



**American Water Works
Association**

The Authoritative Resource for Safe Drinking WaterSM

ANSI/AWWA D102-03
(Revision of ANSI/AWWA D102-97)

AWWA Standard

Coating Steel Water-Storage Tanks



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6666 West Quincy Avenue
Denver, CO 80235-3098
T 1.800.926.7337
www.awwa.org

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Committee Personnel

The Revision Task Force that developed AWWA D102 for reissue consisted of the following personnel:

Mike Bauer, *Chair*

Consumer Members

R.L. Bianchetti, East Bay Municipal Utility District, Oakland, Calif.	(AWWA)
M.W. Griffin, Missouri–American Water Company, St. Joseph, Mo.	(AWWA)

General Interest Members

Glen Amos, Corrpro Companies, San Leandro, Calif.	(AWWA)
W.J. Dixon, Dixon Engineering Inc., Lake Odessa, Mich.	(AWWA)
W.B. Harper, Harper & Associates Inc., Perris, Calif.	(AWWA)
T.J. McCandless, * Standards Engineer Liaison, AWWA, Denver, Colo.	(AWWA)
Randy Reichle, Don S. Reichle & Associates, Beaumont, Texas	(AWWA)

Producer Members

R.E. Barker, CB&I Water, Clive, Iowa	(AWWA)
Mike Bauer, Tnemec Company Inc., N. Kansas City, Mo.	(AWWA)
C.W. Beeler, Caldwell Tanks Inc., Louisville, Ky.	(AWWA)
D.G. Cull, C T Services Inc., Jefferson, Ind.	(AWWA)
Ed Madison, Madison Chemical, Milton, Ont.	(AWWA)
Don Mathews, Induron Coatings Inc., Birmingham, Ala.	(AWWA)
R.L. Moore, Utility Service, Kirkwood, Mo.	(AWWA)
Bob Murphy, Sherwin Williams, Westbrook, Maine	(AWWA)
Walter Neumann Jr., Neumann Company Contractors Inc., Lockport, Ill.	(AWWA)

* Liaison, nonvoting

S.P. Scarpone, Reilly Industries Inc., Indianapolis, Ind.	(AWWA)
L.D. Scott, CB&I Water, San Luis Obispo, Calif.	(AWWA)
Deborah Simmons, Ameron International, Alpharetta, Ga.	(AWWA)

The AWWA Standards Committee on Steel Elevated Tanks, Standpipes & Reservoirs, which reviewed and approved this standard, had the following personnel at the time of approval:

S.W. Meier, Chair

Consumer Members

S.F. Crumb, Fort Worth Water Department, Fort Worth, Texas	(AWWA)
W.H. Harris, City of Houston Public Works & Engineering, Houston, Texas	(AWWA)
E.J. King, The Connecticut Water Company, Clinton, Conn.	(NEWWA)
J.L. Ortiz, East Bay Municipal Utility District, Oakland, Calif.	(AWWA)
G.A. Weeks, Missouri–American Water Company, St. Louis, Mo.	(AWWA)

General Interest Members

J.R. Buzek, AEC Engineering, Minneapolis, Minn.	(AWWA)
B.R. Conklin, Camp Dresser & McKee Inc., Cambridge, Mass.	(NEWWA)
L.P. Connor, American Welding Society, Miami, Fla.	(AWWA)
Ed Darrimon, Bay Area Coating Consultant Service, Modesto, Calif.	(AWWA)
W.J. Dixon, Dixon Engineering Inc., Lake Odessa, Mich.	(AWWA)
J.C. Ellrich, Mid Atlantic Storage Systems, Kent, Ohio	(AWWA)
T.J. McCandless, * Standards Engineer Liaison, AWWA, Denver, Colo.	(AWWA)
S.W. Meier, Tank Industry Consultants Inc., Indianapolis, Ind.	(AWWA)
H.J. Miedema, Psomas and Associates, Costa Mesa, Calif.	(AWWA)
L.F. Peters, Weston & Sampson Engineers Inc., Peabody, Mass.	(AWWA)
J.E. Rudina, Mazda Consultants, St. Paul, Minn.	(AWWA)

* Liaison, nonvoting

C.C. Sundberg, CH2M Hill Consulting Engineers, Bellevue, Wash.	(AWWA)
J.A. Williams, Alpharetta, Ga.	(AWWA)
R.S. Wozniak, Bow Tech Ltd., Batavia, Ill.	(AWWA)

Producer Members

Mike Bauer, Tnemec Company Inc., N. Kansas City, Mo.	(AWWA)
D.G. Cull, C T Services Inc., Jeffersonville, Ind.	(AWWA)
B.E. Kromer, Tank Builders Inc., Euless, Texas	(SPFA)
G.A. Larson, Pitt Des Moines Inc., Plainfield, Ill.	(AWWA)
Keith McGuire, Peabody Tectank Inc., Parsons, Kan.	(AWWA)
D.L. Stilger, Caldwell Tanks Inc., Louisville, Ky.	(AWWA)

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Foreword

This foreword is for information only and is not a part of AWWA D102.

I. Introduction.

I.A. *Background.* The object of this standard is to provide an outline of methods and coating systems that can be used when coating or recoating steel tanks for water storage. Approximately one year following the adoption of AWWA D102, the Steel Tank Committee appointed a new chair and a new Revision Task Force was formed, consisting of a mix of new and previous members.

I.B. *History.* The first edition of this standard was prepared by a joint committee of AWWA and NEWWA and was approved as tentative on May 9, 1952. Revisions were made on June 2, 1953, May 24, 1954, and Aug. 5, 1955. The second edition was approved as tentative on Jan. 23, 1962, and was approved by the AWWA Board of Directors on Feb. 11, 1964. The third edition of this standard was approved on Jan. 28, 1978, and subsequently withdrawn on June 23, 1991. ANSI/AWWA D102 was reissued as the fourth edition and subsequently approved by the AWWA Board of Directors on Feb. 2, 1997. This is the fifth edition approved by the AWWA Board of Directors on Jan. 19, 2003.

I.C. *Acceptance.* In May 1985, the US Environmental Protection Agency (USEPA) entered into a cooperative agreement with a consortium led by NSF International (NSF) to develop voluntary third-party consensus standards and a certification program for all direct and indirect drinking water additives. Other members of the original consortium included the American Water Works Association Research Foundation (AWWARF) and the Conference of State Health and Environmental Managers (COSHEM). The American Water Works Association (AWWA) and the Association of State Drinking Water Administrators (ASDWA) joined later.

In the United States, authority to regulate products for use in, or in contact with, drinking water rests with individual states.* Local agencies may choose to impose requirements more stringent than those required by the state. To evaluate the health

*Persons in Canada, Mexico, and non-North American countries should contact the appropriate authority having jurisdiction.

effects of products and drinking water additives from such products, state and local agencies may use various references, including

1. An advisory program formerly administered by USEPA, Office of Drinking Water, discontinued on Apr. 7, 1990.
2. Specific policies of the state or local agency.
3. Two standards developed under the direction of NSF, ANSI^{*}/NSF[†] 60, Drinking Water Treatment Chemicals—Health Effects, and ANSI/NSF 61, Drinking Water System Components—Health Effects.
4. Other references, including AWWA standards, *Food Chemicals Codex*, *Water Chemicals Codex*,[‡] and other standards considered appropriate by the state or local agency.

Various certification organizations may be involved in certifying products in accordance with ANSI/NSF 61. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdiction. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

Annex A, “Toxicology Review and Evaluation Procedures,” to ANSI/NSF 61 does not stipulate a maximum allowable level (MAL) of a contaminant for substances not regulated by a USEPA final maximum contaminant level (MCL). The MALs of an unspecified list of “unregulated contaminants” are based on toxicity testing guidelines (noncarcinogens) and risk characterization methodology (carcinogens). Use of Annex A procedures may not always be identical, depending on the certifier.

AWWA D102 does not address additives requirements. Thus, users of this standard should consult the appropriate state or local agency having jurisdiction in order to

1. Determine additives requirements, including applicable standards.
2. Determine the status of certifications by all parties offering to certify products for contact with, or treatment of, drinking water.
3. Determine current information on product certification.

II. Special Issues. This standard has no applicable information for this section.

^{*}American National Standards Institute, 25 W. 43rd St., Fourth Floor, New York, NY 10036.

[†]NSF International, 789 N. Dixboro Rd., Ann Arbor, MI 48106.

[‡]Both publications available from National Academy of Sciences, 2102 Constitution Ave. N.W., Washington, DC 20418.

III. Use of Standard. AWWA has no responsibility for the suitability or compatibility of the provisions of this standard to any intended application by any user. Accordingly, it is the responsibility of the user of this AWWA standard to determine that the provisions described in this standard are suitable for use in the particular application being considered.

III.A. Minimum requirements. AWWA D102 is based on accumulated knowledge of purchasers, consultants, manufacturers, and applicators of tank coatings. A coating is deemed to be in compliance with AWWA D102 when the minimum requirements of this standard have been met. The purchaser may specify more stringent requirements.

III.B. Industry practice and assumptions. It is not the purpose of this standard to either define or recommend contractual relationships or to stipulate contractual obligations. Generally, purchasers may solicit competitive bids for the painting of a tank, or in new tank construction, include the painting with the tank constructor's scope of work.

If competitive bids are solicited for the painting of an existing tank, all repairs should be completed prior to painting. Thus, generally an inspection by the owner or a third-party engineering firm is completed prior to soliciting bids for painting. Subsequent to this step, the owner or third-party engineering firm will prepare a thorough set of specifications to be used for soliciting bids.

III.C. Specifying AWWA D102.

III.D. Reference standard. AWWA D102 is a reference standard that a purchaser may cite in the project documents, together with supplementary requirements for a specific project. A statement such as the following will serve to make AWWA D102 a part of the project documents.

"Coating materials and the surface preparation and application, inspection, and testing of the steel water-storage tank coatings shall comply with AWWA D102, AWWA Standard for Coating Steel Water-Storage Tanks, published by the American Water Works Association, Denver, Colorado, except as modified by the requirements of these contract documents."

III.E. Information provided by the purchaser. The purchaser must provide the required information listed in Section C.1 of appendix C in the project documents when AWWA D102 is specified. AWWA D102 contains optional requirements that the purchaser may incorporate in the project documents. Section C.2 contains a comprehensive list of these options and corresponding defaults.

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

1. Outside Coating Systems No. 1 (three-coat alkyd), No. 2 (four-coat alkyd), and No. 3 (alkyd-alkyd-silicone alkyd) have been combined into one outside system (OCS-1).
2. Former Outside Coating System No. 4 (3-coat vinyl) and Inside Coating System No. 4 (4-coat vinyl) have not been included in this standard.
3. Former Inside Coating Systems No. 5 (hot-applied coal-tar enamel) and No. 6 (cold-applied coal-tar) have not been included in this standard.
4. Outside Coating System No. 2 (three-coat moisture-cured polyurethane), No. 3 (three-coat acrylic emulsion) and No. 4 (zinc-rich primer-aliphatic polyurethane-fluoro-urethane) have been added to this standard.
5. Inside Coating Systems No. 4 (one-coat 100 percent solids polyurethane) and No. 5 (organic zinc-rich primer-epoxy-epoxy) have been added to this standard.
6. Charts designating color options for outside and inside coating systems have not been included in this standard.
7. Sec. 4.7 Detailed Safety Precautions has been deleted.

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.



American Water Works
Association

ANSI/AWWA D102-03
(Revision of ANSI/AWWA D102-97)

AWWA Standard

Coating Steel Water-Storage Tanks

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes coating systems for coating and recoating the inside and outside surfaces of steel tanks used for potable water storage in water supply service. Coating systems for new bolted steel tanks are not described in this standard (see ANSI/AWWA D103).

Sec. 1.2 Purpose

The purpose of this standard is to provide the minimum requirements for coating steel water-storage tanks, including materials, coating systems, surface preparation, application, and inspection and testing.

Sec. 1.3 Application

This standard can be referenced in specifications for coating steel water-storage tanks. The stipulations of this standard apply when this document has been referenced and then only to coating steel water-storage tanks.

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 the standard. In any case of conflict, the requirements of this standard shall prevail.

AAMA^{*} 2604-98—High Performance Organic Coatings on Aluminum Extrusions and Panels.

ANSI/AWWA C210—Standard for Liquid Epoxy Coating and Lining Systems for the Interior and Exterior of Steel Water Pipelines.

ANSI/AWWA D103—Standard for Factory-Coated Bolted Steel Tanks for Water Storage.

ANSI/AWWA C222—Standard for Polyurethane Coatings for the Interior and Exterior of Steel Water Pipe and Fittings.

ANSI/AWWA D100-96 Section 10.3—Preparation of Surfaces to be Welded.

ASTM[†] D16—Standard Terminology for Paint, Related Coatings, Materials, and Applications.

DOD[‡] C24654—Coatings, Epoxy, Potable Water Tanks.

EMMAQUA—Equatorial Mount with Mirrors for Acceleration with Water.

MIL-P-28577—Primer, Water-Borne, Acrylic or Modified Acrylic, for Metal Surfaces.

MIL-P-28578—Paint, Water-Borne, Acrylic or Modified Acrylic, for Metal Surfaces.

NACE[§] RP0188—Discontinuity (Holiday) Testing of Protective Coatings.

NACE 6A192—Dehumidification Equipment in Lining Application.

SSPC^{**} -PA 1—Shop, Field, and Maintenance Painting.

SSPC-PA 2—Measurement of Dry Paint Thickness with Magnetic Gages.

SSPC-PA Guide 3—Guide to Safety in Paint Application.

^{*}American Architectural Manufacturers Association, 1827 Walden Office Square, Ste. 104, Schaumburg, IL 60173.

[†]American Society for Testing and Materials, 100 Bar Harbor Dr., West Conshohocken, PA 19428.

[‡]Department of Defense, Philadelphia, PA 19111.

[§]NACE International, 1440 S. Creek Dr., Houston, TX 77084.

^{**}Society For Protective Coatings, 40 24th St., Ste. 301, Pittsburgh, PA 15222.

SSPC-PS Guide 12.00—Painting System Guide No. 12, Guide to Selecting Zinc-Rich Painting Systems.

SSPC-PS Guide 17.00—Painting System Guide No. 17, Guide for Selecting Urethane Painting Systems.

SSPC-Paint 21—White or Colored Silicone Alkyd Paint Type I, High Gloss Type II, Medium Gloss.

SSPC-Paint 22—Epoxy-Polyamide Paints (Primer, Intermediate and Topcoat).

SSPC-Paint 25—Red Iron Oxide, Zinc Oxide, Raw Linseed Oil and Alkyd Primer (Without Lead and Chromate Pigments).

SSPC-SP6/NACE 3—Commercial Blast Cleaning.

SSPC-SP7/NACE4—Brush-Off Blast Cleaning.

SSPC-SP10/NACE 2—Near-White Blast Cleaning.

SSPC-SP11—Power Tool Cleaning to Bare Metal.

SSPC-SP COM—Surface Preparation Specifications Surface Preparation Commentary.

TT*-E-489—Enamel, Alkyd, Gloss (for exterior and interior surfaces).

TT-E-529—Enamel, Alkyd, Semi-Gloss (for exterior and interior surfaces).

TT-P-320—Pigment, Aluminum: Powder and Paste for Paint.

TT-V-81—Varnish: Mixing for Aluminum Paint.

SECTION 3: DEFINITIONS

The following definitions shall apply in this standard:

1. *Coating*: Liquid, powder, or mastic composition that has been converted to a solid, durable, and functional adherent film after application as a thin layer.
2. *Constructor*: The party that provides the work and materials for placement or installation.
3. *Manufacturer*: The party that manufactures, fabricates, or produces materials or products.

*US Dept. of Energy, Technical Information Center, Oak Ridge, TN 37830. Federal Specifications, Superintendent of Documents, US Government Printing Office, Washington, DC 20402.