



SLOVENSKI STANDARD

SIST EN 12121:2000

01-november-2000

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

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumdisulfit

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Disulfite de sodium (standards.iteh.ai)

Ta slovenski standard je istoveten z: ^{SIST EN 12121:2000} EN 12121:1998

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ICS:

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

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en

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EUROPEAN STANDARD

EN 12121

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 1998

ICS 13.060.20; 71.060.50; 71.100.80

Descriptors: potable water, water treatment, chemical compounds, sodium bisulfite, description, physical properties, chemical properties, impurities, toxic substances, tests, conditioning, marking, storage, labelling

English version

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

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumdisulfid

This European Standard was approved by CEN on 5 September 1998.

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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CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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STANDARD PREVIEW

Foreword

This European Standard 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 March 1999, and conflicting national standards shall be withdrawn at the latest by March 1999.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by this Standard :

- 1) this 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 ;
- 2) 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.

1 Scope

This European standard is applicable to sodium disulfite used for treatment of water intended for human consumption. It describes the characteristics of sodium disulfite and specifies the requirements and the corresponding test methods for sodium disulfite. It gives information on its use in water treatment.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN ISO 3696	Water for analytical laboratory use - Specification and test methods (ISO 3696:1987)
ISO 3165	Sampling of chemical products for industrial use - Safety in sampling
ISO 3629	Photography - Processing chemicals - Specifications for potassium metabisulfite
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 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 9280	Water quality - Determination of sulfate - Gravimetric method using barium chloride

ISO 9297

Water quality - Determination of chloride - Silver nitrate
titration with chromate indicator (Mohr's method)

3.1 Identification

3.1.1 Chemical name

Sodium disulfite.

3.1.2 Synonym or commons names

Sodium metabisulfite, sodium pyrosulfite.

3.1.3 Relative molecular mass

190,10.

3.1.4 Empirical formula

$\text{Na}_2\text{S}_2\text{O}_5$.

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3.1.5 Chemical formula

$\text{Na}_2\text{S}_2\text{O}_5$.

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3.1.6 CAS-Registry Number ¹⁾

7681-57-4.

3.1.7 EINECS reference ²⁾

231-673-0.

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, free-flowing fine crystalline powder with a slight odour of sulfur dioxide.

¹⁾ Chemical Abstracts Service Registry Number.

²⁾ European Inventory of Existing Commercial Chemical Substances.

3.3.2 Density

The density of the product is 2,7 g/cm³ at 20 °C.

The bulk density is approximately 1,3 g/cm³ at 20 °C.

3.3.3 Solubility

The solubility of the product in water is 540 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 Crystallisation point

The product decomposes above 150 °C.

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⁾ 100 kPa = 1 bar.

3.4 Chemical properties

The solution is weakly acidic. The pH value of a saturated aqueous solution of sodium disulfite is in the range of 4,5 to 5,0.

Sodium disulfite dissolves in water forming sodium hydrogen sulfite.

At elevated temperatures (> 150 °C) or on contact with acids sulfur dioxide is generated.

Sodium disulfite reacts violently with oxidizing agents ; e.g. with sodium hypochlorite or hydrogen peroxide.

4 Purity criteria

Limits have been given for impurities and toxic substances where these are likely to be present in significant quantities from the current production process and raw materials. If a change in the production process or raw materials leads to significant quantities of other impurities or by-products being present, this shall be notified to the user.

4.1 Composition of commercial product

The content of sodium disulfite shall not be less than 95 % (*m/m*) ($\text{Na}_2\text{S}_2\text{O}_5$).

4.2 Impurities and main by-products

The sum of the content of sodium sulfate and sodium chloride shall not exceed 5 % (*m/m*) of the commercial product.

4.3 Toxic substances

NOTE : For the purpose of this standard, "toxic substances" are those defined in the EU Directive 80/778/EEC of 15 July, 1980 (see C.1).

The content of toxic substances shall conform to the requirements specified in table 1.

Table 1 : Toxic substances

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

NOTE : Pesticides and polycyclic aromatic hydrocarbons and cyanides - as listed in EU Directive 80/778/EEC - are not relevant in sodium disulfite because the raw materials used in the manufacturing are free of them

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5 Test methods**5.1 Sampling**

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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

All reagents shall be of a recognized analytical grade and the water used shall conform to the appropriate grade specified in EN ISO 3696.

5.2.1 Main product

The sodium disulfite content shall be determined by the method for potassium disulfite described in ISO 3629.

5.2.1.1 Principle

Sodium disulfite is oxidized with a fixed volume of iodine. The excess of added iodine is titrated with sodium thiosulfate. The determination includes other sulfites in addition to $\text{Na}_2\text{S}_2\text{O}_5$, therefore the second titration, as described in ISO 3629, is omitted for the purpose of this determination.

5.2.1.2 Calculation

The equation given in ISO 3629 for potassium disulfite has to be adapted for sodium disulfite:

The sodium disulfite content C_1 , expressed as a percentage by mass % (m/m), is given by the following equation :

$$C_1 = 4,76 \left(\frac{(100 \times c_3) - (V \times c_2)}{m} \right)$$

where :

c_2 is the actual concentration, in moles per litre, of the sodium thiosulfate solution ;

c_3 is the actual concentration, in moles per litre, of the iodine solution ;

V is the volume, in millilitres, of the sodium thiosulfate solution used for the titration ;

m is the mass, in grams, of the test portion used for the titration ;

4,76 is a conversion factor for the mass of sodium disulfite equivalent to 1 mole of iodine (i.e. 47,6) X the conversion factor for millilitres to litres (i.e. 0,001) X 100 (for percentage) ;

100 is the volume, in millilitres of iodine solution added for total oxidation.

5.2.2 Impurities

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5.2.2.1 Sulfate

The sulfate content shall be determined in accordance with ISO 9280.

5.2.2.2 Chloride

The chloride content shall be determined in accordance with ISO 9297.

5.2.3 Toxic substances

5.2.3.1 General

The content of toxic substances as defined in the EU Directive 80/778/EEC shall be determined using the procedures specified in table 2.