

ANSI/AWWA **C215-22**
(Revision of ANSI/AWWA C215-16)

AWWA Standard

Extruded Polyolefin Coatings for Steel Water Pipe

Effective date: Oct. 1, 2022.

First edition approved by Board of Directors June 19, 1988.

This edition approved June 10, 2022.

Approved by American National Standards Institute May 17, 2022.



American Water Works
Association



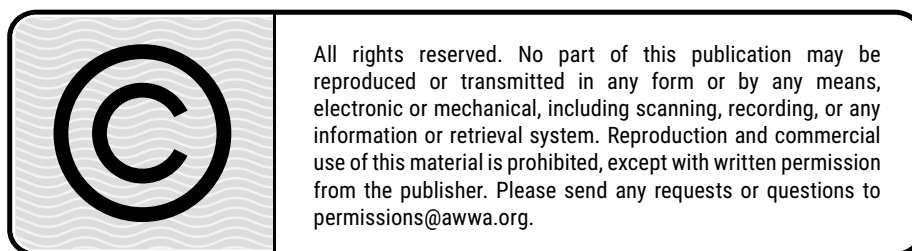
AWWA Standard

This document is an American Water Works Association (AWWA) standard. It is not a specification. AWWA standards describe minimum requirements and do not contain all of the engineering and administrative information normally contained in specifications. The AWWA standards usually contain options that must be evaluated by the user of the standard. Until each optional feature is specified by the user, the product or service is not fully defined. AWWA publication of a standard does not constitute endorsement of any product or product type, nor does AWWA test, certify, or approve any product. The use of AWWA standards is entirely voluntary. This standard does not supersede or take precedence over or displace any applicable law, regulation, or code of any governmental authority. AWWA standards are intended to represent a consensus of the water industry that the product described will provide satisfactory service. When AWWA revises or withdraws this standard, an official notice of action will be placed in the Official Notice section of *Journal AWWA*. The action becomes effective on the first day of the month following the month of *Journal AWWA* publication of the official notice.

American National Standard

An American National Standard implies a consensus of those substantially concerned with its scope and provisions. An American National Standard is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an American National Standard does not in any respect preclude anyone, whether that person has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. American National Standards are subject to periodic review, and users are cautioned to obtain the latest editions. Producers of goods made in conformity with an American National Standard are encouraged to state on their own responsibility in advertising and promotional materials or on tags or labels that the goods are produced in conformity with particular American National Standards.

CAUTION NOTICE: The American National Standards Institute (ANSI) approval date on the front cover of this standard indicates completion of the ANSI approval process. This American National Standard may be revised or withdrawn at any time. ANSI procedures require that action be taken to reaffirm, revise, or withdraw this standard no later than five years from the date of ANSI approval. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036; (212) 642-4900, or e-mailing info@ansi.org.



ISBN-13, print: 978-1-64717-103-2

eISBN-13, electronic: 978-1-61300-636-8

DOI: <http://dx.doi.org/10.12999/AWWA.C215.22>

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including scanning, recording, or any information or retrieval system. Reproduction and commercial use of this material is prohibited, except with written permission from the publisher.

Copyright © 2022 by American Water Works Association
Printed in USA

Committee Personnel

The SWPMTAC Task Group for AWWA C215, which revised this standard, had the following personnel at the time:

Steve Freed, *Chair*

Sam Thomas, *Vice-Chair*

D.G. Barder, Liberty Coating Company, Morrisville, Pa.

J. Buratto, LifeLast & Seal for Life Industries, Pflugerville, Tex.

D.W. D'Ambrosio, Polyguard Products, Houston, Tex.

A. Fletcher, Consultant representing Steel Mains Pty Ltd, Melbourne, Australia

S. Freed, Liberty Coating Company, Morrisville, Pa.

J. Harvey, Mobile Pipe Lining and Coating Inc., Adelanto, Calif.

B.D. Keil, Northwest Pipe Company, Draper, Utah

D. Libby, Chase Corporation, Westwood, Mass.

C. Patton, Seal for Life Industries, Houston, Tex.

S. Reese, Denso, Ont.

S. Salehpour, Seal for Life Industries, Toronto

S.J. Thomas, Liberty Coating Company, Pelham, N.H.

E. Wells, Amcorr, San Antonio, Tex.

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

John H. Bambei Jr., *Chair*

Bob J. Card, *Vice-Chair*

John L. Luka, *Secretary*

General Interest Members

S.A. Arnaout (*alternate*), Stantec, Dallas, Tex.

J.H. Bambei Jr., Bambei Engineering Services, Arvada, Colo.

R.J. Card, Lockwood, Andrews & Newnam Inc., Suwanee, Ga.

R.L. Coffey, Consultant, Bend, Ore.

R.L. Gibson, Freese and Nichols Inc., Fort Worth, Tex.

M.D. Gossett, HDR, Denver, Colo.

M.B. Horsley (*alternate*), Horsley Engineering LLC, Overland Park, Kans.

R. Issa, AECOM, McKinney, Tex.

C.H. Kirby (*alternate*), Lockwood, Andrews & Newnam Inc., Houston, Tex.
R.A. Kufaas, Norske Corrosion & Inspection Services Ltd., Abbotsford, B.C.
J.L. Mattson, Corrosion Control Technologies, Sandy, Utah
D.L. McPherson (*alternate*), HDR, Charlotte, N.C.
A. Murdock, Jacobs, Salt Lake City, Utah
R. Ortega, Aurora Technical Services, Houston, Tex.
E.S. Ralph (*liaison, nonvoting*), Standards Engineer Liaison, AWWA, Denver, Colo.
A.E. Romer (*alternate*), AECOM, Orange, Calif.
J.R. Snow, Stantec, Denver, Colo.
A.M. Stanton, Black & Veatch, Pasadena, Calif.
W.R. Whidden, Woolpert, Orlando, Fla.

Producer Members

H.H. Bardakjian, Consultant, Glendale, Calif.
D. Dechant, Dechant Infrastructure Services, Aurora, Colo.
D.W. Dunker, Thompson Pipe Group, Rialto, Calif.
B.D. Keil, Northwest Pipe Company, Draper, Utah
J.L. Luka, American SpiralWeld Pipe Company, Columbia, S.C.
R.D. Mielke (*alternate*), Northwest Pipe Company, Raleigh, N.C.
G.F. Ruchti (*alternate*), Consultant, Punta Gorda, Fla.
B.P. Simpson (*alternate*), American Cast Iron Pipe Company, Birmingham, Ala.
C.C. Sundberg, Victaulic, Issaquah, Wash.
R. Wu (*alternate*), Thompson Pipe Group, Grand Prairie, Tex.

User Members

L. Adams, US Bureau of Reclamation, Denver, Colo.
G.A. Andersen, New York City Bureau of Water Supply, Little Neck, N.Y.
B. Cheng, Metro Vancouver, Burnaby, B.C.
B. Fountain, San Diego County Water Authority, San Diego, Calif.
J. Fox, Tampa Bay Water, Clearwater, Fla.
S. Hattan, Tarrant Regional Water District, Fort Worth, Tex.
M. Lobik, Springfield Water & Sewer, Springfield, Mass.
T. Peng, Metropolitan Water District, Los Angeles, Calif.
G. Ramon (*liaison, nonvoting*), Standards Council Liaison, Little Rock Water Reclamation Authority, Little Rock, Ark.
V. Scutelnicu, Los Angeles Department of Water and Power, Los Angeles, Calif.
M. Turney (*alternate*), Denver Water, Denver, Colo.

Contents

All AWWA standards follow the general format indicated subsequently. Some variations from this format may be found in a particular standard.

SEC.	PAGE	SEC.	PAGE
<i>Foreword</i>		4.8	Field Joints—Welded and Nonwelded..... 10
I	Introduction..... vii	4.9	Field Procedures 11
I.A	Background..... vii	5	Verification
I.B	History..... vii	5.1	Coating Materials Prequalification... 11
II	Special Issues vii	5.2	Requirements of Coating System..... 11
III	Use of This Standard vii	5.3	Quality Assurance and Records 15
III.A	Purchaser Options and Alternatives vii	5.4	Inspection and Testing by the Purchaser..... 15
IV	Major Revisions..... viii	5.5	Quality Control Requirements of Applied Coating Systems (Types A, B, and C)..... 15
V	Comments ix	5.6	Rejection 17
<i>Standard</i>		6	Delivery
1	General	6.1	Marking 17
1.1	Scope..... 1	6.2	Packaging and Shipping 18
1.2	Purpose 2	6.3	Affidavit of Compliance 18
1.3	Application..... 2	Tables	
2	References 2	1	Properties of Adhesive (Type A)..... 12
3	Definitions 4	2	Properties of Adhesive (Types B and C)..... 12
4	Requirements	3	Properties of Polyolefin Resin for Polyolefin Sheath (Types A, B, and C)..... 12
4.1	Equipment 4	4	Prequalification Requirements of Coating Systems (Types A, B, and C)..... 13
4.2	Materials and Workmanship..... 5	5	Quality-Control Properties of Coating Systems (Types A, B, and C)..... 14
4.3	Coating System 5		
4.4	Surface Preparation..... 6		
4.5	Coating Application 7		
4.6	Coating Fittings and Specials 9		
4.7	Coating Repair 10		

This page intentionally blank.

Foreword

This foreword is for information only and is not a part of ANSI/AWWA C215.*

I. Introduction.

I.A. *Background.* Extruded polyolefin pipe-coating systems were first applied on steel pipe in 1956 using a crosshead-die extrusion system. In 1965, side extrusion was introduced in Europe and became available in the United States in 1972.

I.B. *History.* The first edition of ANSI/AWWA C215 was approved by the AWWA Board of Directors on June 19, 1988, and had an effective date of Jan. 1, 1989. The second edition of ANSI/AWWA C215 was approved on Jan. 30, 1994, and had an effective date of Nov. 1, 1994. The third edition incorporated the latest technology and requirements. It was approved on June 20, 1999. Subsequent revisions to ANSI/AWWA C215 were approved by the AWWA Board of Directors on Jan. 18, 2004; Jan. 17, 2010; and Jan. 16, 2016. This edition was approved on June 10, 2022.

II. Special Issues. ANSI/AWWA C215 is intended to govern the exterior coating of steel water pipelines for underground or underwater installation under normal conditions. It is based on current experience, but it is not intended for unqualified use under all conditions. The applicability of its use for any installation must be reviewed by the purchaser.

Currently, significant experience in extruded polyolefin coatings applied to steel water pipe is limited to polyethylene (PE) material.

Extruded polyolefin coatings described in ANSI/AWWA C215 can be shop-applied to straight lengths of steel water pipe. Three coating-application systems are described in the standard: the crosshead-die system (Type A) and the side-extrusion system with and without primer (Types B and C).

Future air emission rules may regulate the use of liquid adhesives (primers) described in this standard. If this occurs, consult the manufacturer for equivalent alternatives.

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 provided by the purchaser:

1. Standard used—that is, ANSI/AWWA C215, Extruded Polyolefin Coatings for Steel Water Pipe, of latest revision.

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

2. Any exceptions to the standard.
3. Diameter, length, weld configuration, and location of pipeline.
4. Temperature of conveyed water (Sec. 1.1.2).
5. Requirements for coating thickness (Sec. 4.3.1.4).
6. Requirements for coating application at pipe ends (coating cutback) (Sec. 4.5.3.4, Sec. 4.5.4.4, and Sec. 4.5.5.5).
7. Requirements for coating repair (Sec. 4.7).
8. Requirements for coating fittings and specials (Sec. 4.6).
9. Requirements for coating of field joints (Sec. 4.8).
10. Requirements for coating material prequalification (Sec. 5.1)
11. Requirements for inspection and testing (Sec. 5.4).
12. Requirements for rejection (Sec. 5.6)
13. Affidavit of compliance (Sec. 6.3).

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

1. Added a new section to the Scope on substrates other than carbon steel (Sec. 1.1.4)
2. Added definitions for abrasive blast cleaning, applicator, potable water, and seam weld to Sec. 3 to clarify the use of the terms.
3. Revised Sec. 4.2 Materials and Workmanship and added sections on safety and personnel.
4. Changed tensile property in Table 3 from Breaking Strength to Tensile Strength at Yield. This change was made to be consistent with ASTM D638 definitions. The minimum value was also increased from 2,700 psi to 2,800 psi.
5. Reduced the number of pipe size/coating thickness graduations in Table 5. The minimum coating thickness was increased from 30 mils to 48 mils.
6. Sec. 4 was updated with standardized wording and headings.
7. The tables were moved to the sections in which they are referenced.
8. Updated Sec. 4.4 Surface Preparation to be consistent with the wording and format of other steel pipe coating and lining standards.
9. A new Sec. 4.6 Coating Fittings and Specials was added.
10. Sec. 4.7.1 Mill coating repair was revised.
11. A new Sec. 4.8 Field Joints—Welded and Nonwelded was added.
12. The old Sec. 4.8 Holiday Testing was deleted.

13. The following sections were revised to be consistent with other steel pipe coating and lining standards: Sec. 5.2.3.2 Impact resistance, Sec. 5.2.3.3 Penetration resistance, Sec. 5.2.3.4 Water absorption, Sec. 5.2.3.5 Water vapor transmission, and Sec. 5.2.3.7 Cathodic disbondment.

14. Sec. 5.5.4.3 Rejection was revised to provide more detail.

15. Sec. 6.1 Marking was revised to include shelf life and expiration date.

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.

This page intentionally blank.



**American Water Works
Association**

Dedicated to the World's Most Important Resource®

ANSI/AWWA C215-22
(Revision of ANSI/AWWA C215-16)

AWWA Standard

Extruded Polyolefin Coatings for Steel Water Pipe

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes the materials, systems, and application requirements for shop-applied extruded polyolefin coatings for the exterior of steel water pipes.

1.1.1 *Extrusion types.* This standard describes the following three types of coating-system applications:

- Type A, crosshead-die extrusion, consists of an adhesive and an extruded polyolefin sheath. This system is limited to pipe diameters ½ in. through 36 in. (13 mm through 900 mm).
- Type B, side extrusion, consists of an extruded adhesive and an extruded polyolefin sheath. This system is limited to pipe diameters 2 in. (50 mm) and larger.
- Type C, side extrusion, consists of a liquid adhesive (primer) layer, extruded butyl rubber adhesive, and extruded polyolefin sheath. This system is limited to pipe diameters 2 in. (50 mm) and larger.

1.1.2 *Maximum temperatures.* AWWA steel pipe coating standards are written for, and are based on, the service temperature of potable water. Extruded polyolefin coatings have performed at higher temperatures. Consult the coating manufacturer for conditions and limitations.