

American Water Works Association

**ANSI/AWWA C213-96**

(Revision of ANSI/AWWA C213-91)



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**AWWA STANDARD**  
FOR  
**FUSION-BONDED EPOXY  
COATING FOR THE INTERIOR  
AND EXTERIOR OF STEEL  
WATER PIPELINES**



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**AMERICAN WATER WORKS ASSOCIATION**

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\*Alternate

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# Foreword

*This foreword is for information only and is not a part of AWWA C213.*

## I. Introduction

I.A. *Background.* Fusion-bonded epoxy coatings are one-part, dry-powder thermosetting coatings that, when heat activated, produce a chemical reaction to the steel pipe surface while maintaining the performance of its properties. The first known applications for corrosion protection in the United States occurred in 1960 on the external surfaces of small-diameter pipe for gas distribution. Since then, applications have expanded to larger pipe sizes as internal and external coatings for gas, oil, water, and wastewater applications. Custom application to accessory fittings, pumps, valves, couplers, flow meters, and a variety of other parts is also possible. Materials are applied by electrostatic spray, air spray (flocking), or fluid bed, usually in a controlled plant environment. However, equipment is available that allows for internal or external application to pipe joints in the field.

I.B. *History.* The first edition of this standard was approved in 1979. The 1985 revision incorporated changes reflecting fusion-bonded epoxy coating technology, which was current at that time. The primer provision was deleted in the 1985 revision. This revision incorporates the latest technology and requirements.

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<sup>†</sup>/NSF<sup>‡</sup> 60, Drinking Water Treatment Chemicals—Health Effects, and ANSI/NSF 61, Drinking Water System Components—Health Effects.

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

<sup>†</sup>American National Standards Institute, 11 W. 42nd St., New York, NY 10036.

<sup>‡</sup>NSF International, 3475 Plymouth Rd., Ann Arbor, MI 48106.

4. Other references, including AWWA standards, *Food Chemicals Codex*, *Water Chemicals Codex*,<sup>\*</sup> 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.

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.

ANSI/AWWA C213-96 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

II.A. *Advisory Information on Material Application.* This standard defines the quality of fusion-bonded epoxy coatings to establish the characteristics desired for long-term corrosion protection. It is intended for interior and exterior coatings for steel water pipelines for underground and underwater installation under normal conditions.

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 covered in the purchaser's specifications:

1. Standard used—that is, ANSI/AWWA C213, Standard for Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines, of latest revision.
2. Any exceptions to the standard.
3. Diameter, length, and location of pipeline.
4. Temperature of conveyed water (Sec. 1.1.2).
5. Affidavit of compliance, if required (Sec. 6.3).
6. Requirements for coating application at pipe ends (Sec. 4.4.3.2).
7. Requirement for coating thickness (Sec. 4.4.3.3).
8. Requirements for field-welded joint coating (Sec. 4.4.5).
9. Optional coating performance (Sec. 4.4.3.7, Sec. 5.3.3.4).
10. Coating requirements for thread systems, special connections, and appurtenances (Sec. 4.5.3.2).
11. Requirements of inspection and laboratory testing (Sec. 5.1, Sec. 5.3).

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<sup>\*</sup>Both publications available from National Academy of Sciences, 2102 Constitution Ave. N.W., Washington, DC 20418.

12. Requirements for adhesion testing of coating (Sec. 5.3.3.2).
13. Requirements for outdoor storage and handling (Sec. 6.2).
14. Provision for pipe bedding and trench backfill (Sec. 4.6.3).

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

**IV. Major Revisions.** A major revision made to this standard in this edition includes the following:

1. The format has been changed to AWWA standard style.

**V. Comments.** If you have any comments or questions about this standard, please call the AWWA Standards and Materials Development Department, (303) 794-7711 ext. 6283, FAX (303) 795-1440, or write to the department at 6666 W. Quincy Ave., Denver, CO 80235.