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(Revision of ANSI/AWWA B201-18)

AWWA Standard

Soda Ash

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American Water Works Association

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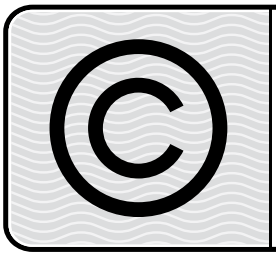
AWWA Standard

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Committee Personnel

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

Julia Mercer, *Chair*

General Interest Members

T.O. Crowley, Carollo Engineers, Lee's Summit, Mo.
N.J. Edman (*liaison, nonvoting*), Standards Group Liaison, AWWA, Denver, Colo.
J. Mercer, Newterra, Pittsburgh, Pa.
J.G. Pressman (*liaison, nonvoting*), Standards Council Liaison, US Environmental Protection Agency, Cincinnati, Ohio
R. Vaidya, PCL Construction, Tampa, Fla.

Producer Members

R. Christy (*alternate*), RDP Technologies, Inc., Conshohocken, Pa.
T. Marsh, RDP Technologies, Inc., Conshohocken, Pa.
J.M. Shepard, Modular Chemical Systems, Murrells Inlet, S.C.

User Members

J. Martinez, East Lansing Meridian Water Authority, East Lansing, Mich.
S.M. Soltau, H2O-Knowledge Pro, Clearwater, Fla.

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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
Foreword		
I	Introduction	vii
I.A	Background	vii
I.B	History	vii
I.C	Acceptance	vii
II	Special Issues	ix
III	Use of This Standard	x
III.A	Purchaser Options and Alternatives	x
III.B	Modification to Standard	x
IV	Major Revisions	x
V	Comments	xi
Standard		
1	**General**	
1.1	Scope	1
1.2	Purpose	1
1.3	Application	1
2	**References**	2
3	**Definitions**	2
4	**Requirements**	
4.1	Physical Requirements	3
4.2	Chemical Composition	3
4.3	Impurities	3
5	**Verification**	
5.1	Sampling	4
5.2	Apparent Density	5
5.3	Insoluble Matter	5
5.4	Total Available Alkali	5
5.5	Notice of Nonconformance	6
6	**Delivery**	
6.1	Marking	7
6.2	Packaging and Shipping	7
6.3	Affidavit of Compliance	8

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA B201.*

I. Introduction.

I.A. *Background*. Soda ash is the common name for the technical grades of anhydrous sodium carbonate (Na_2CO_3). Light and dense soda ash differ in physical characteristics only, such as density (weight of unit volume), angle of repose, and size and shape of particles. Light soda ash is a powder; dense soda ash is granular.

Soda ash is an anhydrous material having a sodium carbonate content of more than 99 percent and a sodium oxide (Na_2O) equivalent of more than 57.9 percent. Sodium carbonate, although readily soluble in water, has the unusual characteristic of attaining maximum solubility at 95.7°F (35.4°C). At this temperature, 100 parts of water dissolve 49.7 parts of sodium carbonate. The solubility of sodium carbonate decreases at temperatures above and below 95.7°F (35.4°C).

I.B. *History*. The first edition of this standard for soda ash was prepared under the direction of the AWWA Water Purification Division. The standard was approved by the Executive Committee of the Water Purification Division and by the Water Works Practice Committee and received approval of the AWWA Board of Directors on July 1, 1949. Additional reviews resulted in an edited copy that was reaffirmed and approved as "Tentative" on Oct. 15, 1951. The initial document was made standard on May 15, 1953. This standard was revised by the AWWA Standards Committee on Softening and Conditioning Chemicals. Subsequent editions of ANSI/AWWA B201 were approved on Jan. 26, 1959; Jan. 28, 1974; Jan. 28, 1980; June 14, 1987; Jan. 26, 1992; Jan. 25, 1998; Jan. 19, 2003; Jan. 27, 2008; June 9, 2013; and Oct. 24, 2018. This edition was approved on Jan. 23, 2025.

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). AWWA and the Association of State Drinking Water Administrators (ASDWA) joined later.

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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 four standards developed under the direction of NSF[‡]: NSF/ANSI/CAN[§] 60, Drinking Water Treatment Chemicals—Health Effects; NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects; NSF/ANSI 372, Drinking Water System Components—Lead Content; and NSF/ANSI/CAN 600, Health Effects Evaluation and Criteria for Chemicals in Drinking Water.

Various certification organizations may be involved in certifying products in accordance with NSF/ANSI/CAN 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.

NSF/ANSI/CAN 600 (which formerly appeared in NSF/ANSI/CAN 60 and 61 as Annex A, "Toxicology Review and Evaluation Procedures") 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 NSF/ANSI/CAN 600 procedures may not always be identical, depending on the certifier.

ANSI/AWWA B201 addresses additives requirements in Sec. 4.3.2 of the standard. The transfer of contaminants from chemicals to processed water or to residual solids is becoming a problem of greater concern. The language in Sec. 4.3.2 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/CAN 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.

[†] Persons outside the United States should contact the appropriate authority having jurisdiction.

[‡] NSF International, 789 North Dixboro Road, Ann Arbor, MI 48105.

[§] Standards Council of Canada, 55 Metcalfe Street, Suite 600, Ottawa, ON K1P 6L5 Canada.

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II. Special Issues. Soda ash is usually shipped in bulk or in 100-lb (45-kg) multiwall paper bags, although it is also available in drums and barrels. The material can be readily handled mechanically by screw or belt conveyors, bucket elevators, or pneumatic systems. Soda ash should be stored in a dry, cool place with minimal exposure to moisture and air. With prolonged storage, soda ash tends to lump and becomes difficult to handle and dissolve.

Soda ash is normally fed into water being treated using volumetric or gravimetric mechanical feeders equipped with dissolving chambers. Less frequently, solution feeding is used. The solution is prepared in tanks and fed by metering pumps.

Soda ash can also be stored in a tank as a slurry with a concentrated 30-percent solution being withdrawn from the upper portion of the tank for application to the treatment process. This method requires much less storage space because the dry soda ash has a bulk density of 35 lb/ft^3 (560 kg/m^3). Monohydrate slurries have bulk densities ranging from 83 lb/ft^3 to 117 lb/ft^3 (1,328 kg/m^3 to 1,872 kg/m^3). Dry soda ash bulk densities range from 33 lb/ft^3 to 68 lb/ft^3 (529 kg/m^3 to 1,088 kg/m^3).

Soda ash is a relatively harmless chemical and, under normal conditions, has no marked effects on skin, the respiratory system, or clothing. It is neither explosive nor flammable, and it is not classified as a dangerous substance on its safety data sheet.

Soda ash may produce a temporary irritation of the respiratory system, but the symptoms will disappear once contact with soda ash is discontinued. People handling soda ash should be equipped with goggles and dust respirators when dust is prevalent. Eye irritation should be treated by flushing the affected eye with tap water for 15 min or longer. Any condition of prolonged irritation should be referred to a physician for treatment.

Individuals who are particularly sensitive to alkaline materials or who have a preexisting skin disease may develop dermatitis when working with soda ash. It is advisable to use protective clothing to reduce skin exposure as much as possible, then use a protective agent, such as an ointment or cream as recommended by a doctor, to prevent this condition. Normal skin irritations can be relieved by bathing the affected parts in a 5 percent boric acid solution.

Every effort should be made to avoid the simultaneous presence of soda ash and lime dust. The combination of these chemicals in the presence of moisture or perspiration will cause the formation of irritating caustic soda. Where both soda ash and lime are used, workers exposed to one chemical should carefully wash it away and remove its dust from clothing before working in the presence of the other chemical, being careful

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to dry completely or change clothing before being in the presence of lime dust, as moisture with lime dust can cause skin burns.

Workers entering storage bins or silos containing soda ash should always use appropriate lockout/tagout procedures for mechanical and pneumatic silo equipment and wear approved safety belts and connecting ropes to facilitate rescue in the event the soda ash shifts or slides. In addition, workers should be in constant communication with someone stationed outside the storage facility.

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 B201, Soda Ash, of latest revision.
2. Quantity required.
3. Whether compliance with NSF/ANSI/CAN 60, Drinking Water Treatment Chemicals—Health Effects, is required.
4. Details of federal, state, provincial, territorial, and local requirements (Section 4).
5. Density required (Sec. 4.1.1).
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 through Sec. 5.4, 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 the shipment.
7. Form of shipment—bulk or package, type, and size (Sec. 6.2).
8. Whether alternative security measures have been adopted to replace or augment the security measures set out in Sec. 6.2.4 and Sec. 6.2.5.
9. Affidavit of compliance or certified analysis, 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 revisions made to the standard in this edition include the following:

1. Minor boilerplate updates to the following sections:
   - I.C. Acceptance
   - III.A. Purchaser Options and Alternatives

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- Section 2: References
- Section 4: Requirements
- Sec. 5.5 Notice of Nonconformance

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

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ANSI/AWWA B201-25
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AWWA Standard

Soda Ash

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes soda ash for use in the treatment of potable water, wastewater, or reclaimed water.

Sec. 1.2 Purpose

The purpose of this standard is to provide the minimum requirements for soda ash, including physical, chemical, sampling, testing, packaging, and shipping requirements.

Sec. 1.3 Application

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

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