ANSI/AWWA **D103-19**

(Revision of ANSI/AWWA D103-09)

AWWA Standard

Factory-Coated Bolted Carbon Steel Tanks for Water Storage

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American Water Works Association

Approved American National Standard ANSI

STANDARD Since 1881

AWWA Standard

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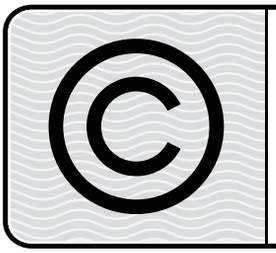

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Contents

All AWWA standards follow the general format indicated subsequently. Some variations from this format may be found in a particular standard.

Foreword

This foreword is for information only and is not a part of ANSI/AWWA D103.*

I. Introduction.

I.A. *Background.* This standard covers factory-coated bolted carbon steel tanks for water storage and is based on the accumulated knowledge and experience of manufacturers of bolted carbon steel tanks.†

I.B. *History.* The first version of this standard was prepared in cooperation with the Bolted Tank Manufacturer's Association and was issued in 1980. It was prepared in response to the increasing use of bolted tanks for water storage. ANSI/AWWA D103-80 was later updated and approved as ANSI/AWWA D103-87 on June 14, 1987.

Subsequent editions of ANSI/AWWA D103 were approved by the AWWA Board of Directors on June 15, 1997, and Jan. 25, 2009. This edition was approved on June 7, 2019.

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

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

† The word *tanks* is used hereinafter broadly in place of the lengthy phrase *standpipes or reservoirs for water storage*.

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

§ NSF International, 789 North Dixboro Road, Ann Arbor, MI 48113.

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 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 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.

ANSI/AWWA D103 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 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. *Purchase.* When tanks are purchased using this standard, the purchaser must specify certain basic requirements. The purchaser may desire to modify, delete, or amplify sections of this standard to suit special conditions. It is strongly recommended that such modifications, deletions, or amplifications be made by supplementing this standard rather than by rewriting or incorporating sections from this standard into a separate specification.

II.B. *Design and Construction.* The details of design and construction covered by this standard are minimum requirements. A tank cannot be represented as adhering to the provisions of ANSI/AWWA D103 if it does not meet the minimum requirements of this standard.

II.C. *Coatings.* Tanks covered by this standard shall be supplied with factory-applied coatings. Field coating is limited to repair of damaged coatings.

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[*] Both publications available from National Academy of Sciences, 500 Fifth Street, NW, Washington, DC 20001.

Tanks with factory-applied coatings and bolted construction have a long life expectancy. Regular inspection and repair of damaged or deteriorated areas may be the determining factors in the length of tank life.

II.D. *Foundations.* Tank foundations are one of the more important aspects of tank design. Detailed requirements for tank foundations are covered in Section 13 of this standard. This standard does not require the manufacturer or constructor to be responsible for the design of the tank foundation unless specified. An adequate soil investigation at the tank site, including recommendations of the type of foundation to be used, the depth of foundation required, specification and compaction of sub-base materials, and the design soil-bearing pressure, should be obtained. This information, as well as specifications for an adequate soil investigation, should be established by a qualified geotechnical engineer. A drainage inlet structure or suitable erosion protection should be provided to receive the discharge from the tank overflow. The overflow should not be connected directly to a sewer or a storm drain without an air break.

II.E. *Annual Inspection, Maintenance, and Operation.* Annual inspection and maintenance is important if maximum tank life is to be attained. Complete interior and exterior inspections should occur at least every three to five years. In particular, accumulations of dirt and weeds from around the outside base of the tank, which may trap moisture and accelerate corrosion, as well as accumulated silt inside on the floor, should be removed. Refer to AWWA Manual M42, *Steel Water-Storage Tanks*, for guidance concerning inspection and maintenance.

Sufficient water replacement and circulation is necessary to prevent freezing in the tank and piping. Where low usage may result in the possibility of freezing, the water may need to be wasted or heat provided to prevent freezing. The purchaser is referred to NFPA* 22, Standard for Water Tanks for Private Fire Protection, for heater sizing. Purchasers are cautioned against allowing ice to build up for use as insulation because the ice may break loose and damage the tank.

II.F. *Disinfection Procedures.* This standard does not cover disinfecting procedures† (see Sec. 11.3). If the disinfecting is to be performed by the tank constructor, the purchaser must specify the disinfecting procedure to be used (see ANSI/AWWA C652).

* National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169.

† Various disinfection procedures are presented in ANSI/AWWA C652, Disinfection of Water-Storage Facilities.