ANSI/AWWA B305-15
(Revision of ANSI/AWWA B305-06)

American Water Works Association

Dedicated to the World's Most Important Resource®

AWWA Standard

Anhydrous Ammonia

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American Water Works Association STANDARD Since 1881

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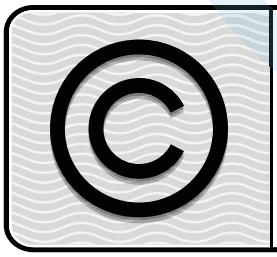

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Committee Personnel

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

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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.

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA B305.*

I. Introduction.

I.A. *Background.* Anhydrous ammonia is a pungent, colorless gas at room temperature and atmospheric pressure. It is a compound formed by the elements hydrogen and nitrogen with a chemical formula of NH_3. In the water industry, anhydrous ammonia is combined with chlorine to form chloramines.

Anhydrous ammonia is produced when a preheated mixture of hydrogen and nitrogen is subjected to pressure over an iron oxide catalyst.

There are several generally accepted grade designations for anhydrous ammonia, including

- Commercial
- Agricultural
- Refrigeration
- Technical
- Metallurgical
- Electronic

More detailed information on anhydrous ammonia may be found in the Compressed Gas Association† booklet CGA G2 (latest revision).

I.B. *History.* The first edition of ANSI/AWWA B305 was approved by the AWWA Board of Directors on Feb. 12, 2006. The standard was approved and promulgated in the course of the activities of the AWWA Committee on Disinfectants. This edition was approved by the AWWA Board of Directors on Jan. 24, 2015.

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.

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* American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036.
† Compressed Gas Association, 4221 Walney Road, Fifth Floor, Chantilly, VA 20151.
‡ Water Research Foundation, 6666 West Quincy Avenue, Denver, CO 80235.

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 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 B305 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. 4.3.5 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. *Safety.* Anhydrous ammonia is usually shipped and stored as a liquid under pressure and should be treated as any pressurized gas. Anhydrous ammonia is

* Persons outside the United States should contact the appropriate authority having jurisdiction.
† NSF International, 789 North Dixboro Road, Ann Arbor, MI 48105.

considered a nonflammable gas by the US Department of Transportation (USDOT) and is also listed as a hazardous gas with a reportable quantity of 100 lb (45 kg).

Federal safety regulations promulgated by the US Occupational Safety and Health Administration (OSHA), USEPA, and the US Department of Transportation that apply to this material should be implemented.

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 B305, Standard for Anhydrous Ammonia, of latest revision.
2. Size and type of bulk storage container to be used, and details on transfer equipment available for receiving bulk shipments. If bulk storage is not used, state the required container sizes.
3. Whether compliance with NSF/ANSI 60, Drinking Water Treatment Chemicals—Health Effects, is required
4. Details of other federal, state or provincial, and local requirements (Section 4.).
5. Physical form(s) and quantity (Sec. 4.1.1).
6. Specific maximum impurity content limits if required (Sec. 4.3).
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. 5.3, 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.
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. An affidavit of compliance or certified analysis or both, 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. Inclusion of a requirement for compliance with the Safe Drinking Water Act and other federal regulations (Section 4).

2. 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 and Technical Service 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.

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Anhydrous Ammonia

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes the use of anhydrous ammonia in the treatment of potable water, wastewater, and reclaimed water. Anhydrous ammonia is expressed by the formula NH_3. *Anhydrous* means free from water.

Sec. 1.2 Purpose

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

Sec. 1.3 Application

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