ANSI/AWWA **C225-20**

(Revision of ANSI/AWWA C225-14)

AWWA Standard

Fused Polyolefin Coatings for Steel Water Pipe

Effective date: July 1, 2020.
First edition approved by Board of Directors Jan. 19, 2003.
This edition approved Jan. 23, 2020.
Approved by American National Standards Institute Feb. 6, 2020.

American Water Works Association

Approved American National Standard ANSI

STANDARD Since 1881

AWWA Standard

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ISBN-13, print: 978-1-64717-017-8

ISBN-13, electronic: 978-1-61300-555-2

DOI: http://dx.doi.org/10.12999/AWWA.C225.20

Committee Personnel

The Steel Water Pipe Manufacturer's Technical Advisory Committee (SWPMTAC) Task Group for AWWA C225, which reviewed 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.

Foreword

This foreword is for information only and is not a part of ANSI/AWWA C225.

I. Introduction.

I.A. *Background.* This standard describes the minimum material and application requirements for a fused polyolefin coating system to be plant-applied to the exterior of steel water pipe for purposes of underground corrosion protection. Currently, the only fused-type coatings for which significant performance experience in this application has been accumulated are based on polyolefin.

I.B. *History.* The fused polyolefin coating system has been in existence since approximately 1988. Steel Pipe New Zealand has been applying this system to large-diameter water pipe since 1994. With the exception of a few water pipe projects around the world, the remainder of the history of this system has been in the oil and gas industry. The first edition of ANSI/AWWA C225 was approved by the AWWA Board of Directors on Jan. 19, 2003. Subsequent editions were approved on June 24, 2007, and Jan. 19, 2014. This edition was approved on Jan. 23, 2020.

II. Special Issues. There are no special issues described in this standard.

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 specified by the purchaser:

1. Standard used—that is, ANSI/AWWA C225, Fused Polyolefin Coatings for Steel Water Pipe, or latest edition.
2. Any exceptions to the standard that may be required.
3. Diameter, length, and location of pipeline.
4. Location of coating application with reference to environmental considerations.
5. Maximum internal operating temperature of the pipeline (Sec. 1.1.1).
6. Requirements for outdoor storage (Sec. 4.3.2.3).
7. Requirements for ultraviolet-light protection (Sec. 4.3.2.3).
8. Requirements for coating system thickness (Table 4).
9. Requirements for cutback at pipe ends (Sec. 4.5.3.7).
10. Requirements for field-joint coating (Sec. 4.7).
11. Requirements for optional inspection by purchaser (Sec. 5.4).

12. Requirements for coating-system test frequency (Sec. 5.5.3.4).

13. Requirements for delivery (Sec. 6).

14. Requirements for packaging (Sec. 6.2.1).

15. 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. Revisions made to this standard in this edition include the following:

1. Sec. III.A Purchaser Options and Alternatives was updated to remove items listed that are now stated as requirements in the standard and items no longer mentioned in the standard.

2. Section 2 References was updated.

3. The definitions for applicator, supplier, and weld seam were added to Sec. 3.

4. Sec. 4.2 Materials and Workmanship was revised and sections on safety and personnel were added to be consistent with other AWWA steel pipe coating standards.

5. The option of using a 100 percent solids (hot melt) adhesive was deleted from Sec. 1.1. Scope and Sec. 4.3.1 System components, item 1, since hot melt adhesives are no longer commercially available. Table 1 and Sec. 4.3.2.2 from the previous edition, which also pertained to 100 percent solids adhesives, were deleted.

6. An increase in nonpolyolefinic backing to 5 percent was included in Table 1, Table 2, and Sec. 4.3.2.2 since the manufacturers increased their limit to 5.0 percent, as the 3.5 percent limit is not reflective of the manufacturer's capabilities.

7. A requirement for adhesion of the inner-layer tape to primed steel was added to Table 1 and Sec. 5.2.2.8.

8. Table 6 was deleted since the information contained in Table 6 only applies to the applicator and their methodology for application of the tape.

9. Sec. 4.3.3 Tests was deleted since it is redundant, as Sec. 5.1 and Sec. 5.2 cover those requirements.

10. Sec. 4.4 Surface Preparation was revised in a continued effort to establish consistent language between similar AWWA steel pipe coating and lining standards.

11. Sections on special requirements and protection during welding were added to Sec. 4.8 Field Procedures.

12. Sec. 4.5.2 Weld-seam treatment was revised to be consistent with other steel pipe standards, and a requirement for the maximum height of the weld reinforcement was added.

13. The width of rubber roller to be used was made a requirement in Sec. 4.5.3.3 Application of inner layer.

14. Sec. 5.5.4 Adhesion of outer tape layers was deleted. Adhesion of the inner layer tape was added in Table 1 and Sec. 5.2.2.8, and adhesion of the total tape coating system is required in Sec. 5.5.3, so evaluating the adhesion of the outer layer separately is no longer required.

15. Sec. 6.2 Packaging and Shipping was updated to be consistent with other AWWA steel pipe coating standards.

16. Sec. 6.3 Affidavit of Compliance was modified to include an affidavit for workmanship. Similar language has been added to other AWWA steel pipe coating and lining standards.

17. Units of measure were updated in the tables to be consistent with other steel pipe coating and lining standards.

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

Fused Polyolefin Coatings for Steel Water Pipe

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes the materials and application of fused polyolefin coating systems for buried service. This system is applied in pipe coating plants, both portable and fixed, using coating techniques and equipment as recommended by the manufacturer. Typically, these prefabricated, polyolefin coatings are applied as a three-layer system consisting of (1) a liquid adhesive layer, (2) a corrosion-protection inner layer, and (3) a mechanical-protection outer layer.

1.1.1 *Maximum temperatures.* This standard is intended for pipe in potable water service. Therefore, the maximum service temperature of this coating considered in this standard is based on the maximum service temperature of potable water. These coating systems will perform at higher temperatures. Consult the coating manufacturer for conditions and limitations.

1.1.2 *Conditions not described in this standard.* This standard does not describe the additional materials and procedures that may be required for difficult conditions, such as those encountered in rocky areas or where soil conditions are known to be severe and in construction of underwater lines, casing pipe, and river crossings. The manufacturer should be consulted for specific recommendations when these conditions exist.

Sec. 1.2 Purpose

The purpose of this standard is to provide minimum performance requirements for fused polyolefin coating systems for the exterior of steel water pipelines, including system components, application, inspection, testing, marking, and packaging requirements.

Sec. 1.3 Application

This standard or sections of this standard can be referenced in documents for purchasing and receiving fused polyolefin coating systems for the exterior of steel water pipelines. This standard can be used as a guide for applying, inspecting, and testing fused polyolefin coating systems for the exterior of steel water pipelines. The stipulations of this standard apply when this document has been referenced and only to fused polyolefin coating systems for the exterior of steel water pipelines.

SECTION 2: REFERENCES

This standard references the following documents. In their latest editions, these documents form a part of this standard to the extent specified within this standard. In any case of conflict, the requirements of this standard shall prevail.

ANSI*/AWWA C203—Coal-Tar Protective Coatings and Linings for Steel Water Pipe.

ANSI/AWWA C209—Tape Coatings for Steel Water Pipe and Fittings.

ANSI/AWWA C215—Heat-Shrinkable Cross-Linked Polyolefin Coatings for Steel Water Pipe and Fittings.

ANSI/AWWA C604—Installation of Buried Steel Water Pipe—4 In. (100 mm) and Larger.

ASTM† D149—Standard Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies.

ASTM D570—Standard Test Method for Water Absorption of Plastics.

ASTM D1000—Standard Test Methods for Pressure-Sensitive Adhesive-Coated Tapes Used for Electrical and Electronic Applications.

ASTM D4218—Standard Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique.

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† ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.