



Standard Specification for Polyethylene of Raised Temperature (PE-RT) Plastic Hot and Cold-Water Tubing and Distribution Systems¹

This standard is issued under the fixed designation F2769; 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 establishes requirements for polyethylene of raised temperature (PE-RT) plastic hot- and cold-water tubing and distribution systems components made in one standard dimension ratio and intended for 100 psig (6.9 bar) water service up to and including a maximum working temperature of 180°F (82°C). Components are comprised of tubing, fittings, valves and manifolds. Tubing may incorporate an optional polymeric inner, middle or outer layer. Testing of Specification F1807 and F2159 fittings and PE-RT tubing to the requirements of this standard indicate that these fittings are appropriate for use with PE-RT piping systems. Requirements and test methods are included for materials, workmanship, dimensions and tolerances, burst pressure, sustained pressure, oxidative resistance, temperature cycling tests, bend strength and environmental stress cracking. Also included are tests related to system malfunctions. The components covered by this specification are intended for use in residential and commercial, hot and cold, potable water distribution systems.

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

NOTE 1—Suggested hydrostatic design stresses and hydrostatic pressure ratings for tubing and fittings are listed in Appendix X1. UV labeling guidelines are provided in Appendix X2. Design, assembly, and installation considerations are provided in Appendix X3. An optional performance qualification and an in-plant quality control program are recommended in Appendix X4.

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 The following safety hazards caveat pertains only to the test methods 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

- 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
- D1898 Practice for Sampling of Plastics (Withdrawn 1998)³
- D2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
- D2749 Symbols for Dimensions of Plastic Pipe Fittings
- 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
- D3895 Test Method for Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry
- F412 Terminology Relating to Plastic Piping Systems
- F1282 Specification for Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure Pipe
- F1473 Test Method for Notch Tensile Test to Measure the Resistance to Slow Crack Growth of Polyethylene Pipes and Resins
- F1807 Specification for Metal Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing
- F2023 Test Method for Evaluating the Oxidative Resistance

¹ This test method is under the jurisdiction of ASTM Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.26 on Olefin Based Pipe.

Current edition approved Nov. 1, 2016. Published November 2016. Originally approved in 2009. Last previous edition approved in 2014 as F2769–14. DOI: 10.1520/F2769-16.

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 The last approved version of this historical standard is referenced on www.astm.org.