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(Revision of ANSI/AWWA C606-15)

AWWA Standard

Grooved and Shouldered Joints

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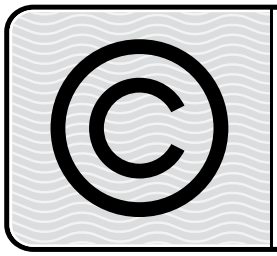
AWWA Standard

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C606.*

I. Introduction.

I.A. *Background*. Grooved and shouldered joints have been used since the early 1900s. To ensure continued quality of this type of joint, this standard has been developed for its manufacture.

In 1971, the AWWA Standards Council received a request to develop a standard for a type of pipe jointing that employs the principle of clamping together grooved or shouldered ends of pipe and fittings with a flexible gasket for closure. Because of this request, the AWWA Standards Council formed an exploratory ad hoc committee "to consider grooved and shouldered type joints and fittings, and to determine how best to arrive at an appropriate AWWA standard for such joints and fittings."

The ad hoc committee recommended "that the AWWA Standards Council establish a standards committee for the development of a standard in one document for grooved and shouldered type joints and fittings for steel, gray-iron, and ductile-iron pipe for water and other liquids as appropriate." On June 7, 1972, the council established the AWWA Standards Committee on Grooved and Shouldered Type Joints, and the committee held its first meeting on that date.

I.B. *History*. The first edition of this standard, designated ANSI/AWWA C606-78—Grooved and Shouldered Type Joints, was published in 1978. The second edition of the standard, designated as ANSI/AWWA C606-81, was approved by AWWA on Jan. 25, 1981, by ANSI on May 12, 1981, and was accepted by the Department of Defense on Apr. 5, 1982.

The third edition, designated ANSI/AWWA C606-87, was approved by the AWWA Board of Directors on Jan. 25, 1987, and by ANSI on Apr. 15, 1987. The major revisions contained in the 1987 edition were the deletion of all information on and references to gray cast-iron pipe. Tables relating to gray cast-iron pipe were eliminated, tables showing metric dimensions were eliminated, and metric conversion factors were added as footnotes; tables were renumbered. The fourth edition was approved on June 15, 1997. Major revisions contained in the 1997 edition included the following: the format was changed to the AWWA standard style, Table 1 was added, the figure above Table 5 was revised, a requirement that field grooves be identified by the groover's

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unique mark was added, definitions were revised and the term *fabricator* was retained, the applied load for the hydrostatic deflected joint test was moved from the midpoint of the coupling to the pipe on either side of the coupling, and machining of the inside diameter of the pipe was approved for the hydrostatic joint test. The fifth edition was approved on Jan. 18, 2004. Major revisions contained in the 2004 edition included the following: the definition of dimension *T* in Tables 2 and 3 was revised, nominal metric conversions were changed from soft to hard values, and the tolerance values were corrected in Table 2. The sixth edition was approved on June 11, 2006. Revisions contained in the 2006 edition included minor format changes to the foreword. The seventh edition was approved on June 12, 2011. Major revisions in the 2011 edition included expanded scope to include 30- and 36-in. pipe; nominal dimensions were converted to soft metric units, 1 in. = 25 mm; gasket material grade changes were added in Table 1; and nominal wall thickness changes were made to pipe sizes 18 in. and larger in Tables 2 and 3. The last edition was approved on Jan. 24, 2015. This edition was approved on Oct. 24, 2022.

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.

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/CAN‡ 60, Drinking Water Treatment Chemicals—Health Effects, and NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects.

* Persons outside the United States should contact the appropriate authority having jurisdiction.
† NSF International, 789 N. Dixboro Road, Ann Arbor, MI 48113.
‡ Standards Council of Canada, 55 Metcalfe Street, Suite 600, Ottawa, ON K1P 6L5 Canada.

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3. Other references, including AWWA standards, *Food Chemicals Codex, Water Chemicals Codex*,[§] and other standards considered appropriate by the state, provincial, 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.

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.

ANSI/AWWA C606 does not address additives requirements. Users of this standard should consult the appropriate state, provincial, or local agency having jurisdiction 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. *Advisory Information on Product Application.*

1. This standard includes definitions for both the manufacturer and the fabricator. For the purpose of this standard, the manufacturer is the party that produces the coupling. The fabricator is the party that grooves or fabricates special ends for the pipe, fittings, valves, or other components.

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, and environmental conditions, including temperature. Careful selection of and specifications

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

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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 application being considered.

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

1. Standard used—that is, ANSI/AWWA C606, Grooved and Shouldered Joints, of latest revision.
2. Pipe class or thickness, grade, and nominal outside diameter.
3. Type of coupling—grooved or shouldered, flexible or rigid.
4. Type of pipe end—cut groove (DIP - flexible or rigid) or cut groove, roll groove, shoulder (type of shoulder).
5. The pH or temperature of water, if unusual.
6. Internal working pressure.
7. Type of protective coating, if other than the standard of the coupling and pipe manufacturer.
8. Whether catalog data and certified shop drawings shall be provided (Sec. 4.1.2).
9. Whether test records shall be provided (Sec. 4.1.3).
10. Whether compliance with federal, state, or local requirements is not required (Sec. 4.2.1).
11. Whether the type of material required for housings is other than ductile or malleable iron (Sec. 4.2.3).
12. Whether the type of material required for bolts and nuts is other than carbon steel (Sec. 4.2.4).
13. Whether the type of material required for gaskets is other than what is required in Table 1 (Sec. 4.2.5.1).
14. Whether flexible joints for shouldered-end pipe shall be other than that indicated in Table 6 (Sec. 4.3.1.5.5).
15. Whether dimensions for cut grooves shall be other than those found in Table 4 (Sec. 4.3.3.1.1).
16. Whether dimensions for rolled grooves shall be other than those found in Table 5 (Sec. 4.3.3.2.1).

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17. Whether dimensions for mechanical shoulders shall be other than those found in Table 6 (Sec. 4.3.5).

18. Whether the purchaser desires to inspect the couplings at the manufacturer's plant, or to inspect the end preparations at the fabricator's location, or both. (Sec. 5.1.3).

19. Whether cap OD shall be other than that required in Tables 2 through 6 (Sec. 4.3).

20. Whether dimension C shall be other than as required in Tables 2 through 6 (Sec. 4.3).

21. Whether dimensions A and B shall be other than as required in Tables 2 through 6 (Sec. 4.3).

22. Requirements for repairs, replacement, and retesting under (Sec. 5.3) Basis for Nonconformance.

23. Whether manufacturer shall provide an affidavit of compliance (Sec. 6.2).

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

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

1. Addition of permeation material requirements in Sec. 4.2.2.
2. Clarifications to several design requirements in Sec. 4.3.
3. Addition of thrust restraint design requirements in Sec. 4.3.1.5.
4. Clarifications to pressure testing requirements in Sec. 5.2.
5. Clarifications to nonconformance requirements in Sec. 5.3.

V. Comments. If you have any comments or questions about this standard, please contact 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.

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ANSI/AWWA C606-22
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American Water Works Association

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AWWA Standard

Grooved and Shouldered Joints

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes grooved and shouldered joints for ductile-iron pipe (DIP), metallic pressure pipe of iron pipe size (IPS), fittings, and other components for water, wastewater, reclaimed water, and other services. The standard describes 4-in. through 36-in. (100-mm through 900-mm) diameter grooved ductile-iron pipe; ¾-in. through 24-in. (19-mm through 600-mm) diameter grooved steel, aluminum, brass, and other metallic pipe of IPS dimensions; and 4-in. through 64-in. (100-mm through 1,600-mm) nominal diameter shouldered ends for ductile-iron pipe and metallic pipe. Joint sizes other than those listed are outside the scope of this product standard.

Sec. 1.2 Purpose

The purpose of this standard is to provide the minimum requirements for grooved and shouldered joints, including materials, dimensions, tolerances, inspection, proof of design procedures, markings, and production testing. Grooved and shouldered joints outside of Tables 2–6 shall comply with all the minimum requirements of the general design, materials, inspection, proof of design procedures, markings, and production testing.

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