



**SLOVENSKI STANDARD**  
**oSIST prEN 1409:2022**  
**01-julij-2022**

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**Kemikalije, ki se uporabljajo za pripravo pitne vode - Poliamini**

Chemicals used for water treatment intended for human consumption - Polyamines

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Polyamine

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Polyamines

**Ta slovenski standard je istoveten z: prEN 1409**

**ICS:**

13.060.20	Pitna voda	Drinking water
71.100.80	Kemikalije za čiščenje vode	Chemicals for purification of water

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## Chemicals used for water treatment intended for human consumption - Polyamines

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Polyamines

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Polyamine

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 164.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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**prEN 1409:2022 (E)**

## **European foreword**

This document (prEN 1409:2022) has been prepared by Technical Committee CEN/TC 164 “Water supply”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1409:2008.

In comparison with the previous edition EN 1409:2008, the following technical modifications have been made:

- a) updating in line with current legislation;
- b) modification of 8.3 on transportation regulations and labelling, adding the sentence “The user must be aware of the incompatibilities between transported products.”;
- c) modification of 8.4 on marking. The requirements of marking are also applied to the accompanying documents.

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## Introduction

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by this document:

- 1) this document provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA;
- 2) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

NOTE Conformity with this document does not confer or imply acceptance or approval of the product in any of the Member States of the EU or EFTA. The use of the product covered by this document is subject to regulation or control by national authorities.

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https://standards.iteh.ai/catalog/standards/sist/0e6e4549-72d6-4bbe-8d6d-f09313cf3347/osist-pren-1409-2022](https://standards.iteh.ai/catalog/standards/sist/0e6e4549-72d6-4bbe-8d6d-f09313cf3347/osist-pren-1409-2022)

## prEN 1409:2022 (E)

## 1 Scope

This document is applicable to polyamines used for treatment of water intended for human consumption. It describes the characteristics of polyamines and specifies the requirements and the corresponding test methods for polyamines. It gives information on their use in water treatment.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 3696:1995, *Water for analytical laboratory use — Specification and test methods (ISO 3696:1987)*

ISO 3165:1976, *Sampling of chemical products for industrial use — Safety in sampling*

ISO 6206:1979, *Chemical products for industrial use — Sampling — Vocabulary*

## 3 Terms and definitions

No terms and definitions are listed in this document.

## 4 Description

### 4.1 Identification

#### 4.1.1 Chemical name(s)

(di)methylamine - epichlorohydrin resin. [oSIST prEN 1409:2022](#)

#### 4.1.2 Synonym(s) or common name(s)

— Polyamine;

— Polyalkylene amine;

— Polyquaternary salts.

NOTE The more general terms: “quaternary ammonium polyelectrolyte”, “cationic polymer”, “cationic polyelectrolyte”, “polymer coagulant” and “cationic flocculant” are used, but can also cover other chemicals referred to in other European standards.

#### 4.1.3 Relative molecular mass

Typically in the range of 10 000 to 1 million Daltons.

#### 4.1.4 Empirical formula

—  $-(C_aH_bN_cO_dCl_e)_n-$

where

$n$  is variable depending on the product;

$a, b, c, d$  and  $e$  are variable depending on the reactants used and on their molar ratios.



#### 4.1.5 Chemical formula

The following formula (Figure 1) illustrates typical structures formed when dimethylamine is reacted with epichlorohydrin.

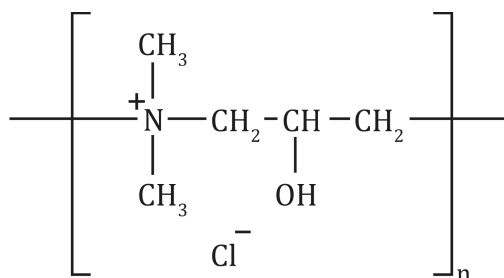


Figure 1 — Dimethylamine reaction with epichlorohydrin

where

$n$  is variable depending on the product.

#### 4.1.6 CAS Registry Numbers <sup>1)</sup>

— 25988-97-0

— 68583-79-1

— 42751-79-1

— 31568-35-1

— 52722-38-0

— 42751-81-5

— 68409-70-1

NOTE This list is not exhaustive: polyamines with other CAS numbers are also used for water treatment.

#### 4.1.7 EINECS reference <sup>2)</sup>

The conformity of polymers to EINECS is assessed on the basis of the monomers of which they are composed. Thus, EINECS reference numbers do not exist for polymers.

Polymers are exempt from registration according to EU Regulation 1907/2006/EC (see [3]), *REACH*.

Monomer substance(s) and any other substance(s) in the form of monomeric units and chemically bound substance(s) may have to be REACH registered according to Article 6 of EU Regulation 1907/2006/EC.

<sup>1)</sup> Chemical Abstracts Service Registry Number.

<sup>2)</sup> European Inventory of Existing Commercial Chemical Substances.

**prEN 1409:2022 (E)****4.2 Commercial form**

Polyamines as specified in this standard are aqueous solutions, the concentration (active content) of which is approximately 20 percent to 50 percent mass fraction (see 7.2.2.2).

For additional information on polyamines, see Annex A.

**5 Physical properties****5.1 Appearance**

The product is a clear, colourless to amber-coloured liquid.

**5.2 Density**

The density of the solution depends on the concentration. A typical value is 1,16 g/ml for 50 % mass fraction polyamine at 20 °C.

**5.3 Solubility**

The product is miscible with water at all concentrations.

**5.4 Vapour pressure**

A typical value is 2,4 kPa for 50 % mass fraction polyamine at 20 °C

**5.5 Boiling point at 100 kPa<sup>3)</sup>**

A typical value is 101 °C for 50 % mass fraction polyamine.

**5.6 Freezing point**

A typical value is - 7 °C for 50 % mass fraction polyamine.

**5.7 Specific heat**

A typical value is 3,13 kJ/kg K for 50 % mass fraction polyamine.

**5.8 Viscosity dynamic**

The viscosity is dependent on molecular mass and active content. A typical value is 400 mPa.s for 50 % mass fraction polyamine at 20 °C.

**5.9 Critical temperature**

Not applicable.

**5.10 Critical pressure**

Not applicable.

**5.11 Physical hardness**

Not applicable.

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<sup>3)</sup> 100 kPa = 1 bar.

## 6 Chemical properties

### 6.1 General

Polyamines are a non-hazardous material and not intrinsically reactive. However, in common with many other organic compounds, a strong exothermic reaction will occur if it is brought into contact with strong acids or oxidizing agents.

NOTE In dilute solution there can be a reaction with, or destruction by, some of the disinfection and oxidizing agents used in water treatment.

### 6.2 Purity criteria

#### 6.2.1 General

This document specifies the minimum purity requirements for polyamines used for the treatment of water intended for human consumption. Limits are given for impurities commonly present in the product. Depending on the raw material and the manufacturing process other impurities may be present and, if so, this shall be notified to the user and when necessary to relevant authorities.

Limits have been given for impurities and chemical parameters where these are likely to be present in significant quantities from the current production process and raw materials. If the production process or raw materials lead to significant quantities of impurities, by-products or additives being present, this shall be notified to the user.

Users of this product should check the national regulations in order to clarify whether it is of appropriate purity for treatment of water intended for human consumption, taking into account raw water quality, required dosage and contents of other impurities and additives used in the product not stated in the product standard.

#### 6.2.2 Impurities and main by-products

The product shall conform to the requirements specified in Table 1.

**Table 1 — Impurity/by - product**

Impurity / by-product	Limits (mg/kg of active product)
3-Monochloropropane-1,2-diol	40
1,3-Dichloro-2-propanol	40
2,3-Dichloro-1-propanol	40

Based on the raw materials and manufacturing process (see A.1), there are no significant concentrations of additional reactants or by-products which are relevant to the application of these products in drinking water treatment.

### 6.3 Composition of commercial product

The following requirements shall apply to polyamines:

- there shall be no visible insoluble gel or extraneous matter;
- pH shall be in the range 4 to 7.

NOTE Various parameters can be checked as part of assessment of product quality (see 7.2.2).