



Designation: F2562/F2562M – 24

Specification for Steel Reinforced Thermoplastic Ribbed Pipe and Fittings for Non-Pressure Drainage and Sewerage¹

This standard is issued under the fixed designation F2562/F2562M; 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 requirements and test methods for materials, dimensions, workmanship, impact resistance, pipe stiffness, flattening, buckling, tensile strength of seam, joint systems, perforations, and markings for steel reinforced thermoplastic pipe and fittings of nominal sizes 8 in. [200 mm] through 120 in. [3000 mm]. The steel reinforced, spirally formed thermoplastic pipes governed by this standard are intended for use in underground applications where soil provides support for their flexible walls. These pipes will be used for gravity flow and non-pressure applications, such as storm sewers, sanitary sewers, industrial waste applications and drainage pipes.

1.2 *Units*—The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text the SI units are shown in brackets. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.3 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 There is no similar or equivalent ISO standard.

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This specification is under the jurisdiction of ASTM Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.62 on Sewer. Current edition approved Feb. 15, 2024. Published March 2024. Originally approved in 2007. Last previous edition approved in 2019 as F2562/F2562M-15(2019). DOI: 10.1520/F2562_F2562M-24.

2. Referenced Documents

2.1 *ASTM Standards*:²

- A1008/A1008M Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable
- A1011/A1011M Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
- D618 Practice for Conditioning Plastics for Testing
- D638 Test Method for Tensile Properties of Plastics
- A653/A653M Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- D2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
- D2321 Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
- D2412 Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
- D2444 Practice for Determination of the Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)
- D3212 Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
- D3350 Specification for Polyethylene Plastics Pipe and Fittings Materials
- F412 Terminology Relating to Plastic Piping Systems
- F477 Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- F2136 Test Method for Notched, Constant Ligament-Stress (NCLS) Test to Determine Slow-Crack-Growth Resistance of HDPE Resins or HDPE Corrugated Pipe

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.

*A Summary of Changes section appears at the end of this standard

2.2 *American Association of State Highway and Transportation Officials (AASHTO)*³

AASHTO LRFD Bridge Construction Specification Section 26

AASHTO M294-05 Corrugated Polyethylene Pipe, 300- to 1500-mm Diameter

2.3 *Federal Standards*:⁴

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

2.4 *Military Standards*:

MIL-STD-129 Marking for Shipment and Storage

3. Terminology

3.1 *Definitions*—Definitions used in this specification are in accordance with Terminology **F412**, unless otherwise noted.

3.2 *Definitions of Terms Specific to This Standard*:

3.2.1 *gravity flow, n*—a condition where liquid flow through a piping system results from a downward pipeline slope, but flow is less than full, except during conditions when the system may become temporarily surcharged in which case, the system is subject to temporary internal hydrostatic pressure that is limited to piping system joint capabilities.

3.2.2 *steel reinforced thermoplastic pipe, n*—ribbed thermoplastic pipe with steel reinforcing strips encapsulated within the ribs (See **Fig. 1**).

3.2.3 *encapsulation thicknesses, n*—the thicknesses of the HDPE covering on both sides of the steel reinforcement as well as the thickness of the closure at the top (outside) of the rib and the thickness of the profile directly under (inside) of the reinforcement.

3.2.4 *wrap width, n*—the width the helically wrapped strip covers when measured across the strip, perpendicular to the ribs (See **Fig. 1**).

4. Significance and Use

4.1 Steel reinforced thermoplastic pipes are used for underground applications where soil provides support to their flexible walls. Their main use is for gravity flow and non-pressure drainage of surface water, sanitary sewage and industrial waste.

NOTE 1—Industrial waste disposal lines should be installed only upon the specific approval of the governing code, or other authority, and after determining the suitability of the product under the anticipated environment, temperature, and other end-use conditions. Users should consult the manufacturer for the required product information.

4.2 This specification covers pipe products made in various stiffness classes according to **Table 1** at 5 % deflection when tested in accordance with Test Method **D2412**. The required stiffness class shall be determined by structural design calculations based on the application of the pipe.

4.3 This specification covers pipe products using the following different joining systems;

4.3.1 *Bell and spigot, gasketed type*—seal is affected by a gasket compressed between the spigot and bell ends of the pipe.

4.3.2 *Internal coupling, sealant type*—seal is affected by applying an industrial sealant between the external surface of the coupling and the internal surface of the pipe.

4.3.3 *Other*—Where these connections are impractical or undesirable because of space, layout or other requirements, it is permissible to use joining methods such as flanging, internal coupling (gasketed type), extrusion welding, electro-fusion, butt fusion, and others. Methods proposed should be evaluated by the engineer for suitability.

5. Materials

5.1 *Polyethylene Materials*:

5.1.1 Polyethylene materials used in the manufacture of steel reinforced thermoplastic pipe shall meet or exceed the requirements of cell classification of 335420C or E (335430C or E for sanitary sewer applications) as defined and described in Specification **D3350**.

5.1.2 Polyethylene materials used in the manufacture of rotationally molded joints, fittings and couplings shall meet or exceed the requirements of cell classification 213320C or E (213330C or E for sanitary sewer applications) as defined and described in Specification **D3350**.

5.1.3 Polyethylene materials used in the manufacture of injection molded joints, fittings and couplings shall meet or exceed the requirements of cell classification 314420C or E (314430C or E for sanitary sewer applications) as defined and described in Specification **D3350**.

5.1.4 Slow crack growth resistance of the polyethylene materials shall be determined by testing in accordance with Test Method **F2136**. The applied stress shall be 600 psi [4100 kPa]. The test specimens shall exceed 24 h with no failures.

³ Available from American Association of State Highway and Transportation Officials (AASHTO), 555 12th St., NW, Suite 1000, Washington, DC 20004, <http://www.transportation.org>.

⁴ DLA Document Services Building 4/D 700 Robbins Avenue Philadelphia, PA 19111-5094 <http://quicksearch.dla.mil/>

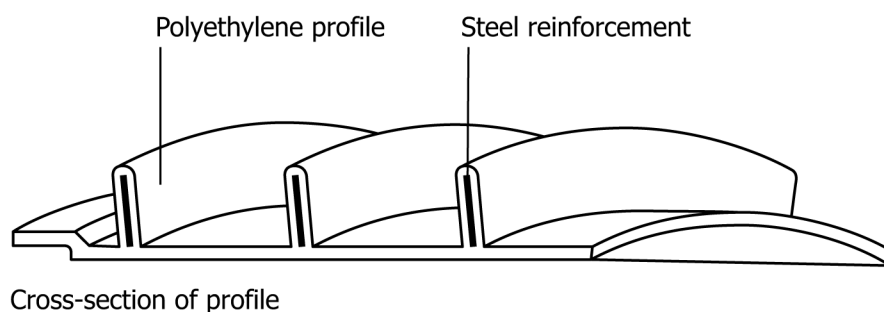


FIG. 1 Steel Reinforced Thermoplastic Ribbed Pipe Profile