SLOVENSKI STANDARD
oSIST prEN 898:2020

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Kemikalije, ki se uporabljajo za pripravo pitne vode - Natrijev hidrogen karbonat

Chemicals used for treatment of water intended for human consumption - Sodium hydrogen carbonate

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumhydrogencarbonat

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

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Chemicals used for treatment of water intended for human consumption - Sodium hydrogen carbonate

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumhydrogencarbonat

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 164.

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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 898:2020) 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 898:2012.

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 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 sodium hydrogen carbonate used for the treatment of water intended for human consumption. It describes the characteristics and specifies the requirements and the corresponding test methods for sodium hydrogen carbonate. 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 3696:1987)*

EN ISO 12846:2012, *Water quality — Determination of mercury — Method using atomic absorption spectrometry (AAS) with and without enrichment (ISO 12846:2012)*

ISO 746, *Sodium carbonate for industrial use — Determination of matter insoluble in water at 50 degrees C*

ISO 2199, *Sodium hydrogen carbonate for industrial use — Determination of sodium hydrogen carbonate content — Titrimetric method*

ISO 2460, *Sodium hydrogen carbonate for industrial use — Determination of iron content — 1,10-Phenanthroline photometric method*

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 Terms and defintions

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 https://www.electropedia.org/

4 Description

4.1 Identification

4.1.1 Chemical name

Sodium hydrogen carbonate.

4.1.2 Synonym or common name

Sodium bicarbonate, bicarbonate of soda, baking soda.

4.1.3 Relative molecular mass

84,01.

4.1.4 Empirical formula

$NaHCO_3$.

4.1.5 Chemical formula

$NaHCO_3$..

4.1.6 CAS Registry Number[1)]

144-55-8.

4.1.7 EINECS reference[2)]

205-633-8.

4.2 Commercial forms

The product is available as powder or crystals.

4.3 Physical properties

4.3.1 Appearance

The product is a white powder or crystals, slightly hygroscopic.

4.3.2 Density

The density of this product is 2,2 g/cm^3.

The bulk density is ranging from 0,5 kg/dm^3 to 1,1 kg/dm^3.

4.3.3 Solubility in water

The product is soluble at 95 g/l at 20 °C.

4.3.4 Vapour pressure

Not applicable.

4.3.5 Boiling point at 100 kPa[3)]

Not applicable.

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1) Chemical Abstracts Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

3) 100 kPa = 1 bar.

4.3.6 Melting point

Not applicable .The product decomposes at 50 °C.

4.3.7 Specific heat

1,197 J/(kg K).

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

The hardness of solid sodium hydrogen carbonate is given as 1,5 to 2 on the Mohs' scale of hardness.

4.4 Chemical properties

Sodium hydrogen carbonate as specified is technical water-free $NaHCO_3$.

Sodium hydrogen carbonate reacts exothermically with acids with formation of carbon dioxide. For additional information on sodium hydrogen carbonate, see Annex A.

5 Purity criteria

5.1 General

This document specifies the minimum purity requirements for sodium hydrogen carbonate 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, this shall be notified to the user and when necessary to relevant authorities.

NOTE The national regulations allow to users to clarify whether the product is of appropriate purity for the 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 and 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 product shall contain not less than a mass fraction of 98,5 % of $NaHCO_3$.

5.3 Impurities and main by-products

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

The concentration limits refer to pure $NaHCO_3$.

Table 1 — Impurities

Impurity	Limit in mg/kg of $NaHCO_3$
Iron (II) [a] max.	5
Insoluble matters [b] max.	200
[a] Iron(II) can cause organoleptic problems. [b] Indicate the presence of foreign matter.	

5.4 Chemical parameters

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

Table 2 — Chemical parameters

Parameter	Limit in mg/kg of $NaHCO_3$
Arsenic (As) max.	2
Cadmium (Cd) max.	2
Chromium (Cr) max.	2
Mercury (Hg) max.	0,1
Nickel (Ni) max.	2
Lead (Pb) max.	2
NOTE Antimony, selenium, cyanides, pesticides and polycyclic aromatic hydrocarbons are not relevant in sodium hydrogen carbonate. For parametric values of sodium hydrogen carbonate on trace metal content in drinking water, see [1].	

6 Test methods

6.1 Sampling

Prepare the laboratory sample (s) required by the relevant procedure described in with ISO 8213, observe the recommendations of ISO 3165 and also take account of ISO 6206.

6.2 Analyses

6.2.1 Main product

The mass fraction in % of $NaHCO_3$ shall be determined by titration with a standard volumetric acid solution in accordance with ISO 2199.

6.2.2 Impurities

6.2.2.1 Iron

The iron content shall be determined by a spectrometric method with 1,10-phenanthroline in accordance with ISO 2460.

6.2.2.2 Insoluble matters

The mass fraction in % of the insoluble matter in water shall be determined at 50 °C in accordance with ISO 746 replacing sodium carbonate by sodium hydrogen carbonate.

6.2.3 Chemical parameters

6.2.3.1 Principle

The elements arsenic, cadmium, chromium, lead and nickel are determined by inductively coupled plasma optical emission spectrometry (see B.1). Mercury is determined by cold vapour atomic absorption spectrometry (see B.2).

6.2.3.2 Arsenic

The arsenic content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

6.2.3.3 Cadmium

The cadmium content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

6.2.3.4 Chromium

The chromium content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

6.2.3.5 Nickel

The nickel content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

6.2.3.6 Lead

The lead content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

6.2.3.7 Mercury

The mercury content shall be determined by cold vapour atomic absorption spectrometry in accordance with EN ISO 12846 (see B.2).