ANSI/AWWA B503-17
(Revision of ANSI/AWWA B503-11)

American Water Works Association
Dedicated to the World's Most Important Resource®

AWWA Standard

Sodium Tripolyphosphate

Effective date: Oct. 1, 2017.
First edition approved by AWWA Board of Directors June 25, 1978.
This edition approved June 11, 2017.
Approved by American National Standards Institute June 19, 2017.

American Water Works Association STANDARD Since 1881

Approved American National Standard ANSI

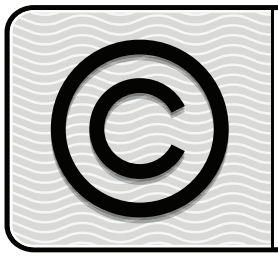
AWWA Standard

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 on the first page of the Official Notice section of *Journal – American Water Works Association*. The action becomes effective on the first day of the month following the month of *Journal – American Water Works Association* 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 West 43rd Street, Fourth Floor, New York, NY 10036; 212.642.4900; or emailing info@ansi.org.



This AWWA content is the product of thousands of hours of work by your fellow water professionals. Revenue from the sales of this AWWA material supports ongoing product development. Unauthorized distribution, either electronic or photocopied, is illegal and hinders AWWA's mission to support the water community.

ISBN-13, print: 978-1-62576-257-3 eISBN-13, electronic: 978-1-61300-444-9
DOI:http://dx.doi.org/10.12999/AWWA.B503.17

Committee Personnel

The AWWA Standards Committee on Scale and Corrosion-Control Chemicals, which reviewed and approved this standard, had the following personnel at the time of approval:

Robert A. Ryder, *Chair*

General Interest Members

E. Leung,* California State Water Board, Richmond, Calif. (AWWA)
M.S. McFadden, HDR Engineering Inc., Denver, Colo. (AWWA)
N.E. McTigue, EE&T Inc., Newport News, Va. (AWWA)
D. Orozco, Robert Cole & Associates, Engineers, Safety Harbor, Fla. (AWWA)
S.J. Posavec,* Standards Group Liaison, AWWA, Denver, Colo. (AWWA)
R.A. Ryder, Kennedy/Jenks Consultants, San Francisco, Calif. (AWWA)
R.D. Vaidya, Chastain Skillman Inc., Lakeland, Fla. (AWWA)

Producer Members

H.T. Belcher Jr., Corrtrac Systems Corporation, Currituck, N.C. (AWWA)
R. Hartsock, Occidental Chemical Corporation, Dallas, Texas (AWWA)
C.P. Principi, Carus Corporation, Belmont, N.C. (AWWA)
H.Stiefel, Aqua Smart Inc., Atlanta, Ga. (AWWA)

User Members

D.M. Lafalam, City of Worcester Water Filtration Plant, Holden, Mass. (AWWA)
J.D. Musinski, Village of Arlington Heights, Arlington Heights, Ill. (AWWA)
R.M. Powell, Pinellas County Utilities, Spring Hill, Fla. (AWWA)
Y. Zhang, Long Beach Water Department, Long Beach, Calif. (AWWA)

* Liaison, nonvoting

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.

This page intentionally blank.

Foreword

This foreword is for information only and is not a part of ANSI/AWWA B503.*

I. Introduction.

I.A. *Background.* Sodium tripolyphosphate ($Na_5P_3O_{10}$) is a manufactured product obtained by combining a comparatively pure chemical—soda ash (Na_2CO_3) or caustic soda (NaOH)—with phosphoric acid (H_3PO_4). The resultant product is subjected to controlled conditions of heating to form a crystalline solid, which is subsequently ground and sized.

Sodium tripolyphosphate is a white solid material, commercially available in granular or powder forms. The density of crushed or granular is approximately 68.7 lb/ft^3 (approximately 1,100 kg/m^3). A solution of 1 lb/gal (0.12 kg/L) has a specific gravity of approximately 1.10. Refer to safety data sheets (SDSs) available from the supplier or manufacturer for additional information.

Water utilities use sodium tripolyphosphate to control scale and corrosion and to treat red water.

I.B. *History.* The first edition of ANSI/AWWA B503 was developed by the AWWA Committee on Scale and Corrosion-Control Chemicals. It was first published in 1978. Subsequent revisions were approved by the AWWA Board of Directors in 1984, 1989, 1994, 2001, 2005, and 2011. This edition was approved on June 11, 2017.

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 direct and indirect drinking water additives. Other members of the original consortium included the Water Research Foundation (formerly 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 effects of products and drinking water additives from such products, state and local

* American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036.
† Persons outside the United States should contact the appropriate authority having jurisdiction.

agencies may use various references, including two standards developed under the direction of NSF*: NSF/ANSI 60, Drinking Water Treatment Chemicals—Health Effects, and NSF/ANSI 61, Drinking Water System Components—Health Effects.

Various certification organizations may be involved in certifying products in accordance with NSF/ANSI 60. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdictions. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

Annex A, "Toxicology Review and Evaluation Procedures," to NSF/ANSI 60 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.

ANSI/AWWA B503 addresses additives requirements in Sec. 4.3 of the standard. The transfer of contaminants from chemicals to processed water or to residual solids is becoming a problem of great concern. The language in Sec. 4.3.3 is a recommendation only for direct additives used in the treatment of potable water to be certified by an accredited certification organization in accordance with NSF/ANSI 60, Drinking Water Treatment Chemicals—Health Effects. However, users of the standard may opt to make this certification a requirement for the product. 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 parties offering to certify products for contact with, or treatment of, drinking water.
3. Determine current information on product certification.

II. Special Issues.

II.A. *Storage and Handling Precautions.* Sodium tripolyphosphate is slightly hygroscopic and must be stored under dry conditions. Exposure to humidity produces a caked condition and accelerates reversion to orthophosphate. This results in poor flow and caking, which interfer with the rate of dilution and effectiveness of the product. For additional information, refer to the MSDS available from the manufacturer or supplier.

* NSF International, 789 North Dixboro Road, Ann Arbor, MI 48105.

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 B503, Sodium Tripolyphosphate, of latest revision.
2. Whether compliance with NSF/ANSI 60, Drinking Water Treatment Chemicals—Health Effects, is required.
3. Details of other federal, state or provincial, and local requirements (Section 4).
4. Physical form(s) and quantity (Sec. 4.1).
5. Specific maximum impurity content limits, if required (Sec. 4.3).
6. Whether the purchaser will reject product from containers or packaging with missing or damaged seals. The purchaser may reject product from bulk containers or packages with missing or damaged seals unless the purchaser's tests of representative samples, conducted in accordance with Sec. 5.2, demonstrate that the product meets the standard. Failure to meet the standard or the absence of, or irregularities in, seals may be sufficient cause to reject a shipment.
7. Form of shipment—bulk or package, type, and size of container (Sec. 6.2.1).
8. Whether alternative security measures have been adopted to replace or augment the security measures set out in Sec. 6.2.3 and 6.2.4.
9. Affidavit of compliance, certified analysis, if required (Sec. 6.3).

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 changes made to the standard in this revision include the following:

1. Revision of the Notice of Nonconformance section (Sec. 5.3).

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.

ANSI/AWWA B503-17
(Revision of ANSI/AWWA B503-11)

American Water Works Association
Dedicated to the World's Most Important Resource®

AWWA Standard

Sodium Tripolyphosphate

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes sodium tripolyphosphate for use in the treatment of potable water, wastewater, and reclaimed water.

Sec. 1.2 Purpose

The purpose of this standard is to provide purchasers, manufacturers, and suppliers with minimum requirements for sodium tripolyphosphate (material), including physical, chemical, sampling, packaging, shipping, and testing requirements.

Sec. 1.3 Application

This standard can be referenced in documents for purchasing and receiving sodium tripolyphosphate and can be used as a guide for testing the physical and chemical properties of sodium tripolyphosphate samples. The stipulations of this standard apply when this document has been referenced and only to sodium tripolyphosphate used in the treatment of potable water, wastewater, and reclaimed water.