



Standard Specification for Steel Reinforced Polyethylene (PE) Corrugated Pipe¹

This standard is issued under the fixed designation F 2435; 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 approval. 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, elongation, impact resistance, pipe stiffness, perforations, and markings for steel reinforced corrugated polyethylene (PE) piping systems of nominal sizes 8 in. (200 mm), through 80 in. (2000 mm). The steel reinforced polyethylene 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 to collect or convey stormwater runoff for storm sewers and drainage pipes, or both.

1.2 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.

1.3 There is no similar or equivalent ISO standard.

1.4 *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

A 591A/A 591M Specification for Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Weight [Mass] Applications

A 1008/A 1008M Specification for Steel, Sheet, Cold-Rolled Carbon Structural, High Strength Low-Alloy with Improved Formability

D 618 Practice for Conditioning Plastics and Electrical Insulating Materials for Testing

D 2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings

D 2321 Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications

D 2412 Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading

D 3212 Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals

D 3350 Specification for Polyethylene Plastics Pipe and Fittings Materials

F 412 Terminology Relating to Plastic Piping Systems

F 449 Practice for Subsurface Installation of Corrugated Thermoplastic Pipe for Agricultural Drainage or Water Table Control

F 477 Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

F 2136 Test Method for Notched Constant Ligament Stress (NCLS) test to Determine Slow Crack Growth Resistance of HDPE resins or HDPE Corrugated Pipe

2.2 Federal Standards:³

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

2.3 Military Standards:³

MIL-STD-129 Marking for Shipment and Storage

3. Terminology

3.1 *Definitions*—Definitions used in this specification are in accordance with Terminology **F 412**, unless otherwise noted.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *double-wall steel reinforced polyethylene corrugated pipe*—polyethylene corrugated pipe with steel reinforcing helical V-shaped plates encapsulated within the corrugations and with an closed channel on the inside of the pipe (See **Fig. 1**)

3.2.2 *single-wall steel reinforced polyethylene corrugated pipe*—polyethylene corrugated pipe with steel reinforcing

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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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, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098.

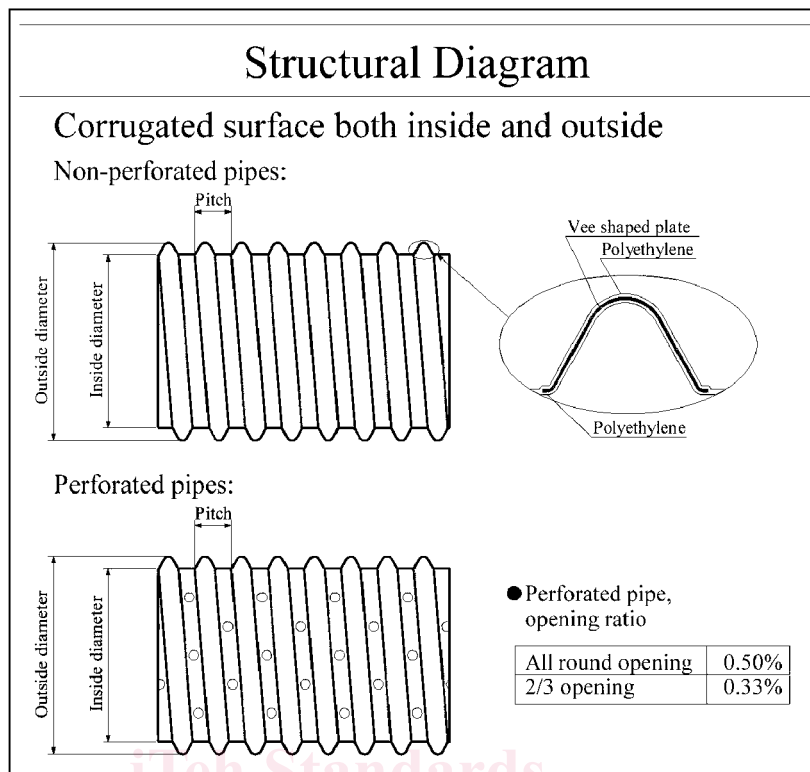


FIG. 1 Single - Wall Steel Reinforced Corrugated Polyethylene Pipe

helical V-shaped plates encapsulated within the corrugations and with an open channel on the inside of the pipe (See Fig. 2)

flexible walls. Their major use is to collect or convey storm water run-off for sewers and drains, or both.

4. Significance and Use

4.1 Steel reinforced corrugated PE pipes are used for underground applications where soil provides support to their

4.2 Exclusions from recommended use:

4.2.1 Permanent exposure to sunlight and exposure to chemicals whose compatibility with the pipe and fittings is not known.

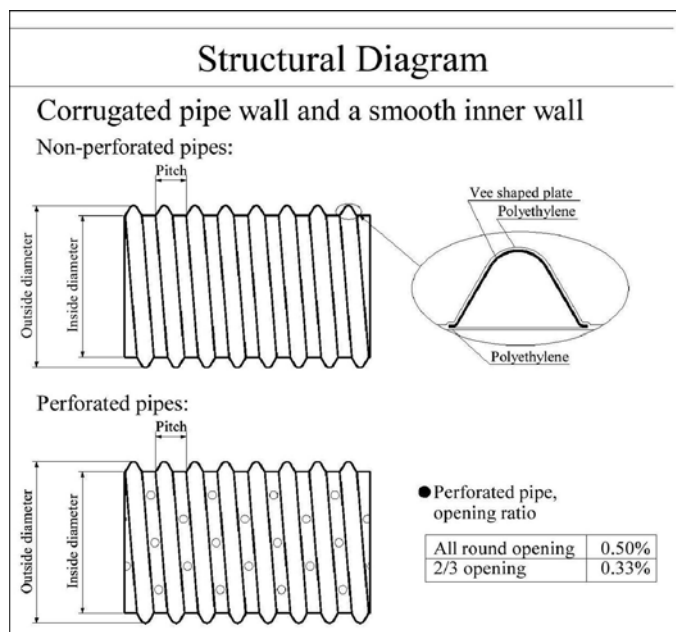


FIG. 2 Double - Wall Steel Reinforced Corrugated Polyethylene Pipe

5. Materials

5.1 Polyethylene Materials:

5.1.1 Polyethylene compounds used in the manufacture of steel reinforced corrugated PE drainage pipe shall meet or exceed the requirements of cell classification of 344430C as defined and described in Specification D 3350.

5.1.2 Slow crack growth resistance of the polyethylene natural resin shall be determined by testing in accordance with Test Method F 2136. The applied stress shall be 600 psi (4100 kPa). The test specimens must exceed 24 h with no failures. Testing shall be done on polyethylene material taken from the finished pipe.

5.1.3 Carbon Black Content—Minimum 2.0 wt. % to a maximum 3.0 wt. % of the total of the polyethylene compound.

5.2 Steel Materials:

5.2.1 The minimum thickness of the steel sheet shall be 0.0078 inches (0.20 mm) and the minimum yield strength shall not be less than 15 ksi (105 MPa). The steel substrate shall conform to Specification A 1008/A 1008M. The zinc-galvanized coating shall have a minimum zinc coating designation of 20Z (intermediate coating) as defined in Specification A 591/A 591M.