



SLOVENSKI STANDARD SIST EN 12125:2005

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Nadomešča:
SIST EN 12125:2000

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

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumthiosulfat

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

Ta slovenski standard je istoveten z: **EN 12125:2005**

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13.060.20	Pitna voda	Drinking water
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EUROPEAN STANDARD

EN 12125

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ICS 71.100.80

Supersedes EN 12125:1998

English version

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

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumthiosulfat

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.

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

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

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Foreword

This European Standard (EN 12125:2005) 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 12125:1998.

Significant technical differences between this edition and EN 12125:1998 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.

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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 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.

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1 Scope

This European Standard is applicable to sodium thiosulfate used for treatment of water intended for human consumption. It describes the characteristics and specifies the requirements of sodium thiosulfate 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 3165, *Sampling of chemical products for industrial use – Safety in sampling*

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 10636, *Photography - Processing chemicals - Specifications for anhydrous sodium thiosulfate and sodium thiosulfate pentahydrate.* (standards.iteh.ai)

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

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3 Description

3.1 Identification

3.1.1 Chemical name

Sodium thiosulfate.

3.1.2 Synonym or common names

Sodium thiosulfate, sodium hyposulfite.

3.1.3 Relative molecular mass

158,11 (anhydrous).

3.1.4 Empirical formula

$\text{Na}_2\text{S}_2\text{O}_3$.

3.1.5 Chemical formula

$\text{Na}_2\text{S}_2\text{O}_3$.

EN 12125:2005 (E)**3.1.6 CAS-Registry Number¹⁾**

7772-98-7 (anhydrous); 10102-17-7 (pentahydrate).

3.1.7 EINECS reference²⁾

231-867-5.

3.2 Commercial form

The product is a crystalline powder.

3.3 Physical properties**3.3.1 Appearance**

The hydrated product is colourless crystal. The anhydrous product is a white powder.

3.3.2 Density

The particle density of the hydrated product is 1,69 g/cm³ to 1,73 g/cm³ at 20 °C.

3.3.3 Solubility in water

The solubility of the product in water is 700 g/l at 20 °C (anhydrous); for pentahydrate : 2910 g/l at 45 °C.

3.3.4 Vapour pressure

Not applicable.

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3.3.5 Boiling point at 100 kPa³⁾

Not applicable.

3.3.6 Crystallisation point

The product starts to decompose at 45 °C to 50 °C.

3.3.7 Specific heat

Not known.

3.3.8 Viscosity, dynamic

Not applicable.

¹⁾ Chemical Abstracts Service Registry Number.

²⁾ European Inventory of Existing Commercial Chemical Substances.

³⁾ 100 kPa = 1 bar.

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 diluted aqueous solution of sodium thiosulfate is approximately neutral (6,5 to 8). Sodium thiosulfate dissolves silver halogenids and other silver salts.

At elevated temperatures (> 50 °C) sulfur dioxide is generated.

Sodium thiosulfate releases sulfur dioxide when mixed with acids.

Sodium thiosulfate reacts violently with oxidizing agents; e.g. with sodium hypochlorite or hydrogen peroxide. It shall not get into contact with acids, iodine, lead and silver salts.

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4 Purity criteria**4.1 General**

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This European Standard specifies the minimum purity requirements for sodium thiosulfate 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 concentration of sodium thiosulfate anhydrous shall not be less than a mass fraction of 95 % of $\text{Na}_2\text{S}_2\text{O}_3$.

The concentration of sodium thiosulfate pentahydrate shall not be less than a mass fraction of 95% of $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$.

4.3 Impurities and main by-products

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

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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.	0,5
Cadmium (Cd)	max.	0,1
Chromium (Cr)	max.	5
Lead (Pb)	max.	5
Mercury (Hg)	max.	0,1
Nickel (Ni)	max.	5
Selenium (Se)	max.	2
NOTE Pesticides and polycyclic aromatic hydrocarbons and cyanides (CN) are not relevant in sodium thiosulfate because the raw materials used in the manufacturing are free of them. For parametric values of sodium thiosulfate 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 thiosulfate content shall be determined in accordance with ISO 10636.

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.

5.2.3 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.

5.2.3.2.2 Reagents

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

5.2.3.2.2.1 Standard solution (100 µg/l Cd, Cr, Pb or Ni)

The standard solution shall be freshly prepared on the day of use by individual dilution of a stock solution. This stock solution with a Cd, Cr, Pb or Ni content of at least 1 mg/l shall be made by dilution of standard solutions of Cd, Cr, Pb and Ni which are available from all major suppliers of laboratory chemicals. This stock solution shall be kept in containers of tetrafluoroethylene-hexafluoropropylene copolymer (FEP), polytetrafluoroethylene (PTFE) or polyethylene (PE).