ANSI/AWWA C218-16
(Revision of ANSI/AWWA C218-08)

American Water Works Association
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AWWA Standard

Liquid Coatings for Aboveground Steel Water Pipe and Fittings

Effective date: Jan. 1, 2017.
First edition approved by AWWA Board of Directors Nov. 1, 1991.
This edition approved June 19, 2016.
Approved by American National Standards Institute July 26, 2016.

AWWA Standard

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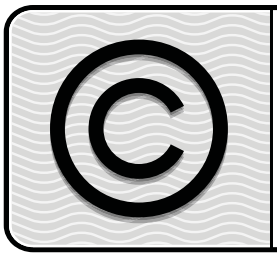

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ISBN-13, print: 978-1-62576-198-9 eISBN-13, electronic: 978-1-61300-400-5
DOI: http://dx.doi.org/10.12999/AWWA.C218.16

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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 C218.*

I. Introduction.

I.A. *Background.* Preventing the corrosion of aboveground steel water pipe subjected to atmospheric weathering has become an increasing concern over the years. The increasing incidence of atmospheric corrosive conditions, such as acid rain, has prompted water suppliers to evaluate the paint and coating systems used to protect aboveground steel water pipe.

Although not all aboveground steel water pipe is subjected to the same atmospheric corrosive conditions, a review of the paint and coating systems currently available to the industry has become necessary. The purchasers must have the option of selecting a system that best suits their needs. These needs may be based on current surface preparation; the types of volatile organic compound (VOC) allowances permitted by regulatory agencies; and regulatory requirements for lead abatement. The paint and coating systems in this standard are designed to assist the user in producing specifications to meet these needs.

I.B. *History.* In November 1986, the AWWA Standards Council authorized AWWA's Steel Pipe Committee to develop a new standard for coatings to be used on aboveground steel water pipe exposed to the atmosphere. The first edition of this standard was published as ANSI/AWWA C218-91, Standard for Coating the Exterior of Aboveground Steel Water Pipelines and Fittings, with an effective date of Nov. 1, 1991. Subsequent editions of this standard were approved by the AWWA Board of Directors on June 17, 1995, Jan. 24, 1999, June 16, 2002, and Jan. 27, 2008. This edition of C218 was approved on June 19, 2016.

I.C. *Acceptance.* This standard has no applicable information for this section.

II. Special Issues.

II.A. *Advisory Information on Product Use.* This standard defines the performance and quality of external pipe coatings and coating systems designed to protect and prevent atmospheric corrosion. This standard applies to the exterior coating of aboveground steel water pipelines and the associated fittings installed aboveground, outdoors, or inside an associated pump station, a valve chamber, or other water facilities. The coating systems cited in this standard are not all-inclusive but are those most

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

commonly used with an accepted performance record. Before selecting and specifying any of these coating systems, the purchaser should determine their suitability for the intended service.

II.A.1 General. This standard presents several alternative coating systems currently in use in the water industry, often serving dual functions of corrosion protection and aesthetics. Another function of coating systems may be to color code the pipe to identify the type of service.

Most coating manufacturers are reformulating their coatings to comply with current federal, state or provincial, and local environmental regulations. Some of the coatings discussed in this standard have been used successfully as solvent-based coatings for the last 20 to 30 years but are now available as water-based coatings. Others have been reformulated to reduce the amount of solvents, resulting in coatings with much lower VOCs. In some cases, high-solids coatings have been developed in which the solids content exceeds 80 percent and may reach 100 percent. Primers have been reformulated to remove heavy metals and toxic inhibitors.

In many instances, these changes have altered the application, curing, adhesion, and inhibiting characteristics of coating systems. The manufacturer should be consulted for the technical data and material safety data sheets, which provide the prospective user with the information necessary to select the coating system that best satisfies the purchaser's requirements.

II.A.2 Materials. *Code of Federal Regulations* 29,* Labor-Part 1910, Occupational Safety and Health Administration (OSHA) regulations establish restrictive limits on the constructor regarding inhaling or absorbing lead- and chromate-bearing pigments and solvents through the skin. This regulation refers to shop applications, and it can significantly increase the cost of shop-coating applications.

Whenever coating materials are referenced to federal, military, or other standards, the reference identifies a generic type of coating material or system.

II.A.3 Selecting coating systems. Several generic coating systems (see Table 1 in Section 4) are included in this standard, because no single coating or coating system is appropriate for all service applications. Often it is impractical for an occasional coatings user to make sufficient laboratory tests to verify and compare the relative performance characteristics of various coating systems to a given set of performance criteria. Consequently, it is necessary for the purchaser to consider the atmospheric

* Available from the US Government Printing Office, Superintendent of Documents, Washington, DC 20402.

and environmental conditions of service to which the coating or coating system will be exposed. Refer to Section 6 and Table 3 in SSPC,* Painting Manual, Volume 2, *Systems and Specifications*, chapter 1, for definitions of atmospheric and environmental conditions of service.

The coatings listed in this standard have been used extensively and have provided excellent corrosion protection and weathering endurance. In recent years, the development of new polymers, pigments, and solvents has contributed to the rapid advancement of materials technology for painting and coating of steel structures. These advancements, coupled with regulatory agency concerns about air pollution by VOCs, have led to the development of many new paint formulations. Although not listed in this standard, many of these new products provide performance equal to or better than the systems presented 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 information should be provided by the purchaser.

1. Standard used, that is, ANSI/AWWA C218, Liquid Coatings for Aboveground Steel Water Pipe and Fittings, of latest revision.
2. Any exceptions to the standard that may be required.
3. Diameter, length, and location of the pipeline.
4. Coating system to be supplied (Sec. 4.2).
5. Color, if special color is specified (Sec. 4.2.2, 4.2.3, 4.2.4, 4.2.6, and 4.2.7).
6. Optional four-coat system (Sec. 4.2.2).
7. Optional two-coat system (Sec. 4.2.5 and 4.2.6).
8. Verification of film thickness of the coating or coating system (Sec. 4.3.2.4).
9. Surface preparation for overcoating (Sec. 4.4.1.2).
10. Previously coated pipe (Sec. 4.4.1.2).
11. Requirements for visual comparative standards for blast cleaning (Sec. 4.4.2.1).
12. Coating of special pipe fittings and appurtenances (Sec. 4.5.12).
13. Coating requirements for threaded connections (Sec. 4.5.12.3).
14. Inspection (Sec. 5.4).
15. Adhesion test procedure (Sec. 5.5.4.1).
16. Affidavit of compliance, if required (Sec. 6.3).

* SSPC: The Society for Protective Coatings, 40 24th Street, 6th Floor, Pittsburgh, PA 15222.

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

IV. Major Revisions. Major revisions made to the standard in this edition include the following:

1. The title of the standard was changed to be consistent with other AWWA steel pipe coating standards.
2. Section 2, References, was updated.
3. Some of the information in Sec. 4.7, Field Procedures, of the previous edition of C218 was removed since it is included in ANSI/AWWA C604. The reader is now referred to ANSI/AWWA 604 for this information.
4. Section 5, Verification, was revised and the heading titles and format were updated to be consistent with the new language and format being used in all AWWA steel pipe coating and linings standards.
5. A new Sec. 5.3, Quality Assurance and Records, was added.
6. Old Sec. 5.3, Notice of Nonconformance, was renamed to Sec. 5.6, Rejection, and revised to be consistent with other coating and lining standards.
7. Section 6, Delivery, was modified to be consistent with other AWWA steel pipe coating standards.
8. Sec. 6.3, Affidavit of Compliance, was modified to include an affidavit for workmanship for the applicator as well as an affidavit for the manufacturer.

V. Comments. If you have any comments or questions about this standard, please call AWWA Engineering and Technical Services at 303.794.7711, FAX 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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Liquid Coatings for Aboveground Steel Water Pipe and Fittings

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes six coating systems designed to protect the exterior surfaces of steel pipelines and the associated fittings used by the water supply industry in aboveground locations. The coating systems described may not perform or cost the same, but they are presented so that the appropriate coating system can be selected for the site-specific project requirements.

1.1.1 *Maximum temperatures.* The maximum service temperature of the coating systems listed in this standard is based on the maximum service temperature of potable water. Consult the coating manufacturer for conditions and limitations.

Sec. 1.2 Purpose

The purpose of this standard is to define the minimum requirements for coating aboveground steel water pipe and fittings, including coating systems, surface preparation, coating material information requirements, coating application, inspection, and testing.

Sec. 1.3 Application

This standard can be referenced in the purchaser's documents for coating or recoating aboveground steel water pipe and fittings. The stipulations of this