



Designation: F1871 – 24

Standard Specification for Folded/Formed Poly-(Vinyl Chloride) Pipe Type A for Existing Sewer and Conduit Rehabilitation¹

This standard is issued under the fixed designation F1871; 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, flattening resistance, impact resistance, pipe stiffness, extrusion quality, and a form of marking for folded/formed poly-(vinyl chloride) (PVC) pipe for existing sewer and conduit rehabilitation.

1.2 Folded pipe produced to this specification is for use in non-pressure sewer and conduit rehabilitation where the folded PVC pipe is installed into and then expanded to provide a close fit to the wall of the original conduit, forming a new structural pipe-within-a-pipe.

NOTE 1—For installation procedures and design calculations refer to Practice F1867.

1.3 This specification includes pipe made only from materials specified in Section 6. This specification does not include folded pipe manufactured from reprocessed, recycled, or reclaimed PVC.

1.4 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.

1.5 There is no similar or equivalent ISO Standard.

1.6 The following precautionary statement pertains only to the test method portion, Section 11, 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.7 *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 Recom-*

mendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

2.1 ASTM Standards:²

- D618 Practice for Conditioning Plastics for Testing
- D638 Test Method for Tensile Properties of Plastics
- D648 Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
- D790 Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- D1600 Terminology for Abbreviated Terms Relating to Plastics (Withdrawn 2024)³
- D1784 Classification System and Basis for Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
- D2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
- D2152 Test Method for Adequacy of Fusion of Extruded Poly(Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion
- 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)
- F412 Terminology Relating to Plastic Piping Systems
- F1057 Practice for Estimating the Quality of Extruded Poly(Vinyl Chloride) (PVC) Pipe by the Heat Reversion Technique
- F1867 Practice for Installation of Folded/Formed Poly(Vinyl Chloride) (PVC) Pipe Type A for Existing Sewer and Conduit Rehabilitation

¹ This specification is under the jurisdiction of Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.67 on Trenchless Plastic Pipeline Technology.

Current edition approved Feb. 1, 2024. Published February 2024. Originally approved in 1998. Last previous edition approved in 2020 as F1871-20. DOI: 10.1520/F1871-24.

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.

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

2.2 *Federal Standard*.⁴

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

2.3 *Military Standard*.⁴

MIL-STD-129 Marking for Shipment and Storage

3. Terminology

3.1 *Definitions*—Definitions are in accordance with Terminology F412, and abbreviations are in accordance with Terminology D1600, unless otherwise specified. The abbreviation for poly(vinyl chloride) plastics is PVC.

3.1.1 The term TYPE A is not an abbreviation, but rather an arbitrary designation for PVC compounds with a minimum value for modulus in tension as listed in 6.1.

3.2 *Definitions of Terms Specific to This Standard*:

3.2.1 *folded pipe, n*—pipe that has been manufactured and calibrated round, then subsequently cooled and deformed into a folded shape for use in existing sewer and conduit rehabilitation (see Fig. 1).

3.2.2 *formed pipe, n*—A folded pipe that has been inserted into an existing sewer or conduit and expanded with steam heat and pressure, and, if required by the manufacturer, with a

squeegee device or similar device to provide a close fit to the existing pipe (see Fig. 1).

3.2.3 *rounded pipe sample, n*—A folded pipe that has been inserted into a pipe mold and expanded with heat and pressure to conform to the mold pipe, intended for testing purposes.

3.2.3.1 *Discussion*—A “field sample” can be formed in the same manner as a rounded pipe sample.

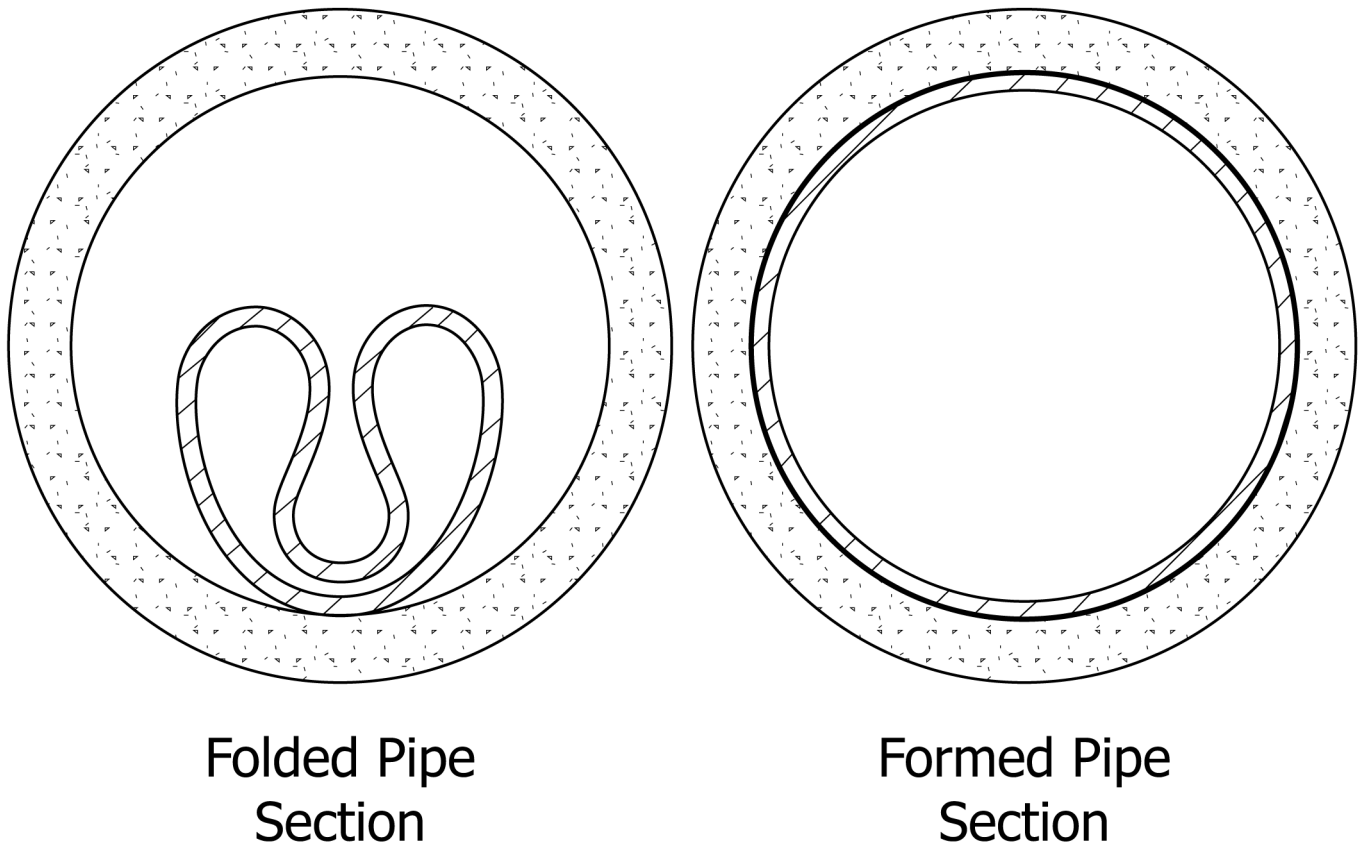
4. Significance and Use

4.1 This specification is for use by designers and specifiers, regulatory agencies, owners, and inspection organizations who are involved in the rehabilitation of non-pressure sewers and conduits. Modifications may be required, depending on specific job conditions, to establish a project specification. The manufacturer of the product should be consulted for design and installation information. Industrial waste disposal lines should be installed only with the specific approval of the cognizant code authority, since chemicals not commonly found in drains and sewers and temperatures in excess of 140 °F (60 °C) may be encountered.

5. Applications of Material

5.1 The nominal rounded PVC pipe sizes specified in Section 8 can be obtained for use in a range of original pipe

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



NOTE 1—This figure is intended only for clarification of terms specific to this specification, and shows representative folded and formed pipe shapes. Other folded pipe shapes can meet the requirements of this specification.

FIG. 1 Folded Pipe and Formed Pipe—Clarification of Terms