SLOVENSKI STANDARD
oSIST prEN 15030:2020

01-julij-2020

Kemikalije, ki se uporabljajo za pripravo pitne vode - Srebrove soli za uporabo z občasnimi prekinitvami

Chemicals used for treatment of water intended for human consumption - Silver salts for intermittent use

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Silbersalze für den nicht systematischen Gebrauch

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Sels d'argent pour usage intermittent

Ta slovenski standard je istoveten z: **prEN 15030**

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71.100.80	Kemikalije za čiščenje vode	Chemicals for purification of water

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English Version

Chemicals used for treatment of water intended for human consumption - Silver salts for intermittent use

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Sels d'argent pour usage intermittent

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Silbersalze für den nicht systematischen Gebrauch

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

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European foreword

This document (prEN 15030:2020) 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 15030:2012+A1:2015.

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

a) modification of 7.3 on transportation regulations and labelling, adding the sentence “The user must 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.

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 1 Conformity with this document does not confer or imply acceptance or approval of the products in any of the member states of the EU or EFTA. The use of the products covered by this document is subject to regulation or control by national authorities.

NOTE 2 These products are used as biocides and comply with the relevant legislation in force. In the European Union, at the time of publication, this legislation is Regulation (EU) No 528/2012 [1].

Water which is to be preserved with silver ions should fulfil the relevant legal requirements before the silver salt is added, in particular microbiological requirements.

1 Scope

This document is applicable to silver nitrate and silver sulfate and silver chloride for the preservation of water intended for human consumption in intermittent applications in:

— water supply plants, including their pipeline networks (small-size plants);

— water for the preparation of foodstuffs;

— water which is stored in packaged form or kept in enclosed systems (for example, water supply systems in land, water and airborne vehicles).

The purpose of adding silver salts is to prevent the detrimental proliferation of microorganisms in water during storage or in enclosed supply systems.

This document describes the characteristics of silver salts, specifies the requirements for silver salts and gives reference to the analytical methods. It gives information on their use in water treatment. It also determines the rules relating to safe handling and use of silver salts (see Annex B).

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 1233, *Water quality - Determination of chromium - Atomic absorption spectrometric methods*

EN ISO 3696, *Water for analytical laboratory use - Specification and test methods (ISO 3696)*

EN ISO 5961, *Water quality - Determination of cadmium by atomic absorption spectrometry (ISO 5961)*

EN ISO 10304-1, *Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1)*

EN ISO 11885, *Water quality - Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (ISO 11885)*

EN ISO 12846, *Water quality - Determination of mercury - Method using atomic absorption spectrometry (AAS) with and without enrichment (ISO 12846)*

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*

ISO 8288:1986, *Water quality - Determination of cobalt, nickel, copper, zinc, cadmium and lead - Flame atomic absorption spectrometric methods*

ISO 17378-2, *Water quality - Determination of arsenic and antimony - Part 2: Method using hydride generation atomic absorption spectrometry (HG-AAS)*

ISO/TS 17379-2, *Water quality - Determination of selenium - Part 2: Method using hydride generation atomic absorption spectrometry (HG-AAS)*

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:

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

4 Description

4.1 Identification

4.1.1 Chemical name

a) Silver nitrate;

b) silver sulfate;

c) silver chloride.

4.1.2 Synonym or common names

The naturally occurring mineral is called *chlorargyrite* or *cerargirite*, if weathered by air named as *horn silver*.

4.1.3 Relative molecular mass

a) 169,87;

b) 311,97;

c) 143,23.

4.1.4 Empirical formula

a) $AgNO_3$;

b) Ag_2SO_4;

c) AgCl.

4.1.5 Chemical formula

a) $AgNO_3$;

b) Ag_2SO_4;

c) AgCl.

4.1.6 CAS Registry Number [1)]

a) 7761-88-8;

1) Chemical Abstracts Service Registry Number.

b) 10294-26-5;

c) 7783-90-6.

4.1.7 EINECS reference [2)]

a) 231-853-9;

b) 233-653-7;

c) 232-033-3.

4.2 Commercial form

The products are solids, available as powders or pelletized.

For safe handling and use and emergency procedures of silver salts, refer to normative Annex B. For the minimization of environmental impacts caused by the use of the methods of analysis, a list of advice is given for information in Annex C.

4.3 Physical properties

4.3.1 Appearance

White to slightly grey or yellowish.

NOTE Silver chloride quickly darkens on exposure to light by disintegrating into elemental chlorine and metallic silver; the latter is responsible for the colour change.

4.3.2 Density

a) 4,35 g/cm³ (crystal density);

b) 5,45 g/cm³ (crystal density);

c) 5,56 g/cm³ (crystal density).

4.3.3 Solubility (in water)

a) 2,16 g/l;

b) 8 g/l;

c) 1,88 mg/l at 25 °C.

4.3.4 Vapour pressure at 20 °C

Not applicable.

4.3.5 Boiling point at 100 kPa [3)]

a) 444 °C (decomposition);

b) 1 085 °C (decomposition);

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2) European Inventory of Existing Commercial Chemical Substances.
3) 100 kPa = 1 bar.

c) 1 550 °C.

4.3.6 Melting point

a) 212 °C;

b) 652 °C;

c) 455 °C.

4.3.7 Specific heat

Not known.

4.3.8 Viscosity (dynamic)

Not applicable.

4.3.9 Critical temperature

Not applicable.

4.3.10 Critical pressure

Not applicable.

4.3.11 Physical hardness

Not applicable.

4.4 Chemical properties

a) silver nitrate in solution is almost neutral (the pH value of an aqueous solution at 100 g/l is approximately 6);

b) silver sulfate in solution is almost neutral (the pH value of an aqueous solution at 5 g/l is approximately 5 to 6);

c) the saturated aqueous solution (see 4.3.3) is pH neutral. Silver chloride is insoluble in alcohol, other organic solvents, dilute acids and concentrated nitric acid, but soluble in concentrated sulphuric acid and (depending on the individual concentration) in aqueous solutions of ammonia, chlorides, bromides, thiosulfates and cyanides under complexation of the silver ion.

The standard redox potential (E^0) of Ag^+/Ag in neutral aqueous solution at 25 °C is: $E° = +0{,}80$ V.

The standard redox potential (E^0) of AgCl/Ag in neutral solution at 25 °C is: $E° = +0{,}22$ V.

For additional information on silver salts, see Annex A.

5 Purity criteria

5.1 General

This document specifies the minimum purity requirements for silvers salts used for the preservation of water intended for human consumption. Limits are given for impurities commonly present in the products. 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 the products should check the national regulations in order to clarify whether it is of appropriate purity for the preservation of water intended for human consumption, taking into account water quality, required dosage, contents of other impurities and additives used in the products 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 lead to significant quantities of impurities, by-products or additives being present, this shall be notified to the user.

5.2 Composition of commercial products

The content of silver salts shall not be less than a mass fraction of 99 %.

5.3 Impurities and main by-products

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

Table 1 — Impurities

Impurity		Limit mg/kg of product		
		a) Silver nitrate	b) Silver sulfate	c) Silver chloride
Chloride (Cl^-)	max.	1	n.a.	n.a.
Copper (Cu)	max.	0,056	100	30
Iron (Fe)	max.	0,255	50	30
Nitrite (NO_2^-)	max.	0,5	n.a.	n.a.
Sulfate (SO_4^{2-})	max.	5	n.a.	n.a.
NOTE n.a. = not applicable				