SLOVENSKI STANDARD
SIST EN 883:1999

01-april-1999

Kemikalije, ki se uporabljajo za pripravo pitne vode – Polialuminijev klorid hidroksid in polialuminijev klorid hidroksid sulfat

Chemicals used for treatment of water intended for human consumption - Polyaluminium chloride hydroxide and Polyaluminium chloride hydroxide sulfate

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Polyaluminiumchloridhydroxid und Polyaluminiumchloridhydroxid Sulfat

Produits chimiques utilisés pour le traitement de l'eau destinée a la consommation humaine - Polyhydroxychlorure d'aluminium et Polyhydroxychlorosulfate d'aluminium

Ta slovenski standard je istoveten z: **EN 883:1997**

ICS:

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

SIST EN 883:1999 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 883

February 1997

ICS 71.100.80

Descriptors: potable water, water treatment, chemical compounds, aluminium hydroxidechloridesulfate, description, physical properties, chemical properties, impurities, toxic substances, tests, labelling, storage, utilization

English version

Chemicals used for treatment of water intended for human consumption - Polyaluminium chloride hydroxide and Polyaluminium chloride hydroxide sulfate

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Polyhydroxychlorure d'aluminium et Polyhydroxychlorosulfate d'aluminium

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Polyaluminiumchloridhydroxid und Polyaluminiumchloridhydroxidsulfat

This European Standard was approved by CEN on 1997-01-17. 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart,36 B-1050 Brussels

Contents

Foreword

This European Standard 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 August 1997, and conflicting national standards shall be withdrawn at the latest by August 1997.

Ths European Standard was circulated for CEN Enquiry as two separate drafts, prEN 883 and prEN 884, which have now been combined.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland 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 standard :

1) this standard 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.

1 Scope

This European Standard describes the characteristics and specifies the requirements of polyaluminium chloride hydroxide and polyaluminium chloride hydroxide sulfate used for treatment of water intended for human consumption and gives reference to the analytical methods. It gives information on their use in water treatment.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate place in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

prEN 1302	Chemicals used for treatment of water intended for human consumption - Aluminium based coagulants - Analytical methods - purity classification
ISO 3165	Sampling of chemical products for industrial use - Safety in sampling
ISO 6206	Chemical products for industrial use - Sampling - Vocabulary

3 Description

3.1 Identification

A characteristic of these products is their high tendency to hydrolyse which restricts their use (see 3.3.3) ; this tendency results from the particular oligomeric or polymeric composition.

3.1.1 Chemical names

a) Polyaluminium chloride hydroxide

b) Polyaluminium chloride hydroxide sulfate

3.1.2 Synonym or common names

a) Polyaluminium chloride, PAC, PACl ; basic aluminium chloride, BAC.

NOTE : In French, the term "Polychlorure d'aluminium" is deprecated.

b) Polyaluminium chloride, PAC ; polyaluminium chloride sulfate, PACS.

3.1.3 Relative molecular mass

Variable (see 3.1.4).

3.1.4 Empirical formula

a) $Al(OH)_aCl_b$ with $(a + b) = 3$ and a greater than 1,05.

b) $Al(OH)_aCl_b(SO_4)_c$ with $(a + b + 2c) = 3$ and a greater than 1,05.

3.1.5 Chemical formula

Variable (see 3.1.4).

3.1.6 CAS Registry Number [1)]

a1) a and b variable : 1327-41-9 with a greater than 1,05.

a2) $a = 2,5$; $b = 0,5$: 12042-91-0.

a3) $a = 2$; $b = 1$: 10284-64-7.

b) a, b and c variable : 39290-78-3 with a greater than 1,05.

[1)] Chemical Abstracts Service Registry Number

3.1.7 EINECS reference [2)]

a1) 215-477-2

a2) 234-933-1

a3) 233-632-2

b) 254-400-7

3.2 Commercial forms

These products are generally available as liquids.

These products vary in their relative basicity (mole ratio OH/3Al), the percentage of chloride and sulfate ions present and in their method of manufacture.

NOTE : These variations may affect their performance in the water treatment plant. Special water plant requirements regarding, but not limited to, such items as : organic matter removal, residual aluminium levels and working pH values should be specified when possible, such that the product which best fits the needs be offered.

3.3 Physical properties

3.3.1 Appearance

Colourless to yellow

3.3.2 Density

The density depends on the particular composition, especially the aluminium ion content, expressed as aluminium percent by mass (Al % (*m/m*)).

Typical values :

a) Polyaluminium chloride hydroxide : 1,35 g/ml to 1,40 g/ml for 9,5 Al % (*m/m*).

b) Polyaluminium chloride hydroxide sulfate :

1,18 g/ml to 1,22 g/ml for 5,3 Al % (*m/m*) ;

1,16 g/ml for 4,2 Al % (*m/m*).

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2) European Inventory of Existing Commercial Chemical Substances

3.3.3 Solubility

All polyaluminium chloride hydroxides and polyaluminium chloride hydroxide sulfates are fully miscible with water.

NOTE : Depending on the particular product, dilute solutions can hydrolyse and form a precipitate.

3.3.4 Vapour pressure

Not known

3.3.5 Boiling point at 100 kPa [3)]

Not known

3.3.6 Crystallization point

Typical values :

(a) Polyaluminium chloride hydroxide :

- 20 °C for 9,5 Al % (*m/m*) ;

0 °C for 12,4 Al % (*m/m*) ;

(b) Polyaluminium chloride hydroxide sulfate :

- 10 °C to - 15 °C for 5,3 Al % (*m/m*) ;

- 5 °C for 4,2 Al % (*m/m*) .

3.3.7 Specific heat

Not known

3.3.8 Viscosity (dynamic)

Typical values at 20 °C :

a) Polyaluminium chloride hydroxide : 10 mPa·s to 50 mPa·s for 9,5 Al % (*m/m*) ;

b) Polyaluminium chloride hydroxide sulfate : 3 mPa·s to 10 mPa·s for 5,3 Al % (*m/m*)l.

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3) 100 kPa = 1 bar.

3.3.9 Critical temperature

Not applicable

3.3.10 Critical pressure

Not applicable

3.3.11 Physical hardness

Not applicable

3.4 Chemical properties

Polyaluminium chloride hydroxide and polyaluminium chloride hydroxide sulfate are acidic liquids which hydrolyse and form a precipitate of aluminium hydroxide when diluted beyond a particular level. Since aluminium compounds are amphoteric in nature, the solubility of aluminium depends on the pH value.

4 Purity criteria

4.1 General

Limits have been given for impurities and toxic substances where these are likely to be present in significant quantities from the current production process and raw materials. If a change in the production process or raw materials leads to significant quantities of other impurities or by-products being present, this shall be notified to the user.

4.2 Composition of commercial product

Polyaluminium chloride hydroxide and polyaluminium chloride hydroxide sulfate are the results of a complex manufacturing process from producers and shall not be, in any case, the result of a mixture of available commercial products.

The concentration of active matter is expressed in grams of aluminium per kilogram of product (g Al/kg).

The content of water soluble aluminium varies.

> NOTE : Typical values can be between 42 g and 124 g of aluminium per kilogram of product.

The commercial products vary in the proportions of chloride and sulfate ions.

Basicity : The relative basicity of the polyaluminium chloride hydroxide and polyaluminium chloride hydroxide sulfate, expressed as the mole ratio OH/3Al, shall be greater than 0,35.