



# SLOVENSKI STANDARD SIST EN 12120:2022

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

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumhydrogensulfit

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

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EUROPEAN STANDARD

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## 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 - Hydrogénosulfite de sodium

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumhydrogensulfid

This European Standard was approved by CEN on 13 March 2022.

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

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<b>Contents</b>	<b>Page</b>
European foreword .....	4
Introduction .....	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions.....	6
4 Description.....	6
4.1 Identification.....	6
4.1.1 Chemical name.....	6
4.1.2 Synonym or commons name.....	6
4.1.3 Relative molecular mass .....	6
4.1.4 Empirical formula.....	6
4.1.5 Chemical formula.....	7
4.1.6 CAS-Registry Number .....	7
4.1.7 EINECS reference .....	7
4.2 Commercial form .....	7
4.3 Physical properties .....	7
4.3.1 Appearance and odour.....	7
4.3.2 Density.....	7
4.3.3 Solubility (in water).....	7
4.3.4 Vapour pressure.....	7
4.3.5 Boiling point at 100 kPa .....	7
4.3.6 Crystallization point .....	7
4.3.7 Specific heat.....	7
4.3.8 Viscosity dynamic .....	7
4.3.9 Critical temperature .....	7
4.3.10 Critical pressure.....	8
4.3.11 Physical hardness.....	8
4.4 Chemical properties.....	8
5 Purity criteria.....	8
5.1 General.....	8
5.2 Composition of commercial product .....	8
5.3 Impurities and main by-products.....	8
5.4 Chemical parameters.....	8
6 Test methods .....	9
6.1 Sampling.....	9
6.1.1 General.....	9
6.1.2 Sampling from drums and bottles .....	9
6.1.3 Sampling from tanks and tankers.....	10
6.2 Analyses.....	10
6.2.1 General.....	10
6.2.2 Main product .....	10
6.2.3 Impurities .....	11
6.2.4 Chemical parameters.....	12
7 Labelling, transportation, storage.....	17

7.1	Means of delivery.....	17
7.2	Labelling .....	17
7.3	Transportation labelling.....	17
7.4	Marking .....	18
7.5	Storage.....	18
7.5.1	Long term stability .....	18
7.5.2	Storage incompatibilities.....	18
Annex A (informative) General information on sodium hydrogen sulfite.....		19
A.1	Origin .....	19
A.1.1	Raw materials .....	19
A.1.2	Manufacturing process.....	19
A.2	Use.....	19
A.2.1	Function .....	19
A.2.2	Form in which it is used .....	19
A.2.3	Treatment dose .....	19
A.2.4	Means of application.....	19
A.2.5	Secondary effects.....	19
A.2.6	Removal of excess product.....	19
Annex B (normative) General rules relating to safety .....		20
B.1	Rules for safe handling and use.....	20
B.2	Emergency procedures.....	20
B.2.1	First aid .....	20
B.2.2	Spillage .....	20
B.2.3	Fire.....	20
Bibliography .....		21

**EN 12120:2022 (E)****European foreword**

This document (EN 12120:2022) 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 October 2022, and conflicting national standards shall be withdrawn at the latest by October 2022.

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

This document supersedes EN 12120:2012.

In comparison with the previous edition EN 12120:2012, the following technical modifications have been made:

- a) modification of 7.3 on transportation regulations and labelling, adding the sentence “The user shall 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;
- c) use of the changed classification and labelling (see 7.2).

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, 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 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 a 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 (see Annex A).

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**EN 12120:2022 (E)****1 Scope**

This document 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 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)*

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

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

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, *Water quality — Determination of sulfates — Method by continuous flow analysis (CFA)*

**3 Terms and definitions**

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 sulfite.

**4.1.2 Synonym or common name**

Sodium bisulfite.

**4.1.3 Relative molecular mass**

104,6.

**4.1.4 Empirical formula**

NaHSO<sub>3</sub>.



#### 4.1.5 Chemical formula

NaHSO<sub>3</sub>.

#### 4.1.6 CAS-Registry Number <sup>1</sup>

7631-90-5.

#### 4.1.7 EINECS reference <sup>2</sup>

231-548-0.

### 4.2 Commercial form

The product is an aqueous solution with a usual concentration of approximately a mass fraction of 40 % NaHSO<sub>3</sub>. This corresponds to 520 g NaHSO<sub>3</sub> per litre.

### 4.3 Physical properties

#### 4.3.1 Appearance and odour

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

#### 4.3.2 Density

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

#### 4.3.3 Solubility (in water)

The product is miscible with water.

#### 4.3.4 Vapour pressure

The vapour pressure of a solution of mass fraction of 40 % NaHSO<sub>3</sub> is 4 kPa <sup>3</sup> at 20 °C.

#### 4.3.5 Boiling point at 100 kPa <sup>3</sup>

The product decomposes at 100 °C.

#### 4.3.6 Crystallization point

A solution of mass fraction of 40 % NaHSO<sub>3</sub> crystallizes at 2 °C.

#### 4.3.7 Specific heat

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

#### 4.3.8 Viscosity dynamic

The viscosity of a solution of mass fraction of 40 % NaHSO<sub>3</sub> is 4 mPa·s at 25 °C.

#### 4.3.9 Critical temperature

Not applicable.

<sup>1</sup> Chemical Abstracts Service Registry Number.

<sup>2</sup> European Inventory of Existing Commercial Chemical Substances.

<sup>3</sup> 100 kPa = 1 bar.

**EN 12120:2022 (E)****4.3.10 Critical pressure**

Not applicable.

**4.3.11 Physical hardness**

Not applicable.

**4.4 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<sub>3</sub> 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 oxidising agents; e.g. with sodium hypochlorite or hydrogen peroxide.

**5 Purity criteria****5.1 General**

This document 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 could be present and, if so, this shall be notified to the user and when necessary to relevant authorities.

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.

**5.2 Composition of commercial product**

The commercial product has a concentration of NaHSO<sub>3</sub> of approximately 520 g/l, which relates to a content of mass fraction of 40 % NaHSO<sub>3</sub>, corresponding to a mass fraction of 25 % SO<sub>2</sub>.

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

**5.3 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<sub>3</sub>.

**5.4 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 <sub>3</sub> )
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].

## 6 Test methods

### 6.1 Sampling

#### 6.1.1 General

Observe the general recommendations of ISO 3165 (see [2]) and take account of ISO 6206 (see [3]).

#### 6.1.2 Sampling from drums and bottles

##### 6.1.2.1 General

**6.1.2.1.1** 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.

**6.1.2.1.2** 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 6.1.2.1.3.

**6.1.2.1.3** Examine the surface of the liquid. If there are signs of surface contamination, take samples from the surface as described in 6.1.2.2. Otherwise, take samples as described in 6.1.2.3.

##### 6.1.2.2 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.