



SLOVENSKI STANDARD

SIST EN 12123:2022

01-junij-2022

Nadomešča:
SIST EN 12123:2013

Kemikalije, ki se uporabljajo za pripravo pitne vode - Amonijev sulfat

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Ammoniumsulfat

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

Ta slovenski standard je istoveten z: **EN 12123:2022**

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ICS:

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

SIST EN 12123:2022

en,fr,de

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EUROPEAN STANDARD

EN 12123

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2022

ICS 71.100.80

Supersedes EN 12123:2012

English Version

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

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Ammoniumsulfat

This European Standard was approved by CEN on 13 March 2022.

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This European Standard exists 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 CEN-CENELEC Management Centre has the same status as the official versions.

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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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EN 12123:2022 (E)**European foreword**

This document (EN 12123:2022) 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of an identical text or by endorsement, at the latest by October 2022, and conflicting national standards shall be withdrawn at the latest by October 2022.

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

This document supersedes EN 12123:2012.

In comparison with the previous edition EN 12123:2012, the following technical modifications have been made:

- a) modification of 7.3 on transportation regulations and labelling, adding the sentence “The user shall be aware of the incompatibilities between transported products.”;
- b) modification of 7.4 on marking. The requirements of marking are also applied to the accompanying documents.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, 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 (see Annex A).

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EN 12123:2022 (E)**1 Scope**

This document is applicable to ammonium sulfate used for treatment of water intended for human consumption. It describes the characteristics and specifies the requirements of ammonium sulfate and refers to the corresponding analytical methods. It gives information on its 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, *Water for analytical laboratory use — Specification and test methods (ISO 3696)*

ISO 760, *Determination of water — Karl Fischer method (General method)*

ISO 2992, *Ammonium sulphate for industrial use — Determination of iron content — 2,2'- Bipyridyl photometric method*

ISO 2993, *Ammonium sulphate for industrial use — Determination of free acidity — Titrimetric method*

ISO 3332, *Ammonium sulphate for industrial use — Determination of ammoniacal nitrogen content — Titrimetric method after distillation*

ISO 5993, *Sodium hydroxide for industrial use — Determination of mercury content — Flameless atomic absorption spectrometric method*

ISO 6353-1, *Reagents for chemical analysis — Part 1: General test methods*

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

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/ui>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Description**4.1 Identification****4.1.1 Chemical name**

Ammonium sulfate.

4.1.2 Synonym or common name

Ammonium sulfate.

4.1.3 Relative molecular mass

132,14.

4.1.4 Empirical formula

$(\text{NH}_4)_2\text{SO}_4$.

4.1.5 Chemical formula

$(\text{NH}_4)_2\text{SO}_4$.

4.1.6 CAS-Registry Number ¹

7783-20-2.

4.1.7 EINECS reference ²

213-984-1.

4.2 Commercial form

The product is a powder.

4.3 Physical properties

4.3.1 Appearance

The product is a white, fine crystalline powder.

4.3.2 Density

The density of the product is 1,8 g/cm³ at 20 °C.

4.3.3 Solubility in water

The solubility of the product in water is 767 g/l at 25 °C.

4.3.4 Vapour pressure

Not applicable.

4.3.5 Boiling point at 100 kPa ³

Not applicable.

4.3.6 Crystallization point

The product decomposes above 235 °C.

4.3.7 Specific heat

Not known.

4.3.8 Viscosity dynamic

Not applicable.

4.3.9 Critical temperature

Not applicable.

¹ Chemical Abstracts Service Registry Number.

² European Inventory of Existing Commercial Chemical Substances.

³ 100 kPa = 1 bar.

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4.3.10 Critical pressure

Not applicable.

4.3.11 Physical hardness

Not applicable.

4.4 Chemical properties

Ammonium sulfate easily dissolves in water. A saturated solution (706 g/l at 0 °C) has a pH value of approximately 6.

Upon heating with chlorates, nitrates or nitrites it reacts violently.

Above 235 °C the product decomposes with formation of ammonia vapour, sulfur oxides.

5 Purity criteria

5.1 General

This document specifies the minimum purity requirements for ammonium sulfate 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 can 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 product standard.

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.

5.2 Composition of commercial product

The content of ammonium sulfate shall not be less than a mass fraction of 99 % corresponding to a mass fraction of 21 % of ammoniacal nitrogen.

5.3 Impurities and main by-products

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

Table 1 — Impurities

Impurity		Limit in mg/kg of the product
Sulfuric acid (free) (H ₂ SO ₄)	max.	200
Water (H ₂ O)	max.	300
Iron (Fe)	max.	10

5.4 Chemical parameters

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

Table 2 — Chemical parameters

Parameter		Limit mg/kg of commercial product
Antimony (Sb)	max.	1
Arsenic (As)	max.	5
Cadmium (Cd)	max.	0,5
Chromium (Cr)	max.	5
Lead (Pb)	max.	5
Mercury (Hg)	max.	0,1
Nickel (Ni)	max.	5
Selenium (Se)	max.	2

NOTE Pesticides and polycyclic aromatic hydrocarbons and cyanides (CN⁻) are not relevant in ammonium sulfate because the raw materials used in the manufacturing are free of them. For parametric values of ammonium sulfate on trace metal content in drinking water, see [1].

6 Test methods

6.1 Sampling

Observe the general recommendations of ISO 3165 [2] and take account of ISO 6206 [3]. Prepare the laboratory sample(s) required by the relevant procedure described in ISO 8213.