

American Water Works Association

ANSI/AWWA C221-97

(First Edition)



AWWA STANDARD
FOR
**FABRICATED STEEL MECHANICAL
SLIP-TYPE EXPANSION JOINTS**



Effective date: Oct. 1, 1997.

First edition approved by AWWA Board of Directors Feb 2, 1997.

Approved by American National Standards Institute July 3, 1997.

AMERICAN WATER WORKS ASSOCIATION

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Foreword

This foreword is for information only and is not a part of AWWA C221.

I. Introduction.

I.A. *Background.* Fabricated steel mechanical slip-type expansion joints have been used for approximately 80 years to accommodate thermal movement in non-buried, aboveground pipelines, penstocks, and other conduits where expansion and contraction of more than $\frac{1}{2}$ in. (13 mm) needs to be addressed. Though details differ, all expansion joints of this type work the same way and have similar components: a slip pipe, body, gland, packing chamber (with alternate rings of elastomeric material and lubricating rings), and follower ring. They may also have a limit ring and limit rods, and threaded fasteners (bolts and nuts) that, when tightened, compress the packing in the packing chamber to make a watertight seal while allowing the anticipated axial movement.

I.B. *History.* This first edition of ANSI/AWWA C221 was approved by the AWWA Board of Directors on Feb. 2, 1997.

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 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

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

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

[†]American National Standards Institute, 11 W. 42nd St., New York, NY 10036.

[‡]NSF International, 3475 Plymouth Rd., Ann Arbor, MI 48106.

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

accept or accredit certification organizations within their jurisdiction. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

Appendix 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 Appendix A procedures may not always be identical, depending on the certifier.

AWWA C221-97 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 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. The following items should be included in the purchaser's specifications:

1. Standard used—that is, ANSI/AWWA C221, Standard for Fabricated Steel Mechanical Slip-Type Expansion Joints, of latest edition.
2. Quantity.
3. Type of pipe(s), including specification to which it is made, or specification and tolerance of pipe ends (Sec. 4.2.3.2).
4. Nominal pipe size(s) (Sec. 3[10]).
5. Actual outside diameter(s) (OD) of pipe ends, including any coatings (Sec. 3[1]).
6. Wall thickness, schedule, or class.
7. Rated pressure, including surges, and the test pressure (Sec. 3(17) and 5.3).
8. Operating temperature range (Sec. 4.1.3).
9. Tolerances of pipe ends (Sec. 4.1.3.3).
10. Anticipated axial movement (Sec. 4.2.1 and 4.2.3.3).
11. Length and thickness of body and slip pipe where special performance or installation requirements exist (Sec. 4.2.1).
12. Special requirements, such as coatings (Sec. 4.4), packing material (Sec. 4.1.3), and special type of bolting (Sec. 4.2.2.5).
13. Purchaser's end preparation requirements (Sec. 4.2.3.2).
14. Hydrostatic test requirements (Sec. 5.3.2.2).
15. Additional nondestructive weld evaluation (Sec. 5.3.3).
16. Material certifications (Sec. 5.1.1.2).
17. Purchaser's inspection requirements (Sec. 5.1.2).
18. Purchaser's proof test requirements (Sec. 5.3.1).
19. Affidavit of compliance (Sec. 6.3).