ANSI/AWWA **C800-21**

(Revision of ANSI/AWWA C800-14)

AWWA Standard

Underground Service Line Valves and Fittings

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American Water Works Association

AWWA Standard

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

* American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036.

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. Two standards developed under the direction of NSF, NSF/ANSI/CAN[§] 60, Drinking Water Treatment Chemicals—Health Effects, and NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects.

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.

Annex A, "Toxicology Review and Evaluation Procedures," to NSF/ANSI/CAN 61 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 Annex A 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)

[†] NSF International, P.O. Box 130140, 789 N. Dixboro Rd., 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 St., NW, Washington, DC 20001.

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.

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 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, Standard for 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 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, 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 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).
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. An advisory statement was added in the foreword (Sec. II.B) regarding chlorine and chloramine degradation of elastomers.

2. Updated Sec. 1.3 Applicability to address considerations regarding suitability for wastewater applications.

3. Sec. 2 References was updated.

4. Added definitions for potable water, reclaimed water, and wastewater in Sec. 3.

5. Three non-Bismuth low-lead silicon-based material options were added to Sec. 4.1.2 Castings.

6. A new Sec. 4.1.2.2 was added to address dezincification performance of alloys utilized in areas with aggressive water.

7. A new Sec. 4.1.2.2.1 was added to make purchaser requirements from gate valve and/or hydrant specifications, such as maximum zinc content, applicable to C800.

8. Sec. 4.1.3 Cast service saddles was revised to include the option of using the low-lead copper alloys that are accepted for use in Sec. 4.1.2 Castings.

9. A new Sec. 4.1.6.1 was added to make Sec. 4.1.2.2 applicable to component parts.

10. Sec. 4.1.5 Saddle corrosion protection was revised to reflect the changes made to Sec. 4.1 and a requirement was added for materials in contact with potable water to conform to NSF/ANSI/CAN 61.

11. A new Sec. 4.4.4.1.2 was added on angle of thread, thread height, and thread truncation.

12. A new Sec. 4.4.4.1.2 was added for tolerances for thread truncation, taper, lead, and angle.

13. Two new tables were added: new Table 8, Standard AWWA Corporation Stop Tolerance of Thread Truncation, and new Table 9, Standard AWWA Corporation Stop Tolerance of Thread Taper, Lead, and Angle.

V. Comments. If you have any comments or questions about this standard, please call AWWA Engineering and Technical Services at 303.794.7711, FAX at 303.795.7603, write to the department at 6666 West Quincy Avenue, Denver, CO 80235-3098, or email at standards@awwa.org.