SLOVENSKI STANDARD
SIST EN 898:2013

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Nadomešča:
SIST EN 898:2005

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

Ta slovenski standard je istoveten z: **EN 898:2012**

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

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EUROPEAN STANDARD

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English Version

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 European Standard was approved by CEN on 16 September 2012.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 898:2012) 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of an identical text or by endorsement, at the latest by May 2013, and conflicting national standards shall be withdrawn at the latest by May 2013.

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

This document supersedes EN 898:2005.

Significant technical differences between this edition and EN 898:2005 are as follows:

a) Modification of 6.2 on labelling, deletion of the reference to EU Directive 80/778/EEC of 15 July 1980 in order to take account of the latest Directive in force (see [1]).

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, 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 European Standard:

a) this European Standard 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 European Standard 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 European Standard is subject to regulation or control by National Authorities.

1 Scope

This European Standard 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, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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)*

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 Description

3.1 Identification

3.1.1 Chemical name

Sodium hydrogen carbonate.

3.1.2 Synonym or common name

Sodium bicarbonate, bicarbonate of soda, baking soda.

3.1.3 Relative molecular mass

84,01.

3.1.4 Empirical formula

$NaHCO_3$.

3.1.5 Chemical formula

$NaHCO_3$.

3.1.6 CAS Registry Number[1)]

144-55-8.

3.1.7 EINECS reference[2)]

205-633-8.

3.2 Commercial forms

The product is available as powder or crystals.

3.3 Physical properties

3.3.1 Appearance

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

3.3.2 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.

3.3.3 Solubility in water

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

3.3.4 Vapour pressure

Not applicable.

3.3.5 Boiling point at 100 kPa[3)]

Not applicable.

3.3.6 Melting point

Not applicable .The product decomposes at 50 °C.

3.3.7 Specific heat

1,197 J/(kg K).

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1) Chemical Abstracts Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

3) 100 kPa = 1 bar.

3.3.8 Viscosity (dynamic)

Not applicable.

3.3.9 Critical temperature

Not applicable.

3.3.10 Critical pressure

Not applicable.

3.3.11 Physical hardness

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

3.4 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.

4 Purity criteria

4.1 General

This European Standard 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 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 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 leads to significant quantities of impurities, by-products or additives being present, this shall be notified to the user.

4.2 Composition of commercial product

The product shall contain not less than a mass fraction of 98,5 % of $NaHCO_3$.

4.3 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) [1)]	max.	5
Insoluble matters [2)]	max.	200
1) Iron(II) can cause organoleptic problems. 2) Indicate the presence of foreign matter.		

4.4 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].		

5 Test methods

5.1 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.

5.2 Analyses

5.2.1 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.

5.2.2 Impurities

5.2.2.1 Iron

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

5.2.2.2 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.

5.2.3 Chemical parameters

5.2.3.1 Principle

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

5.2.3.2 Arsenic

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

5.2.3.3 Cadmium

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

5.2.3.4 Chromium

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

5.2.3.5 Nickel

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

5.2.3.6 Lead

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

5.2.3.7 Mercury

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