ANSI/AWWA C216-07
(Revision of ANSI/AWWA C216-00)

American Water Works Association

The Authoritative Resource on Safe Water®

*AWWA Standard*

# Heat-Shrinkable Cross-Linked Polyolefin Coatings for the Exterior of Special Sections, Connections, and Fittings for Steel Water Pipelines



Effective date: Sept. 1, 2007
First edition approved by AWWA Board of Directors Jan. 29, 1989.
This edition approved Jan. 21, 2007.
Approved by American National Standards Institute June 20, 2007.

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## AWWA Standard

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# Committee Personnel

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

Robert M. Buchanan, *Chair*

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The AWWA Standards Committee on Steel Pipe, which reviewed and approved this standard, had the following personnel at the time of approval:

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Dennis Dechant, *Secretary*

*General Interest Members*

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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. 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. This edition was approved on Jan. 21, 2007.

**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 coating(s), backfilling the pipe, 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 all other responsible parties regarding recommended products, installation and backfill procedures required for the Weld-After-Backfield 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.**

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 the Exterior of Special Sections, Connections, and Fittings for Steel Water Pipelines, of latest revision.

2. Whether compliance with NSF/ANSI 61, Drinking Water System Components—Health Effects, is required, in addition to the requirements of the Safe Drinking Water Act.

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 (Sec. 4.3.1.1).

9. Coating dimensions (Sec. 4.3.1.3).

10. Thickness (Sec. 4.3.1.4).

11. Surface preparation (Sec. 4.4.2).

12. Repair (Sec. 4.4.4).

13. Conditions for outdoor storage (Sec. 4.4.5).

14. Bedding and trench backfill (Sec. 4.5.3).

15. Acceptance testing (Sec. 5.2). NOTE: With reference to Sec. 5.2 (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. 5.3).

17. Packaging (Sec. 6.1).

18. Affidavit of compliance if required (Sec. 6.4).

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. Added Weld-After-Backfill language to the foreword (Sec. II.B).

2. Eliminated the method of cross-linking in Sec. 1.1.

3. Eliminated the reference to DIN 30672 in Section 2.

4. Added a new section (Sec. 4.1) on permeation.

5. Added provisions for repair patches in Sec. 4.2 (now Sec. 4.3).

6. Added requirements for lap shear and upgraded the requirements for adhesion in Table 1.

7. Added a description of filler materials for bell-and-spigot and mechanical joint step-downs in Sec. 4.4.3.

8. Added requirements for lap shear in Sec. 5.3.

**V. Comments.** If you have any comments or questions about this standard, please call the AWWA Volunteer & Technical Support Group at 303.794.7711, FAX 303.795.7603, write to the group at 6666 West Quincy Avenue, Denver, CO 80235-3098, or e-mail standards@awwa.org.

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## 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.