



Standard Test Method for Chemical Resistance of “Fiberglass” (Glass–Fiber–Reinforced Thermosetting-Resin) Pipe in a Deflected Condition¹

This standard is issued under the fixed designation D3681; 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.

ε¹ NOTE—Editorially corrected Table A1.2 in March 2014.

1. Scope*

1.1 This test method covers the procedure for determining the chemical-resistant properties of fiberglass pipe in a deflected condition for diameters 4 in. (102 mm) and larger. Both glass–fiber–reinforced thermosetting resin pipe (RTRP) and glass–fiber–reinforced polymer mortar pipe (RPMP) are fiberglass pipes.

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

1.2 Inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

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 and health practices and determine the applicability of regulatory limitations prior to use.* Specific precautionary statements are given in 9.5.

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

2. Referenced Documents

2.1 ASTM Standards:²

D883 Terminology Relating to Plastics

D1600 Terminology for Abbreviated Terms Relating to Plastics

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

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.

2.2 ISO Standard:

3 Preferred Numbers—Series of Preferred Numbers³

3. Terminology

3.1 Definitions:

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

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *end point*—the passage of the fluid through the pipe wall unless otherwise stated. The failure mode may be catastrophic, characterized by a sudden fracture through the pipe wall in the area of greatest strain, parallel to the axis of the pipe, with the fiber reinforcement cleanly broken at the edge of the fracture. Visual evidence of surface etching or pitting may or may not be present.

3.2.2 *fiberglass pipe*—tubular product containing glass fiber reinforcements 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 or coatings may be included.

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

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

3.2.5 *strain-corrosion*—the failure of the pipe wall caused by the exposure of the inside surface, while in a strained condition, to a corrosive environment for a period of time.

4. Summary of Test Method

4.1 This test method consists of exposing the interior of a minimum of 18 specimens of pipe to a corrosive test solution while the pipe is constantly maintained in a deflected condition at differing induced initial ring flexural strain levels, and

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

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