SLOVENSKI STANDARD
SIST EN 12124:2005

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Nadomešča:
SIST EN 12124:2000

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

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumsulfit

Produits chimiques utlisés pour le traitement de l'eau destiné a la consommation humaine - Sulfite de sodium

Ta slovenski standard je istoveten z: **EN 12124:2005**

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13.060.20	Pitna voda	Drinking water
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English version

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

Produits chimiques utlisés pour le traitement de l'eau destiné à la consommation humaine - Sulfite de sodium

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumsulfit

This European Standard was approved by CEN on 12 May 2005.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This European Standard (EN 12124:2005) 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of an identical text or by endorsement, at the latest by December 2005, and conflicting national standards shall be withdrawn at the latest by December 2005.

This document supersedes EN 12124:1998.

Significant technical differences between this edition and EN 12124:1998 are as follows:

— 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 organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and 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 used for treatment of water intended for human consumption .It describes the characteristics and specifies the requirements of sodium sulfite and refers to the corresponding analytical methods. It gives information for its use in water treatment.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the reference document (including any amendments) applies.

EN ISO 3696, *Water for analytical laboratory use - Specification and test methods (ISO 3696:1987)*

ISO 418, *Photography - Processing chemicals - Specifications for anhydrous sodium sulfite*

ISO 3165, *Sampling of chemical products for industrial use – Safety in sampling*

ISO 5993, *Sodium hydroxide for industrial use - Determination of mercury content - Flameless atomic absorption spectrometric method*

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

ISO 6332, *Water quality - Determination of iron - Spectrometric method using 1,10-phenanthroline*

ISO 6353-1*, Reagents for chemical analysis - Part 1: General test methods*

ISO 8213, *Chemical products for industrial use – Sampling techniques – Solid chemical products in the form of particles varying from powders to coarse lumps*

ISO 22743 (in preparation) *Water quality -- Determination of sulfates by continuous flow analysis (CFA)*

3 Description

3.1 Identification

3.1.1 Chemical name

Sodium sulfite.

3.1.2 Synonym or common name

Sodium sulfite.

3.1.3 Relative molecular mass

126,04.

3.1.4 Empirical formula

Na_2SO_3.

3.1.5 Chemical formula

Na_2SO_3.

3.1.6 CAS-Registry Number[1)]

7757-83-7

3.1.7 EINECS reference[2)]

231-821-4.

3.2 Commercial form

The product is a crystalline powder.

3.3 Physical properties

3.3.1 Appearance and odour

The product is a white, fine crystalline, odourless powder.

3.3.2 Density

The density of the product is 2,63 g/cm³ at 20 °C.

The bulk density is 1,2 g/cm³ to 1,5 g/cm³ at 20 °C.

3.3.3 Solubility in water

The solubility of the product in water is 250 g/l at 20 °C.

3.3.4 Vapour pressure

Not applicable.

3.3.5 Boiling point at 100 kPa[3)]

The product decomposes above 230 °C.

3.3.6 Crystallisation point

See 3.3.5.

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1) Chemical Abstracts Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

3) 100 kPa = 1 bar.

3.3.7 Specific heat

Not known.

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

Not applicable.

3.4 Chemical properties

The pH value of a saturated aqueous solution of sodium sulfite is in the range of 9,7 to 10,2.

At elevated temperatures (> 100 °C) sulfur dioxide is generated.

On contact with air, small amounts of sodium sulfate are formed.

Sodium sulfite releases sulfur dioxide when mixed with acids.

Sodium sulfite reacts violently with oxidizing agents, e.g. with sodium hypochlorite or hydrogen peroxide.

4 Purity criteria

4.1 General

This European Standard specifies the minimum purity requirements for sodium sulfite 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 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, this shall be notified to the user.

4.2 Composition of commercial product

The content of sodium sulfite shall not be less than a mass fraction of 95%.

4.3 Impurities and main by-products

The content of sodium sulfate shall not exceed a mass fraction of 5 %.

The content of iron (Fe) shall not exceed 25 mg/kg.

4.4 Chemical parameters

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

Table 1 – Chemical parameters

Parameter		Limit mg/kg of commercial product
Antimony (Sb)	max.	2
Arsenic (As)	max.	1
Cadmium (Cd)	max.	1
Chromium (Cr)	max.	1
Lead (Pb)	max.	2
Mercury (Hg)	max.	0,5
Nickel (Ni)	max.	1
Selenium (Se)	max.	1

NOTE: Pesticides and polycyclic aromatic hydrocarbons and cyanides (CN^-) are not relevant in sodium sulfite because the raw materials used in the manufacturing are free of them. For parametric values of sodium sulfite on trace metal content in drinking water, see [1].

5 Test methods

5.1 Sampling

Observe the general recommendations of ISO 3165 and take account of ISO 6206. Prepare the laboratory sample(s) required by the relevant procedure described in ISO 8213.

5.2 Analyses

5.2.1 Main product

The sodium sulfite content shall be determined in accordance with ISO 418.

NOTE Both methods, direct titration and back titration, can be used.

5.2.2 Impurities

5.2.2.1 Sulfate

The content of sodium sulfate (Na_2SO_4) shall be determined in accordance with ISO 22743.

5.2.2.2 Iron (Fe)

The content of iron (Fe) shall be determined in accordance with ISO 6332 (spectrometric method).

5.2.3 Chemical parameters

5.2.3.1 General

The content of chemical parameters shall be determined using the procedures specified in Table 2:

Table 2 - Procedures for the determination of chemical parameters

Element	Reference	Method	Wavelength (nm)	Flame
As	see 5.2.3.3	Hydride AAS	193,7	n.a.
Sb	see 5.2.3.3	Hydride AAS	217,6	n.a.
Cd	ISO 6353-1 GM 29 see 5.2.3.2	AAS	228,8	air-acetylene
Cr	ISO 6353-1 GM 29 see 5.2.3.2	AAS	357,8	air-acetylene
Pb	ISO 6353-1 GM 29 see 5.2.3.2	AAS	217,0 or 283,3	air-acetylene
Ni	ISO 6353-1 GM 29 see 5.2.3.2	AAS	232,0	oxidizing acetylene-air
Se	see 5.2.3.3	Hydride AAS	196,0	n.a.
Hg	in accordance with ISO 5993	flameless AAS	253,6	n.a.
AAS = Atomic Absorption Spectroscopy n.a. = not applicable				

5.2.3.2 Determination of cadmium (Cd), chromium (Cr), lead (Pb) and nickel (Ni)

5.2.3.2.1 Principle

The elements cadmium (Cd), chromium (Cr), lead (Pb) and nickel (Ni) are determined using atomic absorption spectrometry with the standard additions technique.