



**American Water Works
Association**

The Authoritative Resource on Safe WaterSM

ANSI/AWWA B303-05
(Revision of ANSI/AWWA B303-00)

AWWA Standard

Sodium Chlorite



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AWWA Standard

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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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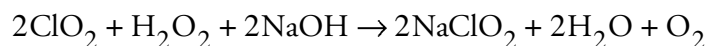
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Foreword

This Foreword is for information only and is not a part of ANSI/AWWA B303.

I. Introduction.

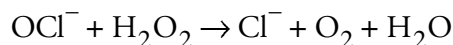
I.A. *Background.* Sodium chlorite, NaClO_2 , is made by the partial reduction of sodium chlorate to chlorine dioxide and the chlorine dioxide's subsequent conversion to sodium chlorite in an alkaline solution in the presence of hydrogen peroxide. An excess of both peroxide and caustic is present to ensure complete reaction as follows:



Under unfavorable conditions, ClO_2 is also known to dissociate to chlorite and chlorate as follows:



Any chlorine present would be in the hypochlorite form because of the strong alkaline conditions. Any chlorate ion so formed is recycled through the process to optimize recovery of sodium chlorite. Hypochlorite will react with hydrogen peroxide to yield chloride as follows:



Because there is no source of ammonia or nitrogen in the process, chloramines will not be present as an impurity.

Sodium chlorite is a dry flaked salt, which, because of its powerful oxidizing nature, is shipped in steel drums bearing Department of Transportation (DOT) Yellow (Class 5.1) oxidizer labels. Dry flaked material is formulated by mixing sodium chlorite solutions with stabilizing salts in solution prior to either drying or filtering. The drying or filtering may be coincidental with spraying under atomizing conditions to achieve particle uniformity for flaking characteristics. As marketed in the solid form, sodium chlorite contains approximately 80 percent by weight sodium chlorite; in the aqueous form, it contains approximately 40 percent or less by weight sodium chlorite. Technical sodium chlorite is a white flaked salt with a density of

approximately 56 lb/ft³ (0.90 g/cc). Some material may have a tint of orange, depending on the iron content. Sodium chlorite is stable when sealed or in solution but can ignite in the presence of organic materials. For this reason, the solution should not be allowed to dry out on floors but should be hosed down with minimum splashing.

Sodium chlorite dissolves easily in water at ordinary temperatures to form a pale-yellow solution. This solution is chemically stable under ordinary temperature and pressure conditions. Solutions above 25–30 percent weight per weight (w/w) may crystallize at moderate ambient temperatures. Crystallization temperatures may vary due to solutions originating either from dilution of slurried or dried materials.

Sodium chlorite used for the on-site production of chlorine dioxide for use as a disinfectant in the treatment of drinking water or for pesticidal use in processing plant-flume water, sewage treatment, slime control in paper mills, and bacteria control in oil wells requires US Environmental Protection Agency (USEPA) registration. Sodium chlorite to be sold and used for drinking water treatment must be registered under a label or labels indicating these uses.

I.B. History. The original ANSI/AWWA Standard for Sodium Chlorite was prepared by Committee 7440P. The standard was approved as tentative on Jan. 25, 1965, and made a standard by the AWWA Board of Directors on June 1, 1967. The standard was designated ANSI/AWWA B303-67.

The AWWA Standards Committee on Chlorine, Chlorine Compounds, and Related Alkalies prepared the 1988 edition, which was approved by the AWWA Board of Directors on June 19, 1988. The AWWA Standards Committee on Disinfectants prepared the 1995 edition, which was approved by the AWWA Board of Directors on June 17, 1995. ANSI/AWWA B303-00 was approved on June 11, 2000. This edition was approved on Jan. 16, 2005.

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.

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 B303 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 greater 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 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.