SLOVENSKI STANDARD
SIST EN 889:2023

01-maj-2023

Kemikalije, ki se uporabljajo za pripravo pitne vode - Železov (II) sulfat

Chemicals used for treatment of water intended for human consumption - Iron (II) sulfate

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Eisen(II)sulfat

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Sulfate de fer (II)

Ta slovenski standard je istoveten z: EN 889:2023

ICS:

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

SIST EN 889:2023 **en,fr,de**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 889

February 2023

ICS 71.100.80

Supersedes EN 889:2004

English Version

Chemicals used for treatment of water intended for human consumption - Iron (II) sulfate

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Sulfate de fer (II)

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Eisen(II)sulfat

This European Standard was approved by CEN on 25 December 2022.

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

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European foreword

This document (EN 889:2023) 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of an identical text or by endorsement, at the latest by August 2023, and conflicting national standards shall be withdrawn at the latest by August 2023.

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 889:2004.

EN 889:2023 includes the following significant technical changes with respect to EN 889:2004:

— removal of the analytical methods from this document and addition of reference to EN 17215 as analytical method standard;

— update of the information of risk and safety labelling of the product to comply with the new regulations (see 7.2 and [2]);

— addition of iron (II) sulfate monohydrate;

— update of the information related to Drinking Water Directive.

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, Türkiye 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 iron (II) sulfate heptahydrate and iron (II) sulfate monohydrate used for treatment of water intended for human consumption. It describes the characteristics of iron (II) sulfate heptahydrate and monohydrate, specifies the requirements and the corresponding analytical methods and gives information on their use in water treatment. It also determines the rules relating to safe handling and use of iron (II) sulfate.

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 17215, *Chemicals used for treatment of water intended for human consumption — Iron-based coagulants — Analytical methods*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 Description

4.1 Identification

4.1.1 Chemical names

a) Iron (II) sulfate heptahydrate

b) Iron (II) sulfate monohydrate

c) Iron (II) sulfate solution

4.1.2 Synonym or common names

a) Ferrous sulfate, iron vitriol, copperas, green salt

b) Ferrous sulfate, monohydrate

c) Ferrous sulfate, solution

4.1.3 Relative molecular mass

a) 278,02 g/mol

b) 169,96 g/mol

c) 151,94 g/mol

4.1.4 Empirical formula

a) $FeSO_4 \cdot 7\ H_2O$

b) $FeSO_4 \cdot H_2O$

c) $FeSO_4$

4.1.5 Chemical formula

a) $FeSO_4 \cdot 7H_2O$

b) $FeSO_4 \cdot H_2O$

c) $FeSO_4$

4.1.6 CAS Registry Number[1)]

a) 7782-63-0

b) 17375-41-6

c) 7782-63-0, 7720-78-7

4.1.7 EINECS reference[2)]

231-753-5 ($FeSO_4$).

4.2 Commercial forms

a) Iron (II) sulfate heptahydrate is available as damp crystals and free-flowing crystals.

b) Iron (II) sulfate monohydrate is available as dry crystals.

c) Iron (II) sulfate is available as a solution. There is no difference between solutions prepared from the heptahydrate or monohydrate.

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1) Chemical Abstracts Service Registry Number

2) European Inventory of Existing Commercial Chemical Substances

4.3 Physical properties

4.3.1 Appearance

Iron (II) sulfate heptahydrate is a light green crystal when damp.

Iron (II) sulfate heptahydrate in free flowing form is an off-white crystal.

Iron (II) sulfate monohydrate is a grey crystalline powder.

Iron (II) sulfate solutions are dark green in colour.

4.3.2 Density

The density of a) iron (II) sulfate heptahydrate is approximately 1,9 g/cm^3 at 20 °C.

The density of b) iron (II) sulfate monohydrate is equal to 1,4 g/cm^3 to 1,7 g/cm^3 at 25 °C.

The bulk density of commercial form a) is equal approximately to 0,8 kg/dm^3 to 1 kg/dm^3.

The bulk density of commercial form b) is equal approximately to 0,8 kg/dm^3 to 1,2 kg/dm^3.

The density of c) saturated solution is approximately 1,25 g/cm^3 at 20 °C.

4.3.3 Solubility (in water)

The solubility of iron (II) sulfate heptahydrate is approximately 550 g/dm^3 at 25 °C.

The solubility of iron (II) sulfate monohydrate is 90 g/dm^3 at 20 °C.

4.3.4 Vapour pressure

Not applicable.

4.3.5 Boiling point at 100 kPa[3)]

Not applicable.

4.3.6 Melting point

For the iron (II) sulfate heptahydrate loss of water of crystallization starts at approximately 64 °C, with decomposition at approximately 300 °C.

4.3.7 Specific heat

Not known.

4.3.8 Viscosity (dynamic)

Not applicable.

4.3.9 Critical temperature

Not applicable.

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3) 100 kPa = 1 bar