



American Water Works
Association

AWWA B452a-07
Addendum to
ANSI/AWWA B452-06
Standard
for

EPI-DMA Polyamines

(Approved by the AWWA Board of Directors on June 24, 2007.)

Sec. III.A, added the following:

17. Whether alternative security measures have been adopted to replace or augment the security measures set out in Sec. 6.2.1 and 6.2.2.

18. Whether the purchaser will reject product from containers or packaging with missing or damaged seals. The purchaser may reject product from bulk containers or packages with missing or damaged seals unless the purchaser's tests of representative samples, conducted in accordance with Sec. 5.2, 5.3, and 5.4, demonstrate that the product meets specifications. Failure to meet specifications or the absence of, or irregularities in, seals may be sufficient cause to reject the shipment.

Section 3, added the following:

7. *Tamper-evident packaging:* Packaging having one or more indicators or barriers to entry which, if breached or missing, can reasonably be expected to provide visible evidence to the purchaser that tampering has occurred. The tamper-evident

features of the packaging shall be designed to and shall remain intact when handled in a reasonable manner during manufacture, storage, shipment, and delivery to the purchaser. Properly constructed, labeled, and closed multiwall paper bags and super-sacks constitute two forms of tamper-evident packaging.

Section 6, added the following:

6.2.1 *Security requirements for nonbulk shipments.* Packaged product shall be stored, shipped, and delivered in tamper-evident packaging as defined in Section 3, or an alternative method or methods may be agreed upon by the manufacturer and purchaser that would provide a reasonable assurance of protection against tampering.

6.2.2 *Security requirements for bulk shipments.* Bulk quantities of product shall be secured by employing one of the following security measures (or a combination of measures):

6.2.2.1 *Seals.* Bulk quantities of product may be sealed with a uniquely numbered tamper-evident seal(s). The seal numbers shall be recorded and disclosed on shipping documents, such as the bill of lading. Seals shall be inspected on receipt of product by the purchaser and evidence of tampering or removal should be reported to the carrier and supplier.

6.2.2.2 *Chain of custody.* A continuous chain of custody may be maintained between the manufacturer and the purchaser during storage and shipment if so specified by the purchaser.

6.2.2.3 *Alternative method.* An alternative method or methods agreed upon by the manufacturer and purchaser may be implemented that would provide reasonable assurance of protection against tampering.



**American Water Works
Association**

The Authoritative Resource on Safe Water®

ANSI/AWWA B452-06
(Revision of ANSI/AWWA B452-98)

AWWA Standard

EPI-DMA Polyamines



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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 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 the United States. 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. 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, low relative molecular weight and 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, Poly [Diallyldimethylammonium Chloride]) in their use, handling, storage, and solution preparation.
2. EPI-DMA polyamines are different from polyacrylamide (PAM) polymers (ANSI/AWWA B453, Polyacrylamide) in their use, handling, storage, and solution preparation.
3. EPI-DMA polyamines are supplied in an aqueous solution form that may be referred to as liquids or aqueous solutions.

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