



**American Water Works
Association**

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ANSI/AWWA C216-15
(Revision of ANSI/AWWA C216-07)

AWWA Standard

Heat-Shrinkable Cross-Linked Polyolefin Coatings for Steel Water Pipe and Fittings

Effective date: May 1, 2015.

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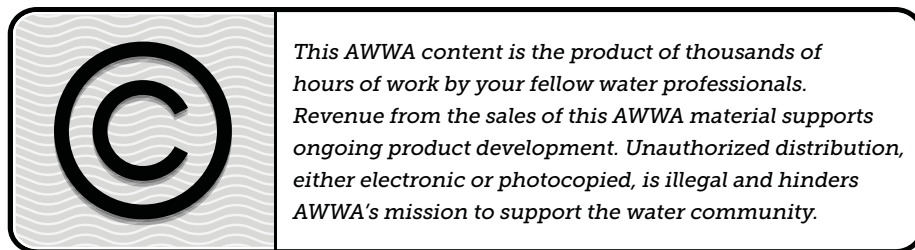
AWWA Standard

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C216.*

I. Introduction.

I.A. *Background.* Heat-shrinkable cross-linked polyolefin coatings for external use on special sections, connections, and fittings for underground steel water pipelines have been used since 1960. This standard establishes required performance standards for heat-shrinkable cross-linked polyolefin coatings.

I.B. *History.* The first edition of this standard was approved by the AWWA Board of Directors on Jan. 29, 1989, and had an effective date of July 1, 1989. The second edition was approved on June 19, 1994, with an effective date of Aug. 1, 1995. The third edition was approved on Jan. 23, 2000. The fourth edition was approved on Jan. 21, 2007. This edition was approved on Jan. 24, 2015.

II. Special Issues.

II.A. *General.* ANSI/AWWA C216 is intended to govern the exterior coating of special sections, connections, and fittings for steel water pipelines for underground or underwater installation under normal conditions. ANSI/AWWA C216 is based on the best-known experience, but it is not intended for unqualified use under all conditions. The advisability of its use for any installation must be reviewed by the purchaser.

II.B. *Weld-After-Backfill.* Weld-after-backfill is the sequence of assembling a welded joint, welding the outside joint (if required), applying the exterior joint coating(s), backfilling the pipe joint, and then welding the inside joint at a later time (where internal welding is safe and practical). Weld-after-backfill is an acceptable practice provided that the requirements of all applicable AWWA standards are followed. Consult with the manufacturers and other responsible parties regarding recommended products, installation and backfill procedures required for the weld-after-backfill sequence. At the request of the purchaser, the coating manufacturer shall provide testing or historical information to verify that the exterior joint coating will retain minimum performance requirements in accordance with the applicable standard throughout the heat-affected area.

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.

* American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036.

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

1. Standard used—that is, ANSI/AWWA C216, Heat-Shrinkable Cross-Linked Polyolefin Coatings for Steel Water Pipe and Fittings, of latest revision.
2. Whether compliance with NSF/ANSI 61, Drinking Water System Components—Health Effects, is required.
3. Any exceptions to the standard that may be required.
4. Description and number of each type of special sections, connections, and fittings for type of exterior protection.
5. Underground or underwater conditions.
6. Severe conditions (Sec. 1.1.1).
7. Maximum operating potable water temperature of the pipeline (Sec. 1.1.2).
8. Configuration of coating (types I, II, III, and IV) (Sec. 4.2.1.1).
9. Coating dimensions (Sec. 4.2.1.3).
10. Thickness (Sec. 4.2.1.4).
11. Surface preparation (Sec. 4.3.2).
12. Visual comparative standard (Sec. 4.3.2.3).
13. Filler material (Sec. 4.3.3.3).
14. Training (Sec. 4.3.3.5).
15. Repair (Sec. 4.3.4).
16. Conditions for outdoor storage (Sec. 4.3.5).
17. Prequalification (Sec. 5.1). NOTE: With reference to Sec. 5.1 (option 2), when submission of samples of proposed materials for testing by the purchaser is specified, the purchaser should address how testing costs will be assigned. According to commonly accepted industry practice, the purchaser is responsible for the cost of initial testing of coating material samples originally offered by the constructor. If any initial samples fail to conform to the standard, additional samples may be tested. The constructor pays for any additional testing.
18. Coating materials tests (Sec. 5.2).
19. Packaging (Sec. 6.2.1).
20. Affidavit of compliance if required (Sec. 6.3).

III.B. *Modification to Standard.* Any modification to 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 edition are as follows:

1. The title of the standard was changed to be consistent with other AWWA steel pipe coating standards.
2. Definitions for potable water and supplier were added (Section 3).
3. Previous Sec. 4.1, Permeation, was deleted to be consistent with other coating and lining standards. This is an item that should be evaluated at the pipe or gasket design level.
4. New Table 2 was added: Quality Control Requirements of Applied Coating System.
5. Sec. 4.3.2.2, Cleaning, was revised, and previous Sec. 4.4.2.3, Abrasive Blast Cleaning, was deleted, to clarify the intent of the surface preparation section.
6. Sec. 4.3.3.3, Filler Material, was revised with additional information on step-down area.
7. The majority of the existing wording in Sec. 4.4, Field Procedures, of the previous edition of C216 was removed. The revised section now references ANSI/AWWA C604.
8. Section 5, Verification, was revised to be consistent with the new language being used in all coating standards.
9. A new cathodic disbondment requirement was added (Table 1 and Sec. 5.2.1.8).
10. New Sec. 5.3, Quality Assurance and Records, was added.
11. Previous Sec. 5.4.1.1 on primary input power and previous Sec. 5.4.2 on detector use were deleted since this information is redundant with the information provided in NACE SP 0274, which is referenced.
12. For consistency, the title of previous Sec. 5.5, Nonconformance, was changed to Sec. 5.6, Rejection.
13. New Sec. 5.5.1, Coating Appearance, was added to address visual inspection.
14. A more in-depth field adhesion to prepared steel section was added in Sec. 5.5.4 to reflect common procedures used for both laboratory and field testing, and it includes requirements on adhesion test area, adhesion test procedures, rejection, frequency of testing, and adhesion test repairs (Sec. 5.5.4.1–5.5.4.5).
15. Section 6, Delivery, was slightly revised for consistency to include requirements for marking and storage.

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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AWWA Standard

Heat-Shrinkable Cross-Linked Polyolefin Coatings for Steel Water Pipe and Fittings

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes the material, application, and field-procedure requirements for protective exterior coatings consisting of heat-shrinkable cross-linked polyolefin coatings. ANSI/AWWA C216 also describes the application of protective exterior coatings to special sections, connections, and fittings to be used in underground and underwater steel water pipelines.

Heat-shrinkable cross-linked polyolefin coatings may be field or shop applied as provided in this standard. This standard describes only heat-shrinkable coatings that consist of a cross-linked polyolefin backing that has been coated with an adhesive. These coatings are referred to as *heat-shrinkable coatings* throughout the remainder of this standard.

1.1.1 *Conditions not discussed in this standard.* This standard does not discuss the additional materials and procedures that may be required for severe conditions, such as those encountered during construction of some underwater lines, casing pipe, river crossings, and lines in exceptionally rocky areas. Also, applications such as extensive shop or field coating of steel pipe can exist that indicate a possible modification to the standard material may need to be considered. Under