

American Water Works Association

ANSI/AWWA B452-98

(Revision of ANSI/AWWA B452-90)



AWWA STANDARD
FOR
EPI-DMA POLYAMINES



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AMERICAN WATER WORKS ASSOCIATION

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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		3	Definitions 2
I	Introduction..... vii	4	Requirements
I.A	Background..... vii	4.1	Description 2
I.B	History vii	4.2	Qualifications 2
I.C	Acceptance viii	4.3	Chemical and Physical Requirements..... 3
II	Special Issues viii	4.4	Impurities..... 3
II.A	Safety viii	4.5	Additives Requirements 4
II.B	Spill Control ix	4.6	Product Certifications 4
III	Use of This Standard..... ix	5	Verification
III.A	Development of a Purchase Specification ix	5.1	General..... 4
III.B	Modification to Standard..... xi	5.2	Sampling 4
IV	Major Revisions..... xi	5.3	Visual Inspection 5
V	Comments xi	5.4	Test Procedures 5
		5.5	Rejection 8
Standard		6	Delivery
1	General	6.1	Marking..... 8
1.1	Scope 1	6.2	Packaging and Shipping 9
1.2	Purpose 1	6.3	Affidavit of Compliance..... 9
1.3	Application..... 1		
2	References 1		

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA B452.

I. Introduction.

I.A. *Background.* Chemical clarification methods have been used to improve the quality of drinking water supplies since the late 1880s. In 1967, the first completely synthetic organic polyelectrolyte was accepted by the US Public Health Service for use in treating potable water. The responsibility for accepting additives for drinking water treatment was subsequently assumed by the US Environmental Protection Agency (USEPA) and administered by their Office of Drinking Water as an advisory program. The USEPA's acceptance was made by the specific name of the suppliers' product and not by generic type. Epichlorohydrin dimethylamine (EPI-DMA) polyamines (CAS* Nos. 25988-97-0 and 42751-79-1) are one of several types of synthetic organic polyelectrolytes that were accepted for use in potable water treatment under this program, which was discontinued in 1990.

EPI-DMA polyamines are a family of synthetic organic polyelectrolytes (also called polymers or coagulants) used in water treatment to improve the performance of some unit operations in the treatment process, most often by increasing the extent or rate of liquid-solids separation. EPI-DMA polyamines are principally made from two monomers, epichlorohydrin (EPI) and dimethylamine (DMA). EPI-DMA polyamines have a cationic charge, a high relative charge density, and a low relative molecular weight. Because of this low molecular weight, they are manufactured and sold in solution form.

The important concepts to remember regarding EPI-DMA polyamines include the following:

1. EPI-DMA polyamines are similar to polyDADMAC polymers (ANSI/AWWA B451) in their use, handling, storage, and solution preparation.
2. EPI-DMA polyamines are different from polyacrylamide (PAM) polymers (ANSI/AWWA B453) in their use, handling, storage, and solution preparation.
3. EPI-DMA polyamines are supplied in a solution form that may be referred to as liquids or aqueous solutions.
4. EPI-DMA polyamines are a family of polymers with a relatively constant charge type and charge density but with different molecular weights and degrees of branching.
5. The physical properties of EPI-DMA polyamines cannot usually be used to judge product performance. Only laboratory testing, pilot plant studies, or full plant trials can discern product efficacy.
6. EPI-DMA polyamines may contain inactive ingredients, such as salts, depending on the manufacturing method and formulation.

The user should consult the material safety data sheet (MSDS) for product composition information regarding any specific EPI-DMA polyamine product.

I.B. *History.* The AWWA Standards Council authorized development of this standard in 1979. The standard was developed by the AWWA Standards Committee on Polyelectrolytes and was approved by the AWWA Board of Directors on June 17, 1990. The second edition of this standard was approved on June 21, 1998.

*Chemical Abstracts Service, 2540 Olentangy River Rd., P.O. Box 3012, Columbus, OH 83210.

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—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. 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 B452-98 addresses additives requirements in Sec. 4.5 of the standard. The transfer of contaminants from chemicals to processed water or to residual solids is becoming a problem of greater concern. The language in Sec. 4.5 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 ANSI/NSF Standard 60, Drinking Water Treatment Chemicals—Health Effects. However, users of this standard may opt to make this certification a requirement for the product. 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. *Safety.* EPI–DMA polyamines are not considered to be toxic as household products nor primary skin irritants by the Consumer Product Safety Commission

*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 48113-0140.