

American Water Works Association

**ANSI/AWWA C509-01**

(Revision of ANSI/AWWA C509-94)



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**AWWA STANDARD**  
FOR  
**RESILIENT-SEATED GATE VALVES**  
**FOR WATER SUPPLY SERVICE**



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**AMERICAN WATER WORKS ASSOCIATION**

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## AWWA Standard

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# Foreword

*This foreword is for information only and is not a part of AWWA C509.*

## I. Introduction.

I.A. *Background.* The resilient-seated gate valve has been commonly used in several European countries for many years. This type of valve has proven to be satisfactory in water utility applications. A resilient-seated gate valve similar to the European model was introduced into the US and has been in service in various water utility applications since 1975.

I.B. *History.* The American Water Works Association (AWWA) requested the assistance of the Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) in providing a standard for resilient-seated gate valves at the 1976 AWWA annual conference.

MSS has played an important role in the development of this standard. The organization was created in 1924, and in 1930, it organized the MSS Water Works Committee and designated representatives for appointment to AWWA standards committees. Since that time, MSS has been particularly active and effective in developing new standards for the water utility industry and in making periodic revisions to existing standards.

I.C. *Acceptance.* In May 1985, 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 all direct and indirect drinking water additives. Other members of the original consortium included the American Water Works Association Research Foundation (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 state. To evaluate the health effects of products and drinking water additives from such products, state and local agencies may use various references, including

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\*Persons in Canada, Mexico, and non-North American countries should contact the appropriate authority having jurisdiction.

1. An advisory program formerly administered by USEPA, Office of Drinking Water, discontinued on Apr. 7, 1990.
2. Specific policies of the state or local agency.
3. Two standards developed under the direction of NSF, ANSI\*/NSF† 60, Drinking Water Treatment Chemicals—Health Effects, and ANSI/NSF 61, Drinking Water System Components—Health Effects.
4. 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 ANSI/NSF 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 ANSI/NSF 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.

AWWA C509-01 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.

**II. Special Issues.** This standard has no applicable information for this section.

**III. Use of This Standard.** AWWA has no responsibility for the suitability or compatibility of the provisions of this standard to any intended application by any

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\*American National Standards Institute, 25 W. 43rd St., New York, NY 10036.

†NSF International, 789 N. Dixboro Rd., Ann Arbor, MI 48105.

‡Both publications available from National Academy of Sciences, 2102 Constitution Ave. N.W., Washington, DC 20418.

user. Accordingly, each user of this standard is responsible for determining that the standard's provisions are suitable for and compatible with that user's intended application.

III.A. *Purchaser Options and Alternatives.* This standard includes certain options that, if desired, must be specified by the purchaser. Also, several items must be specified to describe completely the gate valve required.

The following items should be included in the purchaser's specifications.

1. Standard used—that is, AWWA C509, Standard for Resilient-Seated Gate Valves for Water Supply Service, of latest revision.
2. Size and type of valve—NRS or OS&Y (Sec. 1.1).
3. Whether the valve is handwheel or wrench nut operated and direction in which handwheel or wrench nut shall turn to open (Sec. 4.4.7).
4. Catalog data, net weight, and assembly drawings to be provided by the manufacturer (Sec. 4.1), if required.
5. Affidavit of compliance (Sec. 6.3), if required.
6. Quantity required.
7. Whether records of tests specified in Sec. 5 are to be provided.
8. Whether the valve will be subjected to water that promotes galvanic corrosion and requires the use of alternative materials as described in Sec. 4.2.2.4.3.
9. Type of valve ends—flanged (Sec. 4.4.1.4.1), tapping valve flange (Sec. 4.4.1.4.4), mechanical joint (Sec. 4.4.1.4.2), or push-on joint (Sec. 4.4.1.4.3).
10. Type of stem seal-stuffing box or O-ring (Sec. 4.4.6.1).
11. Detailed description of wrench nut if not in accordance with Sec. 4.4.7.
12. Special cast markings (Sec. 6.1), if required.
13. Whether bolting other than that specified by ASTM\* A307 is required. It is recommended that the purchaser verify with the supplier whether specified or requested alternate bolting materials are appropriate. What alternative, if any, is desired in the type of rustproofing for bolts and nuts (Sec. 4.4.4).
14. Cutter diameter must be specified for tapping valves (Sec. 4.3.2). Tapping machine shell cutters are made in either “full size” (OD is full nominal size) or “undersize” (OD is less than full nominal size, i.e., usually // in. less [Reference MSS SP-113]).

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\*American Society for Testing and Materials, 100 Barr Harbor Dr., West Conshohocken, PA 19428-2959.

15. Whether gearing is required (Sec. 4.4.9).

16. Special packaging for shipment as may be required for protection of coatings.

17. Whether the pH level of the water is less than 6.5 or greater than 8.5.

III.B. *Modification to Standard.* Any modification to the provisions, definitions, or terminology in the standard must be provided in the purchaser's specifications.

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

1. The size range was increased to include the 24- and 30-inch sizes (Sec. 1.1.1).
2. Identification of copper alloys was added (Sec. 4.2.2.4.1).
3. The acceptance clause (Sec. I.C) has been revised to approved wording.
4. Section 1.2, Purpose, and Sec. 1.3, Application, were added.
5. Table 3 was modified to include the UNS classification of bronzes in place of the letter grade of bronzes.

**V. Comments.** If you have any comments or questions about this standard, please call the AWWA Volunteer & Technical Support Group, (303) 794-7711 ext. 6283, FAX (303) 795-7603, or write to the group at 6666 W. Quincy Ave., Denver, CO 80235.



# AWWA STANDARD FOR RESILIENT-SEATED GATE VALVES FOR WATER SUPPLY SERVICE

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## SECTION 1: GENERAL

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### Sec. 1.1 Scope

This standard describes iron-body, resilient-seated gate valves with nonrising stems (NRS) and outside screw-and-yoke (OS&Y) rising stems, including tapping gate valves, for water supply service having a temperature range of 33°–125°F (0.6°–52°C). These valves are intended for applications where fluid velocity does not exceed 16 ft/sec when the valve is in full open position.

**1.1.1 Sizes.** Gate valves described by this standard are 3-in. (75-mm), 4-in. (100-mm), 6-in. (150-mm), 8-in. (200-mm), 10-in. (250-mm), 12-in. (300-mm), 16-in. (400-mm), 20-in. (500-mm), 24-in. (600-mm), and 30-in. (750-mm) nominal pipe size (NPS). Sizes refer to the nominal diameter, in inches (or millimeters), of the waterway through the inlet and outlet connections and the closure area.

**1.1.2 Valve pressure rating.** The minimum design working water pressure shall be 200 psig (1,380 kPa [gauge]) for 3- through 12-in. (75- through 300-mm) sizes and 150 psig (1,034 kPa [gauge]) for 16- through 30-in. (400- through 750-mm) sizes.

**1.1.3 Conditions and materials not described.** This standard is not intended to cover special conditions of installation or operation, such as built-in power drive, installation in vertical or steeply inclined lines, conveyance of unusually corrosive water, or excessive water hammer. These conditions are beyond the intended scope of this standard and require special consideration in design and construction. Joint

accessories for end connections, such as bolts, gaskets, glands, follower rings, and so forth, are not described in this standard.

### Sec. 1.2 Purpose

The purpose of this standard is to provide purchasers, manufacturers, and suppliers with the minimum requirements for resilient-seated gate valves for water supply service, including materials, application, inspection, handling, and shipping.

### Sec. 1.3 Application

This standard can be referenced in specifications for purchasing and receiving resilient-seated gate valves and can be used as a guide for fabricating and assembling resilient-seated gate valves for water supply service. The stipulations of this standard apply when this document has been referenced and then only to resilient-seated gate valves for water supply service applications.

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## SECTION 2: REFERENCES

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This standard references the following documents. In their latest editions, they form a part of this standard to the extent specified within this standard. In any case of conflict, the requirements of this standard shall prevail.

ANSI\* AS-568A—Aerospace Size Standard for O-rings.

ANSI/ASME† B16.1—Cast Iron Pipe Flanges and Flanged Fittings.

ANSI/ASME B16.10—Face-To-Face and End-To-End Dimensions of Valves.

ANSI/ASME B18.2.1—Square and Hex Bolts and Screws Inch Series.

ANSI/AWWA C110/A21.10—American National Standard for Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In. (75 mm Through 1,200 mm), for Water.

ANSI/AWWA C111/A21.11—American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

ANSI/AWWA C550—Standard for Protective Epoxy Interior Coatings for Valves and Hydrants.

ANSI/AWWA C600—Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances.

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\*American National Standards Institute, 25 W. 43rd St., New York, NY 10036.

†American Society of Mechanical Engineers, 3 Park Ave., New York, NY 10016.