ANSI/AWWA **C950-25**

(Revision of ANSI/AWWA C950-20)

AWWA Standard

Fiberglass Pressure Pipe

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American Water Works Association

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STANDARD Since 1881

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C950.*

I. Introduction

I.A. *Background*. This standard provides direction and guidance in selecting and purchasing fiberglass pipe for use as pressure pipe in water distribution (including services) and transmission systems for both aboveground and belowground installations.

This standard describes 1-in. through 156-in. (25-mm through 4,000-mm) diameter pressure pipes. The primary materials used are thermosetting polyester or epoxy resins, glass-fiber reinforcement, and, if used, aggregate. There are nine pressure classes, which range from 50 psi through 450 psi (345 kPa through 3,103 kPa), in 50-psi (345-kPa) increments. Stiffness classes described are 18, 36, 46, and 72 psi (124, 248, 317, and 496 kPa). This standard may be used to the extent applicable for other sizes, pressure classes, and stiffness classes.

I.B. *History*. In June 1971, the AWWA Engineering and Construction Technical and Professional Committee organized the Reinforced Plastics Committee to evaluate both the use of reinforced plastics in the water-supply industry and the need for appropriate AWWA standards. The Reinforced Plastics Committee found sufficient use and interest to support a recommendation that a standard be developed for fiberglass pipe. The Standards Council authorized the formation of the Standards Committee on Thermosetting Fiberglass Reinforced Plastic Pipe in October 1972, and committee organization was completed in December 1974. The first edition of the standard was approved by the AWWA Board of Directors on Jan. 25, 1981. Subsequent editions were approved on June 23, 1988; Jan. 22, 1995; June 17, 2001; Jan. 21, 2007; Jan. 20, 2013; and Apr. 20, 2020. This edition was approved on Oct. 13, 2025.

I.C. *Acceptance.* In May 1985, the US Environmental Protection Agency (USEPA) entered into a cooperative agreement with a consortium led by NSF International (NSF) to develop voluntary third-party consensus standards and a certification program for direct and indirect drinking water additives. Other members of the original consortium included the Water Research Foundation (formerly AwwaRF) and the Conference of State Health and Environmental Managers (COSHEM). The American Water Works Association (AWWA) and the Association of State Drinking Water Administrators (ASDWA) joined later.

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In the United States, authority to regulate products for use in, or in contact with, drinking water rests with individual states.[†] Local agencies may choose to impose requirements more stringent than those required by the state. To evaluate the health effects of products and drinking water additives from such products, state and local agencies may use various references, including

1. Specific policies of the state or local agency.

2. Four standards developed under the direction of NSF:[‡] NSF/ANSI/CAN[§] 60, Drinking Water Treatment Chemicals—Health Effects; NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects; NSF/ANSI/CAN 372, Drinking Water System Components—Lead Content; and NSF/ANSI/CAN 600, Health Effects Evaluation and Criteria for Chemicals in Drinking Water.

3. Other references, including AWWA standards, *Food Chemicals Codex, Water Chemicals Codex*,[¶] and other standards considered appropriate by the state or local agency.

Various certification organizations may be involved in certifying products in accordance with NSF/ANSI/CAN 61. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdictions. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

NSF/ANSI/CAN 600 (which formerly appeared in NSF/ANSI/CAN 60 and 61 as Annex A, "Toxicology Review and Evaluation Procedures") does not stipulate a maximum allowable level (MAL) of a contaminant for substances not regulated by a USEPA final maximum contaminant level (MCL). The MALs of an unspecified list of "unregulated contaminants" are based on toxicity testing guidelines (noncarcinogens) and risk characterization methodology (carcinogens). Use of NSF/ANSI/CAN 600 procedures may not always be identical, depending on the certifier.

ANSI/AWWA C950 does not address additives requirements. Thus, users of this standard should consult the appropriate state or local agency having jurisdiction in order to

1. Determine additives requirements, including applicable standards.

2. Determine the status of certifications by all parties offering to certify products for contact with, or treatment of, drinking water.

3. Determine current information on product certification.

[†] Persons outside the United States should contact the appropriate authority having jurisdiction.

[‡] NSF International, 789 North Dixboro Road, Ann Arbor, MI 48105.

[§] Standards Council of Canada, 55 Metcalfe Street, Suite 600, Ottawa, ON K1P 6L5 Canada.

[¶] Both publications available from National Academies Press, 500 Fifth Street, NW, Washington, DC 20001.

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II. Special Issues

II.A. *Nominal Metric Pipe Sizes, Dimensions, and Tolerances*. Nominal metric pipe sizes, dimensions, and tolerances were obtained from International Organization for Standardization (ISO) and the European Committee for Standardization (CEN) product standards for fiberglass pipes.

III. Use of This Standard. It is the responsibility of the user of an AWWA standard to determine that the products described in that standard are suitable for use in the particular application being considered.

III.A. *Purchaser Options and Alternatives*. The following items should be covered by the purchaser:

1. Standard used—that is, ANSI/AWWA C950, Fiberglass Pressure Pipe, of latest revision.
2. Specific service and installation considerations.
3. Lineal feet of each pressure and stiffness class and size.
4. Details of federal, state, provincial, territorial, and local requirements (Sec. 4.4.1).
5. Pipe diameter size and series (Sec. 4.5.1).
6. Pressure classes (Sec. 4.6).
7. Stiffness classes (Sec. 4.7).
8. Whether plant inspection is required (Sec. 5.1.1).
9. Whether compliance with NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects, is required.

The purchaser may also specify the following:

1. Line layout showing pressure zones, including applicable design and transient pressures within zones and points of change between zones.
2. Cell classification (Sec. 4.3).
3. Standard laying lengths (Sec. 4.5.2).
4. Joint configuration (Sec. 4.9).

III.B. *Manufacturer Options and Alternatives*. The following items should be provided by the manufacturer:

1. Nominal wall thickness.
2. Weight.
3. Total quantity of jointing materials and field allowances.
4. Cell classification (Sec. 4.3).
5. Stiffness class (Sec. 4.7).
6. Joint details (Sec. 4.9).

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When requested by the purchaser, it is understood the manufacturer will also supply the following:

1. Special design calculations.
2. Special lengths (Sec. 4.5.2).
3. Special preparations needed for shipment (Sec. 6.2).
4. Affidavit of compliance (Sec. 6.3).

III.C. *Modification to Standard*. Any modifications to the provisions, definitions, or terminology in this standard must be provided by the purchaser or manufacturer.

IV. Major Revisions. Major revisions made to the standard in this edition include the following:

1. Removed pipe stiffness class 9 psi (62 kPa) as it is no longer commercial for pressure pipe diameters from 12–156 in. (300–4,000 mm). It has been replaced by pipe stiffness class 46 psi (317 kPa), which is the most common pipe stiffness for projects in North America (foreword I.A, Sec. 1.1, Sec. 4.7, Table 8, and Table 9).
2. Clarified scope and application with types of water systems and intended temperature (Sec. 1.1, Sec. 1.3, and Sec. 4.1).
3. Added definitions for *ambient temperature*, *raw water*, and *reclaimed water*. Deleted definition for *wastewater* (Section 3).
4. Corrected the maximum nominal pipe size in Table 9 (to 156 in. [4,000 mm]).
5. Corrected procedure A test speed in accordance with ASTM D2290 (Sec. 5.1.2.3).
6. Corrected Eq 1 and Eq 2 since r was a subscript on P, but r should be multiplied by P (Sec. 5.1.2.3.1).
7. Changed number of specimens for axial tensile strength in accordance with referenced ASTM standards (Sec. 5.1.2.4).

V. Comments. If you have any comments or questions about this standard, please call AWWA Engineering and Technical Services at 303.794.7711; write to the department at 6666 West Quincy Avenue, Denver, CO 80235-3098; or email standards@awwa.org.

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ANSI/AWWA C950-25
(Revision of ANSI/AWWA C950-20)

AWWA Standard

Fiberglass Pressure Pipe

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes the fabrication and the testing of nominal 1-in. through 156-in. (25-mm through 4,000-mm) fiberglass pipe and joining systems for use in both aboveground and belowground potable water, raw water, and reclaimed water systems at ambient temperature. Service and distribution piping systems and transmission piping systems are included.

Both glass-fiber–reinforced thermosetting-resin pipe (RTRP) and glass-fiber–reinforced polymer-mortar pipe (RPMP) are fiberglass pipes. Epoxy-resin and polyester-resin systems are described, and commercial-grade glass-fiber is specified as the reinforcement material in the pipe wall. Liner materials incorporated include thermosetting or thermoplastic resin, reinforced or unreinforced, with or without fillers. Pressure classes described are 50, 100, 150, 200, 250, 300, 350, 400, and 450 psig (345, 689, 1,034, 1,379, 1,724, 2,069, 2,414, 2,759, and 3,103 kPa). Stiffness classes described are 18, 36, 46, and 72 psi (124, 248, 317, and 496 kPa). This standard may be used to the extent applicable for other diameters, pressure classes, and stiffness classes. For information on design, hydraulics, and installation, refer to AWWA Manual M45, *Fiberglass Pipe Design*.

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