SLOVENSKI STANDARD
SIST EN 12120:2005

01-september-2005

Nadomešča:
SIST EN 12120:2000

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

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

Produkt zue Aufbereitung von Wasser den menschlichen Gebrauch - Natriumhydrogensulfit

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

Ta slovenski standard je istoveten z: **EN 12120:2005**

ICS:

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

SIST EN 12120:2005 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12120

June 2005

ICS 71.100.80

Supersedes EN 12120:1998

English version

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

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

Produkt zue Aufbereitung von Wasser den menschlichen Gebrauch - Natriumhydrogensulfit

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.

CEN members are the national standards bodies of 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.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 12120:2005: E

Contents

Foreword

This European Standard (EN 12120:2005) 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 12120:1998.

Significant technical differences between this edition and EN 12120:1998 are as follows:

— deletion of the reference to EU Directive 80/778/EEC of July, 15 1980 in order to take into account 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 hydrogen sulfite used for treatment of water intended for human consumption. It describes the characteristics of sodium hydrogen sulfite and specifies the requirements and the corresponding test methods for sodium hydrogen sulfite. It gives information on 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 referenced 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 6353-1, *Reagents for chemical analysis - Part 1: General test methods*

ISO 9297, *Water quality - Determination of chloride - Silver nitrate titration with chromate indicator (Mohr's method)*

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 hydrogen sulfite.

3.1.2 Synonym or commons name

Sodium bisulfite

3.1.3 Relative molecular mass

104,6

3.1.4 Empirical formula

$NaHSO_3$.

3.1.5 Chemical formula

$NaHSO_3$.

3.1.6 CAS-Registry Number[1)]

7631-90-5

3.1.7 EINECS reference[2)]

231-548-4.

3.2 Commercial form

The product is an aqueous solution with an usual concentration approximately of mass fraction of 40 % $NaHSO_3$. corresponding to 520 g $NaHSO_3$ per litre.

3.3 Physical properties

3.3.1 Appearance and odour

The product is a yellowish liquid with a slight odour of sulfur dioxide.

3.3.2 Density

The density of the product is 1,3 g/ml to 1,5 g/ml at 20 °C.

3.3.3 Solubility (in water)

The product is miscible with water.

3.3.4 Vapour pressure

The vapour pressure of a solution of mass fraction of 40 % $NaHSO_3$ is 4 kPa [3)] at 20 °C.

3.3.5 Boiling point at 100 kPa[3]

The product decomposes at 100 °C.

3.3.6 Crystallisation point

A solution of mass fraction of 40 % $NaHSO_3$ crystallizes at 2 °C.

3.3.7 Specific heat

The specific heat of the product is 3,15 kJ/kg.K .

3.3.8 Viscosity dynamic

The viscosity of a solution of mass fraction of 40% $NaHSO_3$ is 4 mPa.s at 25 °C.

3.3.9 Critical temperature

Not applicable.

---

1) Chemical Abstracts Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

3) 100 kPa = 1 bar.

3.3.10 Critical pressure

Not applicable.

3.3.11 Physical hardness

Not applicable.

3.4 Chemical properties

The solution is weakly acid. The pH value of a commercial solution of mass fraction of 40 % is between 4,5 and 5,0.

$NaHSO_3$ exists in solution only; if the solution is evaporated the salt which is formed is sodium disulfite.

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

Sodium hydrogen 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 hydrogen 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 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 commercial product has a concentration of $NaHSO_3$ of approximately 520 g/l, which relates to a content of mass fraction of 40 % $NaHSO_3$, corresponding to a mass fraction of 25 % SO_2.

The concentration of sodium hydrogen sulfite shall be within ± 5 % of the manufacturer's declared value.

4.3 Impurities and main by-products

The sum of the content of sodium sulfate and sodium chloride shall not exceed a mass fraction of 5% of the commercial product, i.e. solution of mass fraction of 40 % $NaHSO_3$.

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 (mass fraction of 40 % $NaHSO_3$
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 Other chemical parameters and indicator parameters are not relevant in sodium hydrogen sulfite because the raw materials used in the manufacturing process are free of them. For parametric values of sodium hydrogen sulfite on trace metal content in drinking water, see [1].

5 Test methods

5.1 Sampling

5.1.1 General

Observe the general recommendations of ISO 3165 and take account of ISO 6206.

5.1.2 Sampling from drums and bottles

5.1.2.1 General

5.1.2.1.1 Mix the contents of each container to be sampled by shaking the container, by rolling it or by rocking it from side to side, taking care not to damage the container or spill any of the liquid.

5.1.2.1.2 If the design of the container is such (for example, a narrow-necked bottle) that it is impracticable to use a sampling implement, take a sample by pouring after the contents have been thoroughly mixed. Otherwise, proceed as described in 5.1.2.1.3.

5.1.2.1.3 Examine the surface of the liquid. If there are signs of surface contamination, take samples from the surface as described in 5.1.2.2. Otherwise, take samples as described in 5.1.2.3.

5.1.2.2 Surface sampling

Take a sample using a suitable ladle. Lower the ladle into the liquid until the rim is just below the surface, so that the surface layer runs into it. Withdraw the ladle just before it fills completely and allow any liquid adhering to the

ladle to drain off. If necessary, repeat this operation so that, when the other selected containers have been sampled in a similar manner, the total volume of sample required for subsequent analysis is obtained.

5.1.2.3 Bottom sampling

Take a sample using an open sampling tube, or a bottom-valve sampling tube, suited to the size of container and the viscosity of the liquid.

When using an open sampling tube, close it at the top and then lower the bottom end to the bottom of the container. Open the tube and move it rapidly so that the bottom of the tube traverses the bottom of the container before the tube is filled. Close the tube, withdraw it from the container and allow any liquid adhering to the outside of the tube to drain off.

When using a bottom-valve sampling tube, close the valve before lowering the tube into the container and then proceed in a similar manner to that when using an open sampling tube.

5.1.3 Sampling from tanks and tankers

From each access point, take samples as follows:

a) from the surface of the liquid, using a ladle as described in 5.1.2.2;

b) from the bottom of the tank or tanker, using a sampling tube as described in 5.1.2.3 or using a specially designed bottom-sampling apparatus;

c) from one or more positions, depending on the overall depth, between the bottom and the surface using a weighted sampling can.

5.2 Analyses

5.2.1 General

All reagents shall be of a recognized analytical grade and the water used shall conform to grade 3 specified in EN ISO 3696.

5.2.2 Main product

5.2.2.1 General

The sodium hydrogen sulfite content shall be determined by the method for sodium sulfite described in ISO 418.

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

5.2.2.2 Back titration method

5.2.2.2.1 Principle

Sodium hydrogen sulfite 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 $NaHSO_3$.