



Standard Test Method for Longitudinal Tensile Properties of “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe and Tube¹

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1. Scope

1.1 This test method covers the determination of the comparative longitudinal tensile properties of fiberglass pipe when tested under defined conditions of pretreatment, temperature, and testing machine speed. Both glass-fiber-reinforced thermosetting-resin pipe (RTRP) and glass-fiber-reinforced polymer mortar pipe (RPMP) are fiberglass pipes.

NOTE 1—For the purposes of this standard, polymer does not include natural polymer.

1.2 This test method is generally limited to pipe diameter of 6 in. (150 mm) or smaller. Larger sizes may be tested if required apparatus is available.

1.3 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are provided for information purposes only.

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.*

NOTE 2—There is no known ISO equivalent to this standard.

2. Referenced Documents

2.1 ASTM Standards:²

- C33 Specification for Concrete Aggregates
- D618 Practice for Conditioning Plastics for Testing
- D638 Test Method for Tensile Properties of Plastics
- D638M Test Method for Tensile Properties of Plastics (Metric) (Withdrawn 1996)³
- D883 Terminology Relating to Plastics

¹ This test method is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.23 on Reinforced Plastic Piping Systems and Chemical Equipment.

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

D1600 Terminology for Abbreviated Terms Relating to Plastics

D3567 Practice for Determining Dimensions of “Fiberglass” (Glass-Fiber-Reinforced Thermosetting Resin) Pipe and Fittings

E4 Practices for Force Verification of Testing Machines

E83 Practice for Verification and Classification of Extensometer Systems

F412 Terminology Relating to Plastic Piping Systems

3. Terminology

3.1 *General*—Definitions are in accordance with Terminology D883 and F412 and abbreviations are in accordance with Terminology D1600, unless otherwise indicated.

3.2 Other definitions of terms and symbols relating to tension testing of plastics appear in the Annex to Test Methods D638 and D638M.

3.3 Definitions of Terms Specific to This Standard:

3.3.1 *aggregate*—a siliceous sand conforming to the requirements of Specification C33, except that the requirements for gradation shall not apply.

3.3.2 *exterior surface resin layer*—a resin layer, with or without filler or reinforcement, or both, applied to the exterior surface of the pipe structural wall.

3.3.3 *fiberglass pipe*—a tubular product containing glass fiber reinforcement embedded in or surrounded by cured thermosetting resin; the composite structure may contain aggregate, granular or platelet fillers, thixotropic agents, pigments, or dyes; thermoplastic or thermosetting liners may be included.

3.3.4 *liner*—the inner portion of the wall at least 0.005 in. (0.13 mm) in thickness, as determined in 9.1.2, which does not contribute to the strength in the determination of the hydrostatic design basis.

3.3.5 *reinforced polymer mortar pipe (RPMP)*—a fiberglass pipe with aggregate.

3.3.6 *reinforced thermosetting resin pipe (RTRP)*—a fiberglass pipe without aggregate.

3.3.7 *reinforced wall thickness*—the total wall thickness minus the liner or exterior coating thickness, or both.

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