ANSI/AWWA **C216-22**

(Revision of ANSI/AWWA C216-15)

AWWA Standard

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

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American Water Works Association

Approved American National Standard ANSI

STANDARD Since 1881

AWWA Standard

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Committee Personnel

The Steel Water Pipe Manufacturers Technical Advisory Committee (SWPMTAC) Task Group for ANSI/AWWA C216, which updated this standard, had the following personnel at the time:

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Contents

All AWWA standards follow the general format indicated subsequently. Some variations from this format may be found in a particular 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. Subsequent editions were approved on June 19, 1994, with an effective date of Aug. 1, 1995; on Jan. 23, 2000; on Jan. 21, 2007; and Jan. 24, 2015. This edition was approved on Oct. 24, 2022.

II. Special Issues.

II.A. *General.* ANSI/AWWA C216 is intended to govern the exterior coating of special sections, connections, and fittings for underground steel water pipelines. These types of coatings are generally used on pipe that has been coated before transportation to the field site. 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, tack welding the outside joint, 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 appropriate procedures and coating materials are used. 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.

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

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 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. 4.3.1.1).
9. Coating dimensions (Sec. 4.3.1.3).
10. Surface preparation (Sec. 4.4).
11. Filler material (Sec. 4.5.1.3).
12. Training (Sec. 4.5.1.5).
13. Repair (Sec. 4.6).
14. Conditions for outdoor storage (Sec. 4.7.2).
15. 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.
16. Coating materials tests (Sec. 5.2).
17. Thickness (Sec. 5.2.2).
18. Frequency of adhesion testing, and adhesion testing on fittings, repairs, special sections, and appurtenances (Sec. 5.5.4.4).
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. Sec. III.A Purchaser Options and Alternatives, added No. 18 Frequency of Adhesion Testing
2. Added a new Sec. 1.1.3 to the Scope for substrates other than carbon steel.
3. In Section 3: Definitions, Applicator was added.
4. Section 4 headings were revised to be consistent with AWWA standardized wording and headings.
5. Sec. 4.1 Equipment was revised to be consistent with the updated wording in other steel pipe coating standards.
6. Sec. 4.2 Materials and Workmanship was revised to be consistent with the updated wording in other steel pipe coating standards, and sections on safety and personnel were added.
7. In Sec. 4.3.1, the description of adhesive was expanded.
8. Sec. 4.4 Surface Preparation was revised to establish consistent language between similar AWWA steel pipe coating standards, and redundant language that is already included in the referenced SSPC standards was removed. References to SSPC-SP COM, SSPC-VIS 1, and SSPC-VIS 3 were also added to clarify when more thorough cleaning may be needed and which cleaning methods are considered more thorough.
9. The visual comparative standard section (old Sec. 4.3.2.3) was removed because it is duplicative with the language in the referenced SSPC-SP standards in Sec. 4.4.3.
10. Sec. 4.6 Coating Repair was added.
11. In Sec. 5.2.10, updated the heading to Tensile strength at break and updated the heading of Sec. 5.2.11 to Elongation at break.
12. In Table 1, changed the units for Adhesion to prepared steel and Impact resistance. In Table 2, changed the units for Field adhesion to prepared steel.
13. In Sec. 5.5.4.4, updated the frequency of the field peel test.
14. Sec. 6.3 was modified to include affidavits from both the coating manufacturer and the applicator.

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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American Water Works Association

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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 these