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(Revision of ANSI/AWWA C227-17)

AWWA Standard

Bolted, Split-Sleeve Couplings

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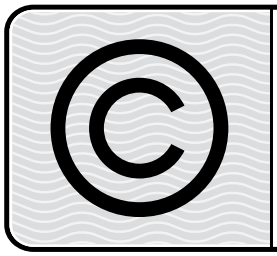
AWWA Standard

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C227.

I. Introduction.

I.A. *Background.* This standard describes bolted, split-sleeve couplings used to join pipe. It also includes materials of construction, inspection, and testing. These couplings have been used on water pipe since 1981.

I.B. *History.* In October 1999, the AWWA Standards Council authorized the AWWA Standards Committee for Steel Pipe to develop a new standard for the use of bolted, split-sleeve couplings for plain-end pipe. The first edition of that standard was approved by the AWWA Board of Directors on Jan. 21, 2007. Subsequent editions were approved on Jan. 23, 2011, and June 11, 2017. This edition was approved on October 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. 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/

* Persons outside the United States should contact the appropriate authority having jurisdiction.
† NSF International, 789 North Dixboro Road, Ann Arbor, MI 48105.
‡ American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036.
§ Standards Council of Canada, 55 Metcalfe Street, Suite 600, Ottawa, ON K1P 6L5 Canada.

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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 jurisdictions. 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 "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.

ANSI/AWWA C227 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. *Advisory Information on Product Application.* Although details differ, all couplings of this type work in a similar fashion and have similar components as depicted in the standard. Coupling manufacturers should be contacted for detailed design information regarding the capabilities of the couplings supplied and proper methods of field installation.

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

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

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of degradation is a function of the type of elastomeric material, chemical concentration, contact surface area, elastomer cross section, and 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.

II.B.1. *Gasket Degradation Study.* A pipe gasket, having the hardness of a compressed elastomer with a large mass relative to the small, exposed surface area, experiences minimal degradation. This was validated in a research paper reported in *Journal AWWA*,[*] in which the pipe gasket degradation in a 110 mg/L chloramine solution was found to degrade just the exposed surface.

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

1. Standard used—that is, ANSI/AWWA C227, Bolted, Split-Sleeve Couplings, of latest revision.
2. Quantity.
3. Nominal pipe size(s)
4. Flange specification for flanged coupling adaptors, if used.
5. Whether compliance with NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects, is required.
6. Details of federal, state, provincial, territorial and local requirements (Sec. 4.2.1).
7. Standard classification of rubber gaskets (Sec. 4.2.5).
8. Special service conditions and operating temperature range (Sec. 4.2.5 and Sec. 4.2.6).
9. Anticipated angular deflection of pipes (Sec. 4.4 and Table 2).
10. Special requirements, such as coatings (Sec. 4.5.1 and Sec. 4.5.2), linings (Sec. 4.5.1 and Sec. 4.5.2), gasket material (Table 1), gaskets for electrical insulation (Sec. 4.2.7), and special types of bolting (Sec. 4.2.9.1).
11. Actual outside diameter(s) (OD) of pipe ends, including coating (Sec. 4.6.2).
12. Purchaser's pipe-end preparation requirements (Sec. 4.6.2).

[*] R.W. Bonds. 2004. Effect of Chloramines on Ductile-Iron Pipe Gaskets of Various Elastomer Compounds. *Jour. AWWA,* 96(4):153–160.

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13. Type of pipe(s), including specification to which it is made, or specifications and tolerance of pipe ends (Sec. 4.6.2.1).

14. Additional nondestructive weld evaluation (Sec. 5.1.1.2).

15. Material certifications to be provided by the manufacturer (Sec. 5.1.1.4).

16. Purchaser's inspection requirements (Sec. 5.1.2).

17. Rated pressure, including transient pressure and test pressure (Sec. 5.2.1).

18. Hydrostatic test data report (Sec. 5.2.2.2).

19. Purchaser's proof test requirements (Sec. 5.2.3).

20. Affidavit of compliance (Sec. 6.3).

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. Major changes made to the standard in this revision include the following:

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

2. Deleted definition for axial sealing element as the term is not used in the body of the standard in Sec. 3.

3. Updated Sec. 4.1 and Sec. 4.2.1 with the latest Standards Council boilerplate language.

4. Changed metric conversions in Tables 2 and 3 to conversion (formally known as hard conversions) from substitution (formally known as soft conversion).

5. Added a note to Sec. 4.5.2 regarding maximum coating thickness.

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.

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ANSI/AWWA C227-22
(Revision of ANSI/AWWA C227-17)

American Water Works Association

Dedicated to the World's Most Important Resource®

AWWA Standard

Bolted, Split-Sleeve Couplings

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes bolted, split-sleeve couplings (couplings) used to join pipe of similar outside diameter. Couplings may be manufactured from carbon steel or stainless steel and are intended for use in systems conveying potable water, wastewater, reclaimed water, or air used in water treatment. This standard covers nominal coupling sizes ¾ in. (20 mm) and larger.

Sec. 1.2 Purpose

The purpose of this standard is to provide the minimum requirements for bolted, split-sleeve couplings for pipe, including requirements for materials, design, testing and inspection, installation, marking, and shipping.

Sec. 1.3 Application

This standard can be referenced in purchaser's documents for bolted, split-sleeve couplings for pipe. The stipulations of this standard apply when this document has been referenced and then only to bolted, split-sleeve couplings for pipe.

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