



SLOVENSKI STANDARD

SIST EN 878:1999

01-april-1999

Kemikalije, ki se uporabljajo za pripravo pitne vode – Aluminijev sulfat

Chemicals used for treatment of water intended for human consumption - Aluminium sulfate

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Aluminiumsulfat

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

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Ta slovenski standard je istoveten z: EN 878:1997

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ICS:

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

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en

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EUROPEAN STANDARD

EN 878

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 1997

ICS 71.100.80

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

English version

Chemicals used for treatment of water intended for human consumption - Aluminium sulfate

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

Produkte zur Aufbereitung von Wasser für den
menschlichen Gebrauch - Aluminiumsulfat

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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

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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.

This European Standard was circulated for CEN Enquiry as three separate drafts, prEN 878, prEN 879 and prEN 880, 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.

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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 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 aluminium sulfate used for treatment of water intended for human consumption and gives reference to the analytical methods. It gives information on its 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 places 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.

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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
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 sulfate.

3.1.2 Synonym or common names

Aluminium sulphate, cake alum, alum.

NOTE : In English the generic term "alum", imprecise, is deprecated and in German the term "Alaun" is misleading.

3.1.3 Relative molecular mass

342,14 ($\text{Al}_2(\text{SO}_4)_3$).

3.1.4 Empirical formula

$\text{Al}_2(\text{SO}_4)_3$.

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3.1.5 Chemical formula

$\text{Al}_2(\text{SO}_4)_3 \cdot n \text{H}_2\text{O}$.

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3.1.6 CAS Registry Number ¹⁾

$\text{Al}_2(\text{SO}_4)_3$: 10043-01-3.

$\text{Al}_2(\text{SO}_4)_3 \cdot 16 \text{H}_2\text{O}$: 16828-11-8.

$\text{Al}_2(\text{SO}_4)_3 \cdot 18 \text{H}_2\text{O}$: 7786-31-8.

3.1.7 EINECS reference ²⁾

$\text{Al}_2(\text{SO}_4)_3$: 2 33-135-0.

3.2 Commercial forms

Aluminium sulfate is available in a number of different grades including iron-free grade, low-iron grade and other grades within which contents of sulfuric acid and active matter (Al) vary. These grades of aluminium sulfate are available in a number of different forms (see 3.3.1).

¹⁾ Chemical Abstracts Service Registry Number.

²⁾ European Inventory of Existing Commercial Chemical Substances.

3.3 Physical properties

3.3.1 Appearance

Solid hydrated forms, with different particle sizes (slabs, kibbled, ground, granulated).

Liquids.

3.3.2 Density

The density of typical grades of solution is given in table 1 and depends of the concentration of the active matter, expressed in grams of aluminium per kilogram of solution (gAl/kg).

NOTE : Densities of other grades can vary to some extent from these values.

Table 1 : Density of solution

gAl/kg of solution	Density at 15 °C g/ml
40,8	1,310
41,6	1,315
42,5	1,320
43,3	1,325
44,2	1,330
45,0	1,335

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3.3.3 Solubility

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The theoretical limit of active matter content for a typical solution is given in table 2.

NOTE : Solubility of other grades can vary to some extent from these values.

Table 2 : Solubility

Temperature °C	Active matter in gAl/kg of solution
- 1	44,7
24	44,8

The practical limit of solubility depends on the temperature and the device used for solubilization of the solid form (slabs, kibbled, ground or granulated).

An indication of practical limits is given in table 3.

Table 3 : Indication of practical limits of solubility

Temperature °C	Active matter gAl/kg of solution	Solubility in grams solid form (containing 90 gAl/kg of solid) per kilograms of solution
15	37	410

3.3.4 Vapour pressure

Not known.

3.3.5 Boiling point at 100 kPa ³⁾

Not known.

3.3.6 Crystallization point

- 7 °C for a typical solution containing 42,4 g of aluminium per kilogram of solution.

NOTE : Values for other grades can vary.

3.3.7 Specific heat

Not known.

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3.3.8 Viscosity, dynamic

The viscosity of a typical solution containing 42,4 g of aluminium per kilogram of solution is given in table 4.

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NOTE : Values for other grades can vary.

Table 4 : Viscosity of a solution containing 42,4 gAl/kg of solution

Temperature °C	Viscosity mPa·s
0	40,0
10	26,5
20	18,6
30	13,2
40	8,8

3.3.9 Critical temperature

Not applicable.

3.3.10 Critical pressure

Not applicable.

³⁾ 100 kPa = 1 bar.