



American Water Works Association

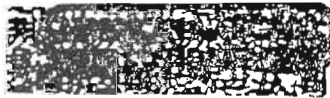
ANSI/AWWA D102-78

(Revision of
AWWA D102-64)

AWWA STANDARD

for

PAINING STEEL WATER-STORAGE TANKS



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AMERICAN WATER WORKS ASSOCIATION
6666 West Quincy Avenue, Denver, Colorado 80235

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Committee Personnel

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

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R. D. DAVIS, American Water Works Service Co.,
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The Committee wishes to acknowledge the technical assistance of all members of the D102 Revision Task Force. The list of Task Force members includes approximately 100 individuals representing a varied cross-section of purchasers, engineers, producers, and other parties interested in this standard. Their contribution has been immensely helpful, and only the limitation of available space precludes individual recognition.

Reference Standards

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

AWWA C203	Coal-Tar Protective Coatings and Linings for Steel Water Pipelines—Enamel and Tape—Hot Applied
AWWA C204	Chlorinated Rubber-Alkyd Paint System for the Exterior of Aboveground Steel Water Piping
AWWA D100	Welded Steel Elevated Tanks, Standpipes, and Reservoirs for Water Storage
ASTM D2200	Pictorial Surface Preparation Standards for Painting Steel Surfaces
NACE TM-01-70	Visual Standard for Surfaces of New Steel Airblast Cleaned with Sand Abrasive
NACE TM-01-75	Visual Standard for Surfaces of New Steel Centrifugally Blast Cleaned with Steel Grit and Shot
NFPA 70	National Electrical Code
SSPC-PA1	Shop, Field, and Maintenance Painting
SSPC-PA2	Measurement of Dry Paint Thickness with Magnetic Gages
SSPC-PT3	Basic Zinc Chromate—Vinyl Butyral Washcoat
SSPC-Vis 1	Pictorial Surface Preparation Standards for Painting Steel Surfaces
SSPC-SP1	Solvent Cleaning
SSPC-SP3	Power Tool Cleaning
SSPC-SP5	White Metal Blast Cleaning
SSPC-SP6	Commercial Blast Cleaning
SSPC-SP7	Brush-Off Blast Cleaning
SSPC-SP8	Pickling
SSPC-SP10	Near-White Blast Cleaning
SSPC-Paint 8	Aluminum Vinyl Paint
SSPC-Paint 9	White (or colored) Vinyl Paint
SSPC-Paint 101	Aluminum Alkyd Paint
SSPC-Paint 104	White or Tinted Alkyd Paint
SSPC-Paint SA1	White or Colored Silicone Alkyd Paint
SSPC-Paint CR1	Chlorinated Rubber Inhibitive Primer
SSPC-Paint CR2	Chlorinated Rubber Intermediate Coat Paint
SSPC-Paint CR3	Chlorinated Rubber Top Coat Paint
Federal Specification TT-E-489	Enamel, Alkyd, Gloss (for exterior and interior surfaces)
Federal Specification TT-P-86	Paint, Red-Lead-Base, Ready-Mixed
Federal Specification TT-P-320	Pigment, Aluminum: Powder and Paste for Paint
Federal Specification TT-V-81	Varnish; Mixing, for Aluminum Paint

Bureau of Reclamation Vinyl Resin Paint
Specification VR-3

MIL-C-4556 Coating Kit, Epoxy, For Interior of Steel Fuel Tanks
MIL-P-24441 Paint, Epoxy-Polyamide, General Specification for

The latest edition of the standards listed are incorporated into this standard by reference. Additional information concerning these reference standards may be obtained from:

National Association of Corrosion
Engineers
Box 1499
Houston, TX 77001

Steel Structures Painting Council
4400 Fifth Avenue
Pittsburgh, PA 15213

Federal and Military Specifications
Naval Publications and Forms Center
5801 Tabor Avenue
Philadelphia, PA 19120

National Fire Protection Association
470 Atlantic Avenue
Boston, MA 02110

- 161AL SEAL
 MOIST METAL GRIP
 POLYAMINE EPOXY SYSTEM

Sec. 3.2 Inside Paint System No. 1

This is a two-coat or three-coat two-component catalyzed epoxy paint system. The following painting systems are included:

System Designation	Finish Coat
I-1-W	White
I-1-S	Special color selected by owner

3.2.1 *Materials.* The materials in this paint system shall be suitable for potable water service. They shall have been evaluated for long-term fresh water resistance, and the system shall have demonstrated satisfactory service in fresh water for at least 18 months.

The materials shall consist of (1) Paint 1—a three-coat system in accordance with MIL-P-24441, and including a green primer, Formula 150, a haze gray intermediate coat, Formula 151, and a white finish coat, Formula 152, with all products having been qualified for inclusion in QPL 24441; (2) Paint 2—a two-coat system in accordance with MIL-C-4556 including a primer and an off-white finish coat with all products having been qualified for inclusion in QPL 4556; or (3) Paint 3—an equivalent system for which documentation consisting of test data, service history, and toxicological information have been provided by the manufacturer. Approval by an agency of the US government for use in contact with potable water shall be considered as satisfying the toxicological requirement of an equivalent epoxy system.

Epoxy paint shall be packaged in containers of suitable size so that one container of each component is used in mixing the paint to the proper proportions.

3.2.2 *Thickness.* The dry film thickness, in mils, of the paint shall be:

System	Primer	Finish Coats	Total System
I-1-W	3	5	8
I-1-S	3	5	8

Sec. 3.3 Inside Paint System No. 2

This is a five-coat vinyl system consisting of one coat of wash primer, two intermediate coats of vinyl paint, and two finish coats of vinyl paint. The following painting systems are included:

System Designation	Finish Coat
I-2-A	Aluminum
I-2-W	White
I-2-S	Special color selected by owner

3.3.1 *Materials.* The wash primer shall consist of a basic zinc chromate vinyl butyral wash coat in accordance with SSPC-PT3. The first two coats of vinyl paint shall consist of vinyl primer in accordance with SSPC Paint No. 9. The final two coats of vinyl paint for System I-2-A shall be SSPC Paint No. 8. The final two coats of vinyl paint for System I-2-W and for System I-2-S shall be Bureau of Reclamation Specification VR-3 with appropriate pigment color.

3.3.2 *Thickness.* Dry film thickness, in mils, of the paint shall be:

System	Wash Primer	Inter-mediate Coats	Final Coats	Total System
I-2-A	0.3*	2.5	2.0	4.5
I-2-W	0.3*	2.5	2.5	5.0
I-2-S	0.3*	2.5	2.5	5.0

* The film thickness of the wash primer must not exceed 0.5 mils.

TAL SEAL
SI... TAL GRIP → x
A7 *Inside Paint System No. 1.* This is a two-component epoxy paint system. To obtain proper curing, surface temperatures of 50F (10C) and greater are required. At lower temperatures heating may be required for curing. Some epoxy systems will cure at temperatures between 35F and 50F [2C and 10C], but an accelerator is required.

A8. *Inside Paint System No. 2.* This is a five-coat vinyl system. A similar vinyl paint system has been used extensively for more than fifteen years. The system uses a wash primer pretreatment to improve adhesion.

A9. *Inside Paint System No. 3.* This chlorinated-rubber paint system has been widely used for water immersion service.

A10. *Inside Paint System No. 4.* This paint system is based on high-solids vinyl coatings that have been used extensively for more than fifteen years. The paint system can be applied to dry steel at ambient temperatures greater than 35F, provided there is no moisture or frost on the surface.

A11. *Inside Paint System No. 5.* This is a heavy hot-applied coal-tar enamel system. In addition to water tanks, many miles of steel pipe have been lined with this system. For aboveground tanks, coal-tar enamel coating is ordinarily used to protect the bottom and sidewalls up to the expected minimum water level. Above the minimum water level another compatible system is usually applied. Coal-tar enamel is usually hand-daubed except that tank bottoms are often coated by mop application.

A12. *Inside Paint System No. 6.* This is a cold-applied coal-tar paint system. The paint used in this system is self-priming when applied directly to field-cleaned steel. The primer is in-

tended for use with shop priming of new tanks. Coal-tar paint systems will shrink and crack (alligator) if exposed to direct sun but give good service when kept shaded. Coal-tar paint systems can be damaged by ice and should not be used where ice formation is anticipated.

A13. *Inside Paint System No. 7.* This metallic sprayed zinc system has a higher initial cost than the other paint systems but it provides excellent protection in difficult corrosive conditions. The zinc is sprayed in molten condition and must be applied to a scrupulously clean surface.

A14. *Underside of flat bottom tanks.* For ground-storage reservoirs and standpipes, it is seldom considered necessary to apply protective coatings to the underside of flat tank bottoms. Bottoms resting on well drained granular material or on a concrete foundation seldom corrode from the outside. Oil or slow-curing asphalt is sometimes added to the granular material beneath flat bottom tanks to inhibit corrosion. Crushed limestone and other alkaline materials are also used as corrosion inhibitors. If painting the underside of flat tank bottoms is desired, the underside of the bottom plates should be painted with a rust-inhibitive primer.

A15. *Inside of pedestals.* Outside paint systems are suitable for use inside of dry risers and pedestals of pedestal-supported tanks. Since these surfaces are not subject to weathering and appearance is less critical, an additional coat of primer is often specified in place of one of the finish coats.

B Surface Preparation.

B1. *General.* Economical paint life depends on adequate surface preparation. Paint or other coatings applied