic Piping Systems

2.2 Federal Standard:

Fed. Std. No. 123 Marking for Shipment (Civil Agencies)³

2.3 Military Standard:

MIL-STD-129 Marking for Shipment and Storage³

3. Terminology

3.1 Definitions:

3.1.1 *General*—Nomenclature is in accordance with Terminology F 412 and abbreviations are in accordance with Terminology D 1600, unless otherwise indicated.

3.1.2 *high-pressure irrigation pipeline*—this term applies to underground pipelines constructed of PE pipe from 0.5 to 6 in. nominal diameter and subject to pressures, including surge pressures, from 80 to 200 psi (550 to 1380 kPa).

3.1.3 *hydrostatic design stress*—the recommended maximum hoop stress that can be applied continuously with a high degree of certainty that failure of the pipe will not occur.

3.1.4 *pressure rating (PR)*—the estimated maximum pressure that the medium in the pipe can exert continuously with a high degree of certainty that failure of the pipe will not occur.

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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 Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.