



American Water Works Association
6666 W. Quincy Ave., Denver, CO 80235 (303) 794-7711

AWWA B303a(2)-97
Addendum to
ANSI/AWWA B303-95
Standard
for
Sodium Chlorite

(Approved by the AWWA Board of Directors on Feb. 2, 1997.)

P. 3, Sec. 4.3.2.7, change the allowable level of sodium chlorate from 1.0 percent to 4.0 percent. Section 4.3.2.7 will then read as follows:

4.3.2.7 Sodium chlorate, 4.0 percent.

This page intentionally blank.

American Water Works Association

ANSI/AWWA B303-95

(Revision of ANSI/AWWA B303-88)



AWWA STANDARD
FOR
SODIUM CHLORITE



Effective date: April 1, 1996.

First edition approved by AWWA Board of Directors June 1, 1967.

This edition approved June 17, 1995.

Approved by American National Standards Institute Jan. 12, 1996.

AMERICAN WATER WORKS ASSOCIATION

6666 West Quincy Avenue, Denver, Colorado 80235

Copyright (C) 1998 American Water Works Association, All Rights Reserved.

AWWA Standard

This document is an American Water Works Association (AWWA) standard. It is not a specification. AWWA standards describe minimum requirements and do not contain all of the engineering and administrative information normally contained in specifications. The AWWA standards usually contain options that must be evaluated by the user of the standard. Until each optional feature is specified by the user, the product or service is not fully defined. AWWA publication of a standard does not constitute endorsement of any product or product type, nor does AWWA test, certify, or approve any product. The use of AWWA standards is entirely voluntary. AWWA standards are intended to represent a consensus of the water supply industry that the product described will provide satisfactory service. When AWWA revises or withdraws this standard, an official notice of action will be placed on the first page of the classified advertising section of *Journal AWWA*. The action becomes effective on the first day of the month following the month of *Journal AWWA* publication of the official notice.

American National Standard

An American National Standard implies a consensus of those substantially concerned with its scope and provisions. An American National Standard is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an American National Standard does not in any respect preclude anyone, whether that person has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. American National Standards are subject to periodic review, and users are cautioned to obtain the latest editions. Producers of goods made in conformity with an American National Standard are encouraged to state on their own responsibility in advertising and promotional materials or on tags or labels that the goods are produced in conformity with particular American National Standards.

CAUTION NOTICE: The American National Standards Institute (ANSI) approval date on the front cover of this standard indicates completion of the ANSI approval process. This American National Standard may be revised or withdrawn at any time. ANSI procedures require that action be taken to reaffirm, revise, or withdraw this standard no later than five years from the date of publication. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute, 11 W. 42nd St., New York, NY 10036; (212) 642-4900.

Copyright © 1996 by American Water Works Association
Printed in USA

Committee Personnel

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

Robert D. Harriger, *Chair*
Gary F. Trojak, *Vice-Chair*

Consumer Members

B.S. Aptowicz, Philadelphia Water Department, Philadelphia, Pa.	(AWWA)
J.B. Breitenstein, Fort Lauderdale Utilities Department, Fort Lauderdale, Fla.	(AWWA)
H.F. Hanson, Hackensack Water Company, Harrington Park, N.J.	(AWWA)
J.T. Harvey, Little Rock Municipal Water Works, Little Rock, Ark.	(AWWA)
D.J. Hilmoie, Seattle Water Department, Seattle, Wash.	(AWWA)
J.C. Jenkins, City of Adrian, Adrian, Mich.	(AWWA)
A.A. Khan, Pepsico, Arlington, Texas	(AWWA)
W.E. Neuman, American Waterworks Service Company, Voorhees, N.J.	(AWWA)
H.L. Plowman Jr., Philadelphia Suburban Water, Media, Pa.	(AWWA)
Stephen Poole, Edmonton Public Works, Edmonton, Alta.	(AWWA)
D.L. Saenz, Los Angeles Water and Power, Sylmar, Calif.	(AWWA)
A.T. Segars, Miami-Dade Water and Sewer Department, Hialeah, Fla.	(AWWA)

General Interest Members

E.E. Baruth,* Staff Liaison Engineer, AWWA, Denver, Colo.	(AWWA)
P.E. Cote, Whitman & Howard Inc., South Portland, Maine	(AWWA)
J.E. Dyksen,* Council Liaison, Malcolm Pirnie Inc., Mahwah, N.J.	(AWWA)
R.D. Harriger, Eaglebrook Inc., Williamsburg, Va.	(AWWA)
H.E. Korab, Silver Spring, Md.	(AWWA)

Producer Members

D.J. Gates, Rio Linda Chemical Company, Citrus Heights, Calif.	(AWWA)
David Hildebrand, Vulcan Chemicals, Wichita, Kan.	(CI)
W.B. Huebner, Wallace & Tiernan Inc., Belleville, N.J.	(AWWA)
P.A. Ross, Dow Chemical USA, Freeport, Texas	(AWWA)
G.F. Trojak, The Chlorine Institute Inc., Washington, D.C.	(CI)

*Liaison, nonvoting

Contents

All AWWA standards follow the general format indicated subsequently. Some variations from this format may be found in a particular standard.

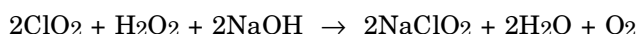
SEC.	PAGE	SEC.	PAGE
Foreword		5	Verification
I	Introduction..... v	5.1	Sampling 3
I.A	Background v	5.2	Test Procedures—General 4
I.B	History..... vi	5.3	Test Procedure for Sodium Chlorite, Idometric Method..... 4
I.C	Acceptance..... vi	5.4	Test Procedure for Sodium Hydroxide 6
II	Special Issues..... vii	5.5	Test Procedure for Sodium Carbonate 6
II.A	Handling, Storage, and Safety Precautions vii	5.6	Test Procedure for Sodium Chloride 6
III	Use of This Standard viii	5.7	Test Procedure for Sodium Sulfate 7
III.A	Purchaser Options and Alternatives..... viii	5.8	Test Procedure for Arsenic 7
III.B	Modification to Standard viii	5.9	Test Procedure for Sodium Nitrate 8
IV	Major Revisions viii	5.10	Test Procedure for Sodium Chlorate 8
V	Comments viii	5.11	Rejection 9
Standard		6	Delivery
1	General	6.1	Marking..... 10
1.1	Scope 1	6.2	Packaging and Shipping 10
1.2	Purpose..... 1	6.3	Affidavit of Compliance..... 11
1.3	Application 1	Figure	
2	References 1	1	Crystallization Temperature Sodium Chlorite Solutions 3
3	Definitions 2		
4	Requirements		
4.1	Physical Requirements..... 2		
4.2	Chemical Requirements 2		
4.3	Impurities..... 2		

Foreword

This foreword is for information only and is not a part of AWWA B303.

I. Introduction

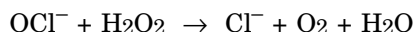
I.A. *Background.* Sodium chlorite is made by the partial reduction of sodium chlorate to chlorine dioxide and the chlorine dioxide's subsequent conversion to sodium chlorite in an alkaline solution in the presence of hydrogen peroxide. An excess of both peroxide and caustic is present to ensure complete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



Under unfavorable conditions, ClO_2 is also known to disproportionate 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 an Interstate Commerce Commission (ICC) yellow label classification. 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 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 is very combustible 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 conditions of temperature and pressure. 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. Thirty-seven percent aqueous solutions may crystallize at ambient room temperatures under some circumstances.

The use of sodium chlorite for the on-site production of chlorine dioxide for use as a disinfectant in the treatment of drinking water or for processing plant-flume water, sewage treatment, slime control in paper mills, and bacteria control in oil