



**American Water Works
Association**

The Authoritative Resource for Safe Drinking WaterSM

ANSI/AWWA C225-03
(First Edition)

AWWA Standard

Fused Polyolefin Coating Systems for the Exterior of Steel Water Pipelines



Effective date: June 1, 2003.

This first edition approved by AWWA Board of Directors Jan. 19, 2003.

Approved by American National Standards Institute Dec. 17, 2002.

6666 West Quincy Avenue
Denver, CO 80235-3098
T 800.926.7337
www.awwa.org

Advocacy
Communications
Conferences
Education and Training
► **Science and Technology**
Sections

Copyright © 2003 American Water Works Association, All Rights Reserved.



Documents

Document Sharing Hub

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. AWWA standards are intended to represent a consensus of the water supply industry that the product described will provide satisfactory service. When AWWA revises or withdraws this standard, an official notice of action will be placed on the first page of the classified advertising 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 publication. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute, 25 W. 43rd St., Fourth Floor, New York, NY 10036; (212) 642-4900.

Science and Technology

AWWA unites the drinking water community by developing and distributing authoritative scientific and technological knowledge. Through its members, AWWA develops industry standards for products and processes that advance public health and safety. AWWA also provides quality improvement programs for water and wastewater utilities.

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information or retrieval system, except in the form of brief excerpts or quotations for review purposes, without the written permission of the publisher.

Copyright © 2003 by American Water Works Association
Printed in USA

Committee Personnel

The Steel Water Pipe-Manufacturers Technical Advisory Committee (SWPMTAC) Task Group on C225, which developed this standard, had the following personnel at the time:

Eric Aulicino, *Chair*

Eric Aulicino, Tyco Adhesives, Norwood, Mass.	(AWWA)
R.R. Dublin, Canusa CPS, Woodlands, Texas	(AWWA)
R.W. Geary, Tek-Rap Inc., Houston, Texas	(AWWA)
M.P. Murphy, Ameron International, Rancho Cucamonga, Calif.	(AWWA)
Randy Newby, ICI Devoe Coatings, Apple Valley, Calif.	(AWWA)
David Norman, Metrotech Ltd., Cleckheaton, West Yorkshire, England	(AWWA)
Jack O'Brien, Tapecoat Company, Deerfield, Ill.	(AWWA)
D.A. Scott, Scapa Tapes North America, Calgary, Alb.	(AWWA)
J.A. Wise, Canus International Sales Inc., Maple Ridge, B.C.	(AWWA)

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

George J. Tupac, *Chair*
John H. Bambei Jr., *Vice-Chair*
Dennis Dechant, *Secretary*

Consumer Members

G.A. Andersen, Department of Environmental Protection, Corona, N.Y.	(AWWA)
J.H. Bambei Jr., Denver Water Department, Denver, Colo.	(AWWA)
D.W. Coppes, Massachusetts Water Resources Authority, Chelsea, Mass.	(NEWWA)
R.V. Frisz, US Bureau of Reclamation, Denver, Colo.	(USBR)
T.R. Jervis, Greater Vancouver Regional District, Burnaby, B.C.	(AWWA)
T.J. Jordan, Metropolitan Water District of Southern California, La Verne, Calif.	(AWWA)
T.A. Larson, Tacoma Public Utilities, Tacoma, Wash.	(AWWA)
A.L. Linard, Los Angeles Department of Water & Power, Los Angeles, Calif.	(AWWA)

G.P. Stine, San Diego County Water Authority, San Diego, Calif.	(AWWA)
J.V. Young, City of Richmond, Richmond, B.C.	(AWWA)

General Interest Members

Ergun Bakall, Tustin, Calif.	(AWWA)
W.R. Brunzell, Brunzell Associates Ltd., Skokie, Ill.	(AWWA)
R.L. Coffey, Kirkham Michael Consulting Engineers, Omaha, Neb.	(AWWA)
H.E. Dunham, MWH, Bellevue, Wash.	(AWWA)
K.G. Ferguson,* MWH, Las Vegas, Nev.	(AWWA)
S.N. Foellmi, Black & Veatch Corporation, Irvine, Calif.	(AWWA)
J.W. Green, Alvord Burdick & Howson, Lisle, Ill.	(AWWA)
K.D. Henrichsen, HDR Engineering Inc., Denver, Colo.	(AWWA)
M.B. Horsley,* Black & Veatch Corporation, Kansas City, Mo.	(AWWA)
J.K. Jeyapalan, Pipeline Consultant, New Milford, Conn.	(AWWA)
Rafael Ortega, Lockwood Andrews & Newnam, Houston, Texas	(AWWA)
A.E. Romer, Boyle Engineering Corporation, Newport Beach, Calif.	(AWWA)
H.R. Stoner, Consultant, North Plainfield, N.J.	(AWWA)
C.C. Sundberg, CH2M Hill Inc., Bellevue, Wash.	(AWWA)
G.J. Tupac, G.J. Tupac & Associates Inc., Pittsburgh, Pa.	(AWWA)
J.S. Wailes,† Standards Engineer Liaison, AWWA, Denver, Colo.	(AWWA)
L.W. Warren, Consultant, Seattle, Wash.	(AWWA)
W.R. Whidden, Post Buckley Schuh & Jernigan, Orlando, Fla.	(AWWA)

Producer Members

H.H. Bardakjian, Ameron International, Rancho Cucamonga, Calif.	(AWWA)
R.J. Card, Victaulic Depend-O-Lok Inc., Atlanta, Ga.	(AWWA)
R.R. Carpenter, American Cast Iron Pipe Company, Birmingham, Ala.	(MSS)
Dennis Dechant, Northwest Pipe Company, Denver, Colo.	(AWWA)
J.E. Hagelskamp,† American Cast Iron Pipe Company, Maitland, Fla.	(AWWA)
B.D. Keil, Continental Pipe Manufacturing Company, Pleasant Grove, Utah	(SPFA)

*Alternate

†Liaison, nonvoting

J.L. Luka,* American SpiralWeld Pipe Company, Columbia, S.C.	(AWWA)
Bruce Vanderploeg,* Northwest Pipe Company, Portland, Ore.	(AWWA)
J.A. Wise, Canus International Sales Inc., Maple Ridge, B.C.	(AWWA)

This page intentionally blank.

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
Foreword		4.5	Field Procedures.....12
I	Introduction..... vii	5	Verification
I.A	Background..... vii	5.1	Coating-Materials Acceptance
I.B	History..... vii		Testing..... 13
I.C	Acceptance vii	5.2	Inspection and Testing by
II	Special Issues.....vii		the Purchaser 14
III	Use of This Standard. vii	5.3	Coating-System Tests 14
III.A	Purchaser Options and Alternatives. vii	5.4	Coated-Pipe Tests 16
III.B	Modification to Standard..... viii	5.5	Rejection.....16
IV	Major Revisions viii	6	Delivery
V	Comments. viii	6.1	Marking..... 17
		6.2	Packaging and Shipping..... 17
		6.3	Affidavit of Compliance..... 18
Standard			
1	General	Tables	
1.1	Scope 1	1	Physical Properties of the
1.2	Purpose 2		Liquid Adhesive 5
1.3	Application 2	2	Physical Properties of the
2	References 2		Inner Layer 5
3	Definitions 3	3	Physical Properties of the
4	Requirements		Outer Layer 5
4.1	Equipment..... 4	4	Physical Properties of the
4.2	Materials and Workmanship..... 4		Total System 6
4.3	Coating System.....4	5	Inner-layer and Outer-Layer
4.4	Coating Application.....8		Width Dimensions 8

This page intentionally blank.

Foreword

This foreword is for information only and is not part of 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 for nine years. With an 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 worldwide.

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

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

III. **Use of This Standard.** AWWA has no responsibility for the suitability or compatibility of the provisions of this standard to any intended application by any user. Accordingly, each user of this standard is responsible for determining that the standard's provisions are suitable for and compatible with that user's intended application.

III.A. *Purchaser Options and Alternatives.* The following items should be covered in the purchaser's specifications:

1. Standard used—that is, AWWA C225, Standard for Fused Polyolefin Coating Systems for the Exterior of Steel Water Pipelines, of 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. 4.3.1.3).
7. Requirements for ultraviolet-light protection (Sec. 4.3.1.3).
8. Requirements for coating system thickness (Tables 2, 3, and 4, and Sec. 4.3.1.4).

9. Requirements for polyolefin layers and dimensions (Sec. 4.3.2.2.2).
10. Requirements for inspection and testing (Sec. 4.3.3 and Sec. 5).
11. Requirements for cleaning (Sec. 4.4.2.2).
12. Requirements for rubber roller (Sec. 4.4.3.3).
13. Requirements for cutback at pipe ends (Sec. 4.4.3.7).
14. Requirements for coating repair (Sec. 4.4.4).
15. Requirements for field-joint coating (Sec. 4.4.5).
16. Provision for pipe bedding and trench backfill (Sec. 4.5.3).
17. Requirements for coating-materials acceptance testing (Sec. 5.1).
18. Requirements for optional inspection (Sec. 5.2.1).
19. Requirements for coating-system test frequency (Sec. 5.4.1).
20. Requirements for selection of holiday detector (Sec. 5.4.2).
21. Requirements for pipe rejection (Sec. 5.5).
22. Requirements for delivery (Sec. 6).
23. Requirements for packaging (Sec. 6.2.1).
24. 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 in the purchaser's specifications.

IV. Major Revisions. This is the first edition of this standard.

V. Comments. If you have any comments or questions about this standard, please call the AWWA Volunteer and Technical Support Group (303) 794-7711, FAX (303) 795-7603, or write to the group at 6666 West Quincy Avenue, Denver, CO 80235-3098, or by e-mail at standards@awwa.org.