



**American Water Works
Association**

ANSI/AWWA B504-12
(Revision of ANSI/AWWA B504-05)

The Authoritative Resource on Safe Water®

AWWA Standard

Monosodium Phosphate, Anhydrous and Liquid



Effective date: Aug. 1, 2012.

First edition approved by AWWA Board of Directors Jan. 25, 1988.

This edition approved Jan. 22, 2012.

Approved by American National Standards Institute June 1, 2012.

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ISBN-13, print: 978-1-58321-896-9
ISBN-10, print: 1-58321-896-3

eISBN-13, electronic: 978-1-61300-189-9
eISBN-10, electronic: 1-61300-189-4

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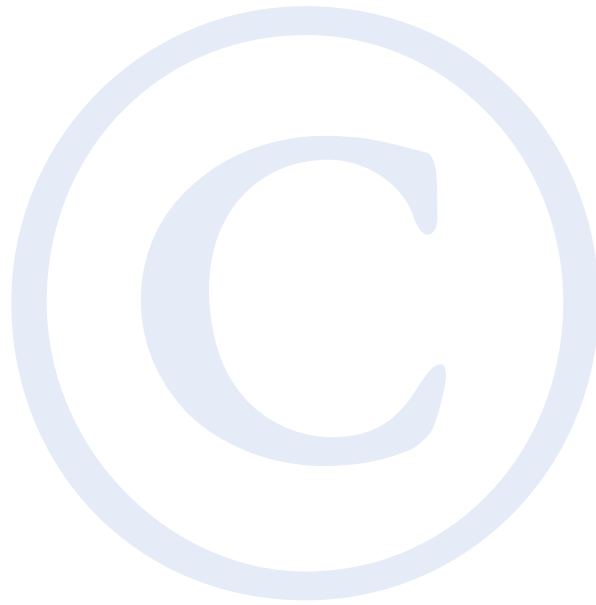
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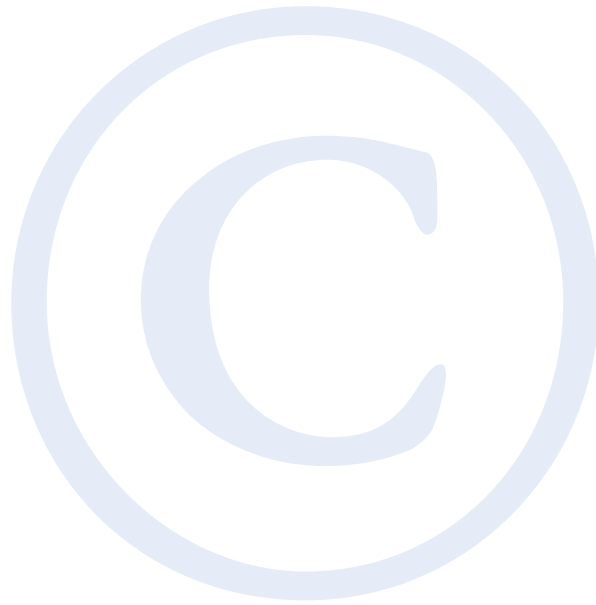


Contents

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		2	References 2
I	vii	3	Definitions 2
II.A	vii	4	Requirements
I.B	vii	4.1	Physical Requirements 3
I.C	vii	4.2	Chemical Requirements 4
II	ix	4.3	Impurities 4
II.A	ix	5	Verification
III	ix	5.1	Sampling 5
III.A	ix	5.2	Test Procedures 6
		5.3	Notice of Nonconformance 9
III.B	ix	6	Delivery
IV	x	6.1	Marking 10
V	x	6.2	Packaging and Shipping 10
		6.3	Affidavit of Compliance 11
Standard		Table	
1	General	1	Sample Size Determination for
1.1	Scope 1		Orthophosphate Analysis 9
1.2	Purpose 1		
1.3	Application 1		

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA B504.*

I. Introduction.

I.A. *Background.* Phosphate chemicals are among the few recognized substances that can be safely and effectively used in water for corrosion treatment. There are several phosphate technologies available, one of which is monosodium phosphate (MSP, NaH_2PO_4). Monosodium phosphate is a manufactured product obtained by combining a comparatively pure chemical, soda ash (Na_2CO_3) or caustic soda (NaOH , sodium hydroxide), with phosphoric acid (H_3PO_4).

Monosodium phosphate, anhydrous, is a white, crystalline solid, commercially available in granular and powder forms. Monosodium phosphate is also found as a clear liquid. A solution of 1 lb/gal (0.12 kg/L, 34 percent by weight) has a specific gravity of approximately 1.30 at 20°C (70°F).

For information on safety, refer to material safety data sheets (MSDS) available from the supplier or manufacturer.

I.B. *History.* In 1985, the AWWA Standards Committee on Scale and Corrosion-Control Chemicals recognized the need for a standard for monosodium phosphate, anhydrous, used as a corrosion-control product in the treatment of potable water. The AWWA Standards Council authorized development of this standard on Nov. 18, 1985, and the first edition was approved on Jan. 25, 1988. The second edition of the standard was approved on June 19, 1994. The third edition of the standard was approved on Jan. 21, 2001. The fourth edition of ANSI/AWWA B504 was approved on June 12, 2005. This fifth edition was approved by the AWWA Board of Directors on Jan. 22, 2012.

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 American Water Works Association Research Foundation (AwwaRF, now Water Research Foundation) and the Conference of State Health and Environmental Managers (COSHEM). The American Water Works

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

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 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 Systems 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 jurisdiction. 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 B504 addresses additives requirements in Sec. 4.3.3 of the standard. The transfer of contaminants from chemicals to processed water or to the 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 also 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.

* Persons outside the United States should contact the appropriate authority having jurisdiction.

† NSF International, 789 N. Dixboro Road, Ann Arbor, MI 48105.

II. Special Issues.

II.A. *Storage and Handling Precautions.* Monosodium phosphate, anhydrous, is slightly deliquescent in nature and must be stored under dry conditions. Exposure to humidity produces a caked condition. This results in poor flow and caking that interferes with the rate of dilution. Liquid monosodium phosphate is considered non-hazardous. However, because the pH is between 4 and 5, handle as an acidic solution. Store in polyethylene, FRP, epoxy, rubber-lined mild steel, or stainless-steel containers in a cool, dry area. Protect containers from physical damage and freezing. Refer to the material safety data sheets (MSDS) available from the manufacturer or supplier for additional information.

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.

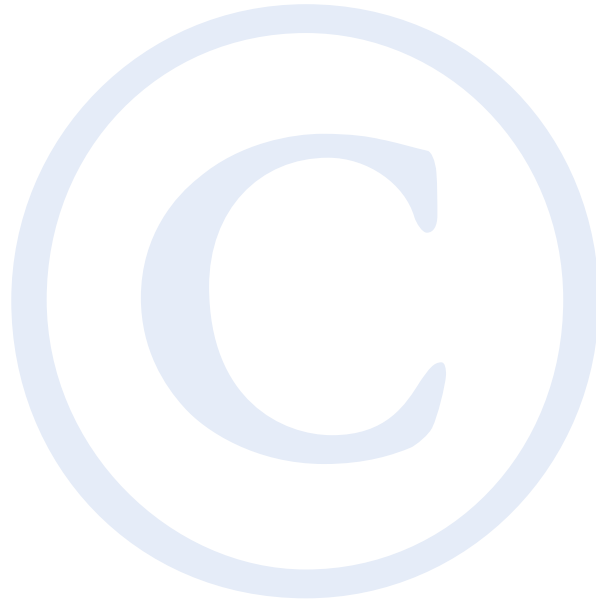
III.A. *Purchaser Options and Alternatives.* The following information should be provided by the purchaser:

1. Standard used—that is, ANSI/AWWA B504, Standard for Monosodium Phosphate, Anhydrous and Liquid, of latest revision.
 2. Whether compliance with NSF/ANSI 60, Drinking Water Treatment Chemicals—Health Effects, is required.
 3. Physical form(s) and quantity (Secs. 4.1.1 and 4.1.2).
 4. Specific maximum impurity content limits, if required (Sec. 4.3).
 5. Details of other federal, state or provincial, and local requirements (Section 4).
 6. Whether alternative security measures have been adopted to replace or augment the security measures set out in Secs. 6.2.3 and 6.2.4.
 7. 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 specifications or the absence of, or irregularities in, seals may be sufficient cause to reject the shipment.
 8. Form of shipment—bulk or package, type and size of container (Sec. 6.2).
 9. Affidavit of compliance or certified analysis, or both, if required (Sec. 6.3).
- III.B. *Modification to Standard.* Any modification to 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. Inclusion of the liquid form of monosodium phosphate.
2. Inclusion of a requirement for compliance with the Safe Drinking Water Act and other federal regulations (Section 4).
3. Inclusion of a requirement for tamper-evident packaging (Sec. 6.2.3 and 6.2.4).

V. Comments. If you have any comments or questions about this standard, please call the AWWA Engineering & Technical Services Department at 303.794.7711, FAX at 303.795.7603, write to the department at 6666 West Quincy Avenue, Denver, CO 80235-3098, or e-mail at standards@awwa.org.





**American Water Works
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AWWA Standard

Monosodium Phosphate, Anhydrous and Liquid

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes monosodium phosphate, anhydrous and liquid, for use in the treatment of potable water, wastewater, and reclaimed water. The product described is an orthophosphate used as formulated and in blends to inhibit corrosion of water conveyance systems. The product described by this standard is also known as sodium phosphate, monobasic, anhydrous and liquid.

Sec. 1.2 Purpose

The purpose of this standard is to provide the minimum requirements for monosodium phosphate, anhydrous and liquid, including physical, chemical, sampling, packaging, shipping, and testing requirements.

Sec. 1.3 Application

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