ANSI/AWWA **C800-25**

(Revision of ANSI/AWWA C800-21)

AWWA Standard

Underground Service Line Valves and Fittings

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American Water Works Association

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STANDARD Since 1881

AWWA Standard

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Committee Personnel

The AWWA C800 Subcommittee, which was formed to develop a methodology for adding new materials to the standard and which reviewed this standard, had the following personnel at the time:

Brad Haas, *Chair*

A. Bain, Ford Meter Box Company Inc., Wabash, Ind.
B. Brunker (alternate), A.Y. McDonald Manufacturing Company, Dubuque, Iowa
B.J. Haas, A.Y. McDonald Manufacturing Company, Dubuque, Iowa
T.C. Harbour, Mueller Water Products, Decatur, Ill.
D. Miller, Apollo Conbraco Industries, Mathews, N.C.
L. Muller, Wieland Chase, Montpelier, Ohio
B.E. Perron, Salem-Beverly Water Supply Board, Beverly, Mass.
K. Sadayappan, Canmet Materials, Hamilton, Ont.

NOTE: Special thanks to Savas Danos, past Chair of the Water Service Line Fittings Committee, and Steve Tefft, past Subcommittee Chair, for all their contributions to the work of the subcommittee over the years.

The AWWA Standards Committee on Water Service Line Fittings, which reviewed and approved this standard, had the following personnel at the time of approval:

Bradley Perron, *Chair*
Katie Ross, *Vice-Chair*

General Interest Members

S.C. Danos, Pantonite LLC, Charlestown, R.I.
J.W. Hellums, Booth, Hellums and Associates LLC, Lake Charles, La.
M.V Liga, LAN Inc., Houston, Tex.
E.S. Ralph (*liaison, nonvoting*), Standards Engineer Liaison, AWWA, Denver, Colo.
G. Ramon (*liaison, nonvoting*), Standards Council Liaison, Placida, Fla.
M. Salinas, Garver, Brownsville, Tex.

Producer Members

A. Bain, Ford Meter Box Company Inc., Wabash, Ind.

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B. Brunker (*alternate*), A.Y. McDonald Manufacturing Company, Dubuque, Iowa
P. Gifford (*alternate*), Mueller Water Products, Chattanooga, Tenn.
B.J. Haas, A.Y. McDonald Manufacturing Company, Dubuque, Iowa
T.C. Harbour, Mueller Water Products, Decatur, Ill.
D.A. Miller (*nonvoting*), Apollo/Conbraco Industries Inc., Mathews, N.C.
L. Muller, Wieland Chase, Montpelier, Ohio
C. Shanks (*alternate*), Ford Meter Box Company Inc., Wabash, Ind.

User Members

J. Brennan, Canby Utility Board, Canby, Ore.
L. De Los Santos (*alternate*), Las Vegas Valley Water District, Las Vegas, Nev.
P.J. Dicken, Citizens Water, Indianapolis, Ind.
J.F. Gruber, Schuylkill County Municipal Authority, Pottsville, Pa.
B.E. Perron, Salem-Beverly Water Supply Board, Beverly, Mass.
C.R. Pribila, Las Vegas Valley Water District, Las Vegas, Nev.
K. Ross, Denver Water, Denver, Colo.
M. Spinner, New Jersey American Water, Cherry Hill, N.J.

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C800.*

I. Introduction

I.A. *History.* In 1929, the development of a standard for threads for underground service fittings was undertaken by the American Standards Association (ASA). In 1932, the subcommittee that had been appointed for the task asked to be discharged after it had submitted its proposed standards in the form of two drawings. No action was taken by ASA on these proposed standards.

The American Water Works Association (AWWA) recognized the need for standardization of these threads and appointed a committee in 1940 to prepare a standard. The New England Water Works Association (NEWWA) also appointed a committee to prepare a standard for these threads. The AWWA and NEWWA committees cooperated closely in developing a tentative standard in 1947. This was approved as a standard by AWWA on Sept. 1, 1948, and by NEWWA on Sept. 14, 1948. Revisions to the standard were made effective Jan. 17, 1955. In July 1963, a committee was formed to revise C800-55 regarding the evaluation of types K and L copper tubing for water services. In the revision, published in 1966, threads representing current practice were established for those fittings generally used in the water utility field. Sizes ½ in. and ⅝ in. were added for inlet and outlet threads for fittings and couplings for use with flared copper service tubing. The 1966 revision introduced an appendix that was not part of the standard but that listed standards for water service line materials. The appendix was provided for information only because the materials were covered by other standards. The appendix also contained specifications for copper water tubing, red brass pipe, cast-iron pipe, and steel pipe.

In 1974, a standing committee was formed to revise and update C800-66. The committee recognized the need to expand the scope of the standard beyond being a standard covering only threads for underground service fittings. Previous versions of C800 described only the threads for fittings that were in common use in water distribution systems. Subsequently, the scope of the standard was changed to include performance standards for underground service line fittings as well as for the threads. The 1984 revision to C800 was approved by the AWWA Board of Directors on Jan.

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29, 1984. Subsequent revisions were approved on Jan. 1, 1990; Jan. 21, 2001; Jan. 16, 2005; June 10, 2012; June 8, 2014; and June 10, 2021.

In 2013, a subcommittee was formed to develop a methodology for adding new materials to the standard. Among the items considered were corrosion methods, strength, compatibility, durability, longevity, and a history of underground use with C800 products. The scope of work quickly narrowed to traditionally used copper zinc alloys to make the scope more manageable. Extensive research into applicable tests for copper zinc alloy corrosion resulted in the committee conducting a number of tests utilizing two alloys (UNS C83600 and UNS C89833) with a proven history of use in C800 products to set a baseline for performance and an alloy with a history of being more susceptible to corrosion (UNS C86700) to prove the effectiveness of the tests. Given significant correlation to historical field performance, the committee included a recommendation for using the Brandl test[†] in addition to the required tests from the following two standards as part of the criteria for adding materials to the standard: ISO[‡] 6509, Corrosion of Metals and Alloys—Determination of Dezincification Resistance of Copper Alloys With Zinc—Part 1: Test Method, and ASTM[§] G37, Standard Practice for Use of Mattsson's Solution of pH 7.2 to Evaluate the Stress-Corrosion Cracking Susceptibility of Copper-Zinc Alloys. Conversely, the committee decided to not include the following standards because of inconclusive results with the chosen test parameters: ASTM G31, Standard Guide for Laboratory Immersion Corrosion Testing of Metals; ASTM G59, Standard Test Method for Conducting Potentiodynamic Polarization Resistance Measurements; ASTM G61, Standard Test Method for Conducting Cyclic Potentiodynamic Polarization Measurements for Localized Corrosion Susceptibility of Iron-, Nickel-, or Cobalt-Based Alloys; ASTM G71, Standard Guide for Conducting and Evaluating Galvanic Corrosion Tests in Electrolytes; and ASTM G106, Standard Practice for Verification of Algorithm and Equipment for Electrochemical Impedance Measurements.

Test reports for all tests are stored by AWWA for future C800 Committee and Subcommittee reference. (Note: The laboratories that conducted these tests are not the only acceptable laboratories.) This work resulted in the 2025 revision of the AWWA C800 standard introducing a criterion for adding copper zinc materials to the

[†] Brandl et al. 2009. "Stress Corrosion Cracking and Selective Corrosion of Copper-Zinc Alloys for Drinking Water Installation." *Materials and Corrosion.* 60(4)251–258.

[‡] International Organization for Standardization, ISO Central Secretariat, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland.

[§] ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

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standard. Additional due diligence is required for materials outside the copper zinc alloys. This revision was approved on Oct. 13, 2025.

I.B. *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.

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 states. 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 jurisdiction. 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

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¶ NSF International, P.O. Box 130140, 789 North Dixboro Road, Ann Arbor, MI 48105.

** Persons outside the United States should contact the appropriate authority having jurisdiction.

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

‡‡ Both publications available from The National Academies Press, 500 Fifth Street NW, Washington, DC 20001.

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"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.

In an alternative approach to inadvertent drinking water additives, some jurisdictions (including California, Maryland, Vermont, and Louisiana at the time of this writing) are calling for reduced lead limits for materials in contact with potable water. Various third-party certifiers have been assessing products against these lead content criteria, and a new ANSI-approved national standard, NSF/ANSI 372, Drinking Water System Components—Lead Content, was published in 2010.

On Jan. 4, 2011, legislation was signed revising the definition for "lead free" within the Safe Drinking Water Act (SDWA) as it pertains to "pipe, pipe fittings, plumbing fittings, and fixtures." The changes went into effect on Jan. 4, 2014. In brief, the new provisions to the SDWA require that these products meet a weighted average lead content of not more than 0.25 percent when used with respect to wetted surfaces.

ANSI/AWWA C800 does not address additives requirements. 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 parties offering to certify products for contact with, or treatment of, drinking water.
3. Determine current information on product certification.

II. Special Issues

II.A. *Lead Fittings.* References to lead fittings have been removed from ANSI/AWWA C800 and the attached appendixes. The AWWA Standards Department has available to users of ANSI/AWWA C800 copies of ANSI/AWWA C800-84 information that contains references to lead fittings.

II.B. *Chlorine and Chloramine Degradation of Elastomers.* The selection of materials is critical for water service and distribution piping in locations where there is a possibility that elastomers will be in contact with chlorine or chloramines. Documented research has shown that elastomers such as gaskets, seals, valve seats, and encapsulations may be degraded when exposed to chlorine or chloramines. The impact of degradation is a function of the type of elastomeric material, chemical concentration, contact surface area, elastomer cross section, environmental conditions as well as temperature. Careful selection of and specifications for elastomeric materials and the specifics of their application for each water system component should be considered to provide long-term usefulness and minimum degradation (swelling, loss of elasticity, or softening) of the elastomer specified.

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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. *Products Intended for Waterworks Applications.* A variety of valves, fittings, and other water conveyance devices are available on the market for water service. For the user, it is important to distinguish between products designated plumbing style versus waterworks service style and to ensure the proper product is selected for the specific application. Waterworks products are designed and constructed for belowground installation. This approach helps ensure long-term performance under a variety of installation and service conditions. The specific materials established in ANSI/AWWA C800 were selected to provide long-term performance and corrosion resistance from both internal and external sources. The user is cautioned that underground service line valves and fittings not compliant with ANSI/AWWA C800 may result in unsatisfactory performance or failure of the product. When in doubt concerning product suitability, contact a waterworks manufacturer for assistance.

III.B. *Purchaser Options and Alternatives.* The following information should be provided by the purchaser:

1. Standard used—that is, ANSI/AWWA C800, Underground Service Line Valves and Fittings, of latest revision.
2. Whether compliance with NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects, is required.
3. Whether compliance with NSF/ANSI/CAN 372, Drinking Water System Components—Lead Content, or an alternative lead content criterion, is required.
4. The size and type of fitting or valve.
5. Quantity required.
6. Details of federal, state, provincial, territorial, and local requirements (Sec. 4.1.1).
7. Working pressures under which the valve or fitting will be operated after installation—normal or high pressure (Sec. 4.2).
8. Minimum inside diameter of waterway through corporation stops (Sec. 4.3.1.1).
9. If meter setter spacing is other than shown to accommodate meter lengths listed in Table 12 or Table 13 (Sec. 4.3.14).
10. Type of inlet thread (Sec. 4.4).
11. Size and type of outlet thread (Sec. 4.4).
12. If meter flanges other than oval are required (Sec. 4.4.12).

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13. Whether records of factory tests are to be provided (Sec. 5.2.1).

14. Description of special castings or patterns, if required. Special casting markings, if required, should be stated, including location of these markings (Sec. 6.1).

15. Whether an affidavit of compliance is to be provided (Sec. 6.3).

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

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

1. Updated Sec. I.B Acceptance in the Foreword with the latest Standards Council language reflecting the addition of reference to NSF/ANSI/CAN 372 and NSF/ANSI/CAN 600.

2. In the Foreword, Sec. I.A History, a summary was provided on the work of the subcommittee that was formed in 2013 to develop a methodology for adding new materials to the standard.

3. Updated Sec. 4.1.1 General with the latest Standards Council boilerplate language.

4. Added Sec. 4.1.2.1 related to suitability for materials utilized in products covered by this standard referencing Appendix D.

5. Added a new Appendix D, Evaluation of Copper Zinc Alloys Not Covered by C800, that provides information on standardized lab tests and extended time in service requirements.

V. Comments. If you have any comments or questions about this standard, please call AWWA Standards and Optimization Programs 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 C800-25
(Revision of ANSI/AWWA C800-21)

AWWA Standard

Underground Service Line Valves and Fittings

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard covers valves, fittings, service saddles, and meter setters for use in a service line from the main through the meter valve or meter-setting appurtenance. Valves, fittings, and meter setters described in this standard include ½ in. (12.5 mm) through 2 in. (50.8 mm). Service saddles described have outlet sizes ½ in. (12.5 mm) through 2 in. (50.8 mm) and fit mains of 2 in. (50.8 mm) through 12 in. (304.8 mm). Valves include corporation stops and curb stops. Fittings include various types of couplings and adapters. Service saddles include various types of devices circumferentially attached to the main. Meter setters include various configurations of copper tubing, valves, and fittings for the holding of ⅝-in. (15.875-mm) through 2-in. (50.8-mm) meters.

1.1.1 *Installation.* The performance of products depends on proper installation. The purchaser must follow instructions supplied by or available from the manufacturer. If these instructions are not available, good installation practices shall be followed.

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