SLOVENSKI STANDARD
SIST EN 882:2016

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Nadomešča:
SIST EN 882:2005

Kemikalije, ki se uporabljajo za pripravo pitne vode - Natrijev aluminat

Chemicals used for treatment of water intended for human consumption - Sodium aluminate

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumaluminat

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

Ta slovenski standard je istoveten z: **EN 882:2016**

ICS:

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

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EUROPEAN STANDARD

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EN 882

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ICS 71.100.80

Supersedes EN 882:2004

English Version

Chemicals used for treatment of water intended for human consumption - Sodium aluminate

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This European Standard was approved by CEN on 18 January 2016.

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

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Contents

Page

European foreword

This document (EN 882:2016) has been prepared by Technical Committee CEN/TC 164 “Water supply”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2016, and conflicting national standards shall be withdrawn at the latest by September 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 882:2004.

Significant technical differences between this edition and EN 882:2004 are as follows:

a) addition of chemical names for aluminium sodium dioxide and for aluminium sodium tetrahydroxide;

b) replacement of warning and safety precautions notes by labelling according to Regulation (EC) No 1272/2008.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

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

a) 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;

b) 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.

1 Scope

This document is applicable to sodium aluminate used for treatment of water intended for human consumption. It describes the characteristics and specifies the requirements of sodium aluminate and refers to the corresponding analytical methods. It gives information for its use in water treatment. It also determines the rules relating to safe handling and use of sodium aluminate (see Annex B).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1302, *Chemicals used for treatment of water intended for human consumption - Aluminium-based coagulants - Analytical methods*

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

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

ISO 8213, *Chemical products for industrial use — Sampling techniques — Solid chemical products in the form of particles varying from powders to coarse lumps*

3 Description

3.1 Identification

3.1.1 Chemical name

Aluminium sodium oxide

Aluminium sodium dioxide

Aluminium sodium tetrahydroxide

3.1.2 Synonym or common name

Sodium aluminate

3.1.3 Relative molecular mass

82 for $NaAlO_2$.

3.1.4 Empirical formula

$NaAlO_2$ 0,1 $Na_2O.nH_2O$ (*n* varies from 0,3 to 0,4)

3.1.5 Chemical formula

$NaAlO_2$

3.1.6 CAS Registry Number [1)]

1302-42-7

12251-53-5

3.1.7 EINECS reference [2)]

215-100-1

235-487-0

3.2 Commercial form

Sodium aluminate is available as solids (powder or granules) or solutions.

3.3 Physical properties

3.3.1 Appearance

The product is a white powder or granules or colourless to yellow liquid.

3.3.2 Density

The absolute density of solids products is 2,35 g/cm^3.

The tamped bulk density (powder) is between 1 g/cm^3 to 1,2 g/cm^3 (depends on grain size).

The density of solutions is 1,5 g/ml for a solution containing 10 % of active matter, expressed as mass fraction of aluminium in the product (10 % Al).

3.3.3 Solubility

Sodium aluminate is soluble in water to yield solutions of up to 12,7 % Al at 20 °C (concentration higher than 400 g/l).

NOTE Depending on temperature and degree of dilution, solutions of sodium aluminate can hydrolyse and form a precipitate.

3.3.4 Vapour pressure

— Solid not applicable

— Solution not known

3.3.5 Boiling point at 100 kPa [3)]

— Solid not applicable

— Solution not known

3.3.6 Melting or crystallization point

— Solid melting point: approximately 1 650 °C

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1) Chemical Abtracts Service Registry Number.

2) European inventory of Existing Commercial chemicals Substances.

3) 100 kPa = 1 bar

— Solutiontypical values for crystallization point range between - 15 °C and - 25 °C

3.3.7 Specific heat

Not known

3.3.8 Viscosity (dynamic)

Typical values of dynamic viscosity for sodium aluminate solutions, containing 10 % Al and 12,7 % Al are given in Table 1.

Table 1 — Viscosity

Temperature °C	Viscosity mPa.s	
	10 % Al	12,7 % Al
- 5	1 250	15 000
0	650	7 000
5	360	2 850
10	200	1 650
15	140	900
20	120	560

3.3.9 Critical temperature

Not applicable

3.3.10 Critical pressure

Not applicable

3.3.11 Physical hardness

— Solid not known

— Solutionnot applicable

3.4 Chemical properties

Sodium aluminate solutions are highly alkaline. Their solutions hydrolyse and form a precipitate of aluminium hydroxide when diluted beyond a particular level or neutralized.

NOTE Since aluminium compounds are amphoteric in nature, the solubility of aluminium depends on the pH value and it is advised to use the product within an appropriate pH range.

When dissolved in drinking water, calcium is partially precipitated with aluminium hydroxide.

4 Purity criteria

4.1 General

This document specifies the minimum purity requirements for sodium aluminate 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.

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, contents of other impurities and additives used in the product not stated in this document.

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 leads to significant quantities of impurities, by-products or additives being present, this shall be notified to the user.

4.2 Composition of commercial product

The concentration of active matter in the commercial product, expressed as a mass fraction of aluminium in the product (Al %) shall be within ± 3 % of the manufacturer's declared values.

NOTE The concentration of water-soluble aluminium in commercial product varies. Typical values are given here below:

	Al % of the product
Solid forms	27,5 to 29,1
Solution forms	10 to 13,2

4.3 Impurities and main by-products

The product shall conform to the requirements specified in Table 2.

Table 2 — Limits of impurities

Impurity	**Limit** g/kg of Al
Iron (Fe) max.	0,8
Insoluble matter (solid product) max	8
NOTE The value quoted for iron is both iron (II) and iron (III). Iron can be present as a component of the product and will usually be removed in the treatment process.	

4.4 Chemical parameters

The product shall conform to the requirements specified in Table 3.