



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

AWWA B202a-97
Addendum to
ANSI/AWWA B202-93
Standard
for
Quicklime and Hydrated Lime

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

P. v, Sec. I.C, replace with the following:

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, ANSI†/NSF‡ 60, Drinking Water Treatment Chemicals

*Persons in Canada, Mexico, and non-North American countries should contact the appropriate authority having jurisdiction.

†American National Standards Institute, 11 W. 42nd St., New York, NY 10036.

‡NSF International, 3475 Plymouth Rd., Ann Arbor, MI 48106.

—Health Effects, and ANSI/NSF 61, Drinking Water System Components—Health Effects.

Various certification organizations may be involved in certifying products in accordance with ANSI/NSF 60 (61). 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.

Appendix A, “Toxicology Review and Evaluation Procedures,” to ANSI/NSF 60 (61) 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 Appendix A procedures may not always be identical, depending on the certifier.

AWWA B202-93 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. 4.3.2 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 ANSI/NSF Standard 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.

P. viii, Sec. III.A, add the following to the list of items that should be covered in the purchaser’s specifications:

10. Whether the recommended compliance with ANSI/NSF Standard 60, Drinking Water Treatment Chemicals—Health Effects, is to be required. If this certification is to be required, the purchaser’s specifications shall read, “This material *shall* be certified as suitable for contact with or treatment of drinking water by an accredited certification organization in accordance with ANSI/NSF Standard 60, Drinking Water Treatment Chemicals—Health Effects.”

P. 3, Sec. 4.3, insert the subsection heading 4.3.1 General at the beginning of the existing paragraph under Sec. 4.3 and add a new subsection 4.3.2 as follows:

4.3.2 Product certifications. Quicklime and hydrated lime are direct additives used in the treatment of potable water. These materials should be certified as suitable for contact with or treatment of drinking water by an accredited certification organization in accordance with ANSI/NSF Standard 60, Drinking Water Treatment Chemicals—Health Effects. Evaluation shall be accomplished in accordance with requirements that are no less restrictive than those listed in ANSI/NSF Standard 60. Certification shall be accomplished by a certification organization accredited by the American National Standards Institute.

American Water Works Association

ANSI/AWWA B202-93

(Revision of ANSI/AWWA B202-88)



AWWA STANDARD
FOR
QUICKLIME AND HYDRATED LIME



Effective date: Mar. 1, 1994.

First edition approved by AWWA Board of Directors Sept. 28, 1954.

This edition approved June 6, 1993.

Approved by American National Standards Institute Dec. 14, 1993.

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 © 1994 by American Water Works Association
Printed in USA

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:

Brannon H. Wilder, *Chair*

Consumer Members

C.R. Dugan, Board of Water & Light, Lansing, Mich.	(AWWA)
A.A. Khan, Pepsico, Arlington, Texas	(AWWA)
G.C. Rosati, City of Mankato, Mankato, Minn.	(AWWA)
A.T. Segars, Miami-Dade Water & Sewer Authority, Hialeah, Fla.	(AWWA)
J.C. Thurrott, City of Daytona Beach, Daytona Beach, Fla.	(AWWA)
D.A. Visintainer, St. Louis Water Division, St. Louis, Mo.	(AWWA)
B.H. Wilder, Coca-Cola USA, Atlanta, Ga.	(AWWA)

General Interest Members

E.E. Baruth,* Standards Engineer Liaison, AWWA, Denver, Colo.	(AWWA)
A.R. Finney Jr., Clearwater, Fla.	(AWWA)
C.A. Froman Jr.,* Council Liaison, Gary Hobart Water Corporation, Gary, Ind.	(AWWA)
H.E. Korab, Society of Soft Drink Technologists, Brentwood, Md.	(SSDT)
W.H. Plautz, Consoer Townsend & Associates Inc., Chicago, Ill.	(AWWA)
M.T. Redman, National Soft Drink Association, Washington, D.C.	(AWWA)
C.L. Truss Jr., Operator Training Committee of Ohio Inc., Columbus, Ohio	(AWWA)
C.S. Wilder, Camp Dresser & McKee Inc., Atlanta, Ga.	(AWWA)

Producer Members

H.L. Francis, National Lime Association, Arlington, Va.	(NLA)
J.A. Gall, Dow Chemical, U.S.A., Midland, Mich.	(AWWA)
W.B. Huebner, Wallace & Tiernan Inc., Belleville, N.J.	(AWWA)
J.M. Shepard, General Chemical Corporation, Claymont, Del.	(AWWA)
C.L. Tramel, Occidental Chemical Corporation, Niagara Falls, N.Y.	(AWWA)

*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		2	References 1
I	Introduction..... v	3	Definitions 2
I.A	Background v	4	Requirements
I.B	History..... v	4.1	Physical Requirements 2
I.C	Acceptance..... v	4.2	Chemical Requirements..... 3
II	Special Issues..... vi	4.3	Impurities..... 3
II.A	Calcium Oxide..... vi	5	Verification
II.B	Lime..... vii	5.1	Sampling 3
II.C	Magnesium and Insoluble Material vii	5.2	Test Procedures—General 5
II.D	Size and Marking vii	5.3	Available Calcium Oxide 5
II.E	Purchase Basis..... vii	5.4	Slaking Rate 7
III	Use of This Standard viii	5.5	Objectionable Insoluble Matter 10
III.A	Purchaser Options and Alternatives viii	5.6	Rejection..... 11
III.B	Modification to Standard viii	6	Delivery
IV	Major Revisions ix	6.1	Marking..... 12
V	Comments ix	6.2	Packaging and Shipping 12
Standard		6.3	Affidavit of Compliance..... 13
1	General	Figures	
1.1	Scope..... 1	1	Details of Equipment for Slaking-Rate Test 8
1.2	Purpose..... 1	2	Assembly of Apparatus for Slaking-Rate Test 9
1.3	Application 1		

Foreword

This foreword is for information only and is not a part of AWWA B202.

I. Introduction.

I.A. *Background.* Quicklime results from the calcination of limestone, shell, or equivalent, and consists of calcium oxide in natural association with a lesser amount of magnesium oxide. Hydrated lime is a very finely divided powder resulting from the hydration of quicklime with enough water to satisfy its chemical affinity. Both are commonly used in the treatment and softening of municipal and industrial water supplies.

I.B. *History.* AWWA B202 was first approved as tentative Sept. 9, 1952. It was made standard Sept. 28, 1954; and subsequently revised on Jan. 25, 1965; Jan. 30, 1977; Jan. 30, 1983; and June 19, 1988.

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 consortium included the American Water Works Association Research Foundation (AWWARF), the Conference of State Health and Environmental Managers (COSHEM), the American Water Works Association (AWWA), and the Association of State Drinking Water Administrators (ASDWA). The consortium is responsible for the cooperative effort of manufacturers, regulators, product users, and other interested parties that develop and maintain the NSF standards.

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

1. An advisory program formerly administered by USEPA, Office of Drinking Water, discontinued on Apr. 7, 1990.
2. Specific policies of the state or local agency.
3. Two standards developed under the direction of NSF, ANSI†/NSF‡ 60, Drinking Water Treatment Chemicals—Health Effects, and ANSI/NSF 61, Drinking Water System Components—Health Effects.
4. Other references, including AWWA standards, *Food Chemicals Codex*, *Water Chemicals Codex*,§ and other standards considered appropriate by the state or local agency.

Various certification organizations may be involved in certifying products in accordance with ANSI/NSF 60. Individual states or local agencies have authority to

*Persons in Canada, Mexico, and non-North American countries should contact the appropriate authority having jurisdiction.

†American National Standards Institute, 11 W. 42nd St., New York, NY 10036.

‡NSF International, 3475 Plymouth Rd., Ann Arbor, MI 48106.

§Both publications available from National Academy of Sciences, 2102 Constitution Ave. N.W., Washington, DC 20418.

accept or accredit certification organizations within their jurisdiction. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

Appendix A, "Toxicology Review and Evaluation Procedures," to ANSI/NSF 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 Appendix A procedures may not always be identical, depending on the certifier.

AWWA B202-93 does not address additives requirements. Thus, 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 all 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. Calcium Oxide. Many methods are available for evaluating the available calcium oxide in lime. Some give consistently low results, some are rather time-consuming, and some do not give reproducible results. The method included in this standard is reasonably rapid, reproducible, and gives results that are consistent with the available calcium oxide content obtained in use in water treatment. Other methods may be used but, in any case, the means of evaluation should be agreed on between the supplier and the purchaser at the time of purchase.

The method of analysis for available calcium oxide content presented in this standard has been found by many users to be satisfactory as a basis for the purchase of lime for water treatment. Usable results will be obtained by this method only if the acid is carefully standardized according to the instructions included in this standard and only if the procedure for the specified test is followed in exact detail.

Some water utility personnel still believe that a better evaluation of lime can be made and that more accurate results can be obtained by determining total calcium oxide (CaO). In addition to available calcium oxide, such an analysis determines calcium oxide present as calcium carbonate—a factor of little importance in water treatment. For those who prefer the total calcium oxide method, and for those who wish to make a complete analysis, the methods outlined in ASTM* C25, Standard Test Methods of Chemical Analysis of Limestone, Quicklime, and Hydrated Lime, are recommended.

The amount of available calcium oxide varies in limes from different geographic regions. Such factors as source of rock, manufacturing conditions, type of kiln, type of fuel, and even personnel have an effect on product quality. Because of the wide variation that is possible and because the cost of transportation is at times an appreciable portion of the price, purchase on a bonus-and-penalty basis is provided for in this foreword. The bonus-and-penalty clause may be waived by the purchaser, and available calcium oxide alone can be used as a basis for acceptance or rejection.

*American Society for Testing and Materials, 1916 Race St., Philadelphia, PA 19103.