



**American Water Works
Association**

ANSI/AWWA B305-06
(First Edition)

The Authoritative Resource on Safe WaterSM

AWWA Standard

Anhydrous Ammonia



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6666 West Quincy Avenue
Denver, CO 80235-3098
T 800.926.7337
www.awwa.org

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Committee Personnel

The AWWA subcommittee that developed this standard had the following personnel at the time:

W.B. Huebner, Mine Hill, N.J.	(AWWA)
B.C. Lauer,* Standards Group Liaison, AWWA, Denver, Colo.	(AWWA)
K.B. Stark, Disinfectants Committee Liaison, NSF International, Ann Arbor, Mich.	(AWWA)
D.B. Binder, Tanner Industries Inc., Southampton, Pa.	(AWWA)
Ray Cannon, La Roche Industries, Atlanta, Ga.	(AWWA)
Barry Lonsdale, Terra Industries, Courtright, Ont.	(AWWA)
M.F. Knudson, Portland Bureau of Water Works, Portland, Ore.	(AWWA)
E.R. Saxon, Beaufort–Jasper Water & Sewer Authority, Okatie, S.C.	(AWWA)
J.C. Cranor, Denver Water, Denver, Colo.	(AWWA)

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

K. Blake Stark, *Chair*

Gary F. Trojak, *Vice-Chair*

General Interest Members

P.E. Cote, Cumberland, Maine	(AWWA)
D.J. Gates, Sabre Oxidation Technologies Inc., Citrus Heights, Calif.	(AWWA)
C.L. McLain,* Moorhead Public Service, Moorhead, Minn.	(AWWA)
S.J. Posavec,* Standards Group Liaison, AWWA, Denver, Colo.	(AWWA)
K.B. Stark, NSF International, Ann Arbor, Mich.	(AWWA)

Producer Members

W.B. Huebner, Mine Hill, N.J.	(AWWA)
Thomas Nier, Bay Chemical & Supply Company, Odem, Texas	(AWWA)
G.F. Trojak, The Chlorine Institute, Arlington, Va.	(AWWA)

*Liaison, nonvoting

User Members

Ileana Alvarez,* John Preston Water Plant, Hialeah, Fla.	(AWWA)
B.S. Aptowicz, Philadelphia Water Department, Philadelphia, Pa.	(AWWA)
H.F. Hanson, Woodbridge, Va.	(AWWA)
A.A. Khan, Pepsi Cola North America, Plano, Texas	(AWWA)
R.C. Lorenz, Westerville Water Plant, Westerville, Ohio	(AWWA)
A.T. Segars, Miami–Dade Water & Sewer Department, Hialeah, Fla.	(AWWA)

*Alternate

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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.* This 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.

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 all direct and indirect drinking water additives. Other members of the original consortium included the American Water Works Association Research Foundation (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.

*Compressed Gas Association, 4221 Walney Road, Fifth Floor, Chantilly, VA 20151.

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 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 B305 addresses additives requirements in Sec. 4.3 of the standard. The transfer of contaminants from chemicals to processed water or the 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 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 all parties offering to certify products for contact with, or treatment of, drinking water.
3. Determine current information on product certification.

*Persons outside the US should contact the appropriate authority having jurisdiction.

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

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

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 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).

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 items 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. Physical form(s) and quantity (Sec. 4.1.1).

5. Specific maximum impurity content limits if required (Sec. 4.3).

6. An affidavit of compliance, 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.** This is the first edition of this standard.

V. **Comments.** If you have any comments or questions about this standard, please call the AWWA Volunteer & Technical Support Group at (303) 794-7711, FAX (303) 795-7603, write to the group at 6666 West Quincy Avenue, Denver, CO 80235-3098, or e-mail 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 for water supply service application. 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 specifications 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 water supply service applications.