SLOVENSKI STANDARD
oSIST prEN 15482:2020

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Kemikalije, ki se uporabljajo za pripravo pitne vode - Natrijev permanganat

Chemicals used for treatment of water intended for human consumption - Sodium permanganate

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumpermanganat

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Permanganate de sodium

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English Version

Chemicals used for treatment of water intended for human consumption - Sodium permanganate

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Permanganate de sodium

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumpermanganat

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 15482:2020) 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 15482:2012.

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 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.

1 Scope

This document is applicable to sodium permanganate used for the treatment of water intended for human consumption. It describes the characteristics of sodium permanganate and specifies the requirements and the corresponding test methods for sodium permanganate. It provides 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 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 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 3856-2, *Paints and varnishes - Determination of "soluble" metal content - Part 2: Determination of antimony content - Flame atomic absorption spectrometric method and Rhodamine B spectrophotometric method*

ISO 6206, *Chemical products for industrial use - Sampling - Vocabulary*

ISO 8288, *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:

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

4 Description

4.1 Identification

4.1.1 Chemical name

Sodium permanganate.

4.1.2 Synonym or common names

Permanganate acid sodium salt.

4.1.3 Relative molecular mass

Permanganate acid sodium salt.

4.1.4 Empirical formula

$NaMnO_4$

4.1.5 Chemical formula

$NaMnO_4$

4.1.6 CAS Registry Number [1)]

10101-50-5

4.1.7 EINECS reference [2)]

233-251-1

4.2 Commercial form

The sodium permanganate is usually available as a concentrated solution with a concentration within the range of mass fraction of 20 % to 40 %.

The density of sodium permanganate solutions is given in Table 1.

Table 1

Solution concentration Mass fraction in %	**Density** g/ml at 22 °C
10	1,076
15	1,116
20	1,164
25	1,216
30	1,266
35	1,316
40	1,374

For safe handling and use and emergency procedures of sodium permanganate, refer to normative Annex B.

1) Chemical Abstracts Service Registry Number.
2) European Inventory of Existing Commercial Chemical Substances.

4.3 Physical properties

4.3.1 Appearance

Sodium permanganate solution is a dark purple coloured solution.

4.3.2 Density

The density of 40,00 % sodium permanganate solution is 1,37 g/cm³ at 20 °C.

4.3.3 Solubility (in water)

Sodium permanganate solution is soluble up to 40 % and miscible with water in all proportions.

4.3.4 Vapour pressure

Not determined for sodium permanganate solution, however, very similar to water.

4.3.5 Boiling point at 100 kPa [3)]

Greater than 101 °C.

4.3.6 Melting point

Not applicable.

4.3.7 Specific heat

Not determined.

4.3.8 Viscosity (dynamic)

Less than 0,005 Pa·s for concentrations of 40 % or less.

4.3.9 Critical temperature

Not determined.

4.3.10 Critical pressure

Not determined.

4.3.11 Physical hardness

Not applicable.

4.4 Chemical properties

Sodium permanganate is a very strong oxidising agent.

It is soluble in water and dissolves in various organic solvents (methanol, ethanol).

The reaction with organics can be violent and is not recommended.

It decomposes at a high temperature and also in the presence of concentrated acids, hydrogen peroxide and organic compounds in general.

It hydrolyses very slowly in contact with air, reducing to manganese dioxide (MnO_2), a solid, brown to black colour product.

For additional information on sodium permanganate, see Annex A.

3) 100 kPa = 1 bar.

5 Purity criteria

5.1 General

This document specifies the minimum purity requirements for sodium permanganate 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 may be present and, if so, the user and when necessary relevant authorities shall be notified.

Users of this product should check the national regulations 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, the user shall be notified.

5.2 Composition of commercial product

The sodium permanganate is usually available in a concentrated solution with a concentration within the range of mass fraction of 20 % to 40 %.

The concentration of sodium permanganate solution shall be equal to or greater than the manufacturer specified value.

5.3 Impurities and main by-products

The content of manganese dioxide (insoluble matter) shall be no more than a mass fraction of 0,055 %.

NOTE The product can contain fluoride or hexafluorosilicate. At typical levels of dosing, the added fluoride would be less than 40 µg/l.

5.4 Chemical parameters

The content of chemical parameters shall conform to the requirements specified in Table 2.

Table 2 — Chemical parameters

Parameter		Limit mg/kg of $NaMnO_4$ (mass fraction 100 %)
Arsenic (As)	max.	20
Cadmium (Cd)	max.	50
Chromium (Cr)	max.	50
Mercury (Hg)	max.	10
Nickel (Ni)	max.	50
Lead (Pb)	max.	50
Antimony (Sb)	max.	50
Selenium (Se)	max.	50