

ANSI/AWWA **B602-25**
(Revision of ANSI/AWWA B602-17)

AWWA Standard



Copper Sulfate

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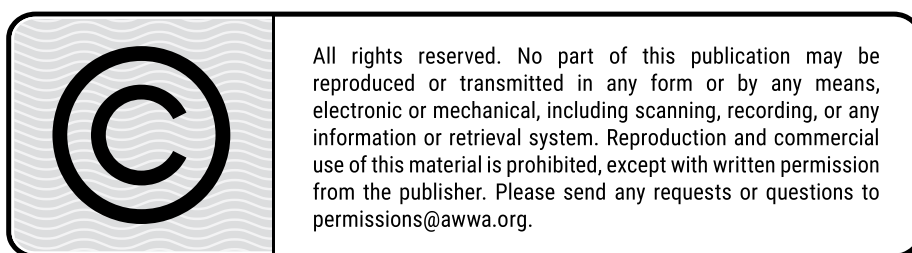
AWWA Standard

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA B602.*

I. Introduction.

I.A. *Background.* Copper sulfate is used primarily as an algicide in potable water. It is available both as a commercial product and as a byproduct of the printed-circuit-board industry.

The commercial product is produced by reacting a solution of sulfuric acid with copper metal, cupric oxide, or basic cupric copper salts. Copper sulfate crystals form in the concentrated solution and grow in size in a characteristic crystalline shape. A broad range of crystal sizes is produced by controlling the length of crystallization time or by fracturing the larger crystals and screening to the desired sizes.

The byproduct copper sulfate is generally produced in printed-circuit-board shops, where proprietary etchant solutions are used to dissolve copper from printed circuit boards. If a sulfuric-acid-based etchant solution is used, it becomes saturated with copper ions and sulfate ions. Small crystals of copper sulfate form and are mechanically removed.

The presence of various impurities and their amounts in the copper sulfate depend on the impurities present in the starting materials or the solution in which the crystals grow.

The selection of crystal size for use in algae control depends on a number of factors, including algae type and growth habits as well as application method and equipment to be used. The application rate will depend on algae type and species as well as water characteristics, including pH, alkalinity and hardness, presence of suspended solids, density of algae growth, and water temperature. For potable water, the US Environmental Protection Agency (USEPA) has set a tolerance for the maximum residue of copper at 1 ppm, or equal to 4 ppm as copper sulfate pentahydrate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) (40 CFR[†] 185.1200), which also is the secondary standard under the US National Drinking Water Regulations. USEPA, Office of Drinking Water, has set the action level at 1.3 mg/L copper (Cu) as the National Primary Drinking Water Standard. Under most use conditions, the effective dose is considerably less than the established residue tolerance.

* American National Standards Institute, 1180 Avenue of the Americas, 10th Floor, New York, NY 10036.

[†] *Code of Federal Regulations*. Washington, DC: US Government Printing Office, Superintendent of Documents.

I.B. *History.* This standard was first approved as tentative on Sept. 15, 1957. It was developed by the AWWA Water Purification Division and also was submitted for review to producers and consumers whose comments were then considered by a referee. It was approved as a standard without revision on Jan. 26, 1959, and published as AWWA B602-59.

This standard was revised by the AWWA Standards Committee on Taste and Odor Control Chemicals. The dates of approval and numerical designation of past editions of ANSI/AWWA B602 are as follows:

<i>Designation</i>	<i>Date of Approval</i>
B602-57T	Sept. 15, 1957
B602-59	Jan. 26, 1959
B602-80	Jan. 28, 1980
B602-86	Jan. 27, 1986
B602-91	Jan. 27, 1991
B602-97	Feb. 2, 1997
B602-02	Jan. 20, 2002
B602-08	Jan. 27, 2008
B602-17	Jan. 14, 2017

This edition was approved by the AWWA Board of Directors on Mar. 27, 2025.

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.

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 four standards developed under the direction of NSF: NSF[§]/ANSI/CAN[¶] 60, Drinking Water Treatment Chemicals—

[‡] Persons outside the United States should contact the appropriate authority having jurisdiction.

[§] NSF International, 789 North Dixboro Road, Ann Arbor, MI 48105.

[¶] Standards Council of Canada, 55 Metcalfe Street, Suite 600, Ottawa, ON K1P 6L5 Canada.