



# SLOVENSKI STANDARD

## oSIST prEN 938:2014

01-september-2014

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### **Kemikalije, ki se uporabljajo za pripravo pitne vode - Natrijev klorit**

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumchlorit

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

**Ta slovenski standard je istoveten z: prEN 938**

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## Chemicals used for treatment of water intended for human consumption - Sodium chlorite

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumchlorit

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EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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prEN 938:2014 (E)

## Foreword

This document (prEN 938:2014) has been prepared by Technical Committee CEN/TC 164 "Water supply", the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 938:2009.

The significant technical differences between this edition and EN 938:2009 are as follows:

- a) deletion of reference to EU Directive 67/548/EEC of June 27, 1967 in order to take into account the latest Regulation in force (see [2]);
- b) use of the changed classification and labelling (see [2]).

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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:

- a) 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;
- 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 the 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 chlorite used for treatment of water intended for human consumption. It describes the characteristics of sodium chlorite and specifies the requirements and the corresponding test methods for sodium chlorite. It gives information on its use in water treatment.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1483, *Water quality — Determination of mercury — Method using atomic absorption spectrometry*

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

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

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

ISO 8288:1986, *Water quality — Determination of cobalt, nickel, copper, zinc, cadmium and lead — Flame atomic absorption spectrometric methods*

ISO 9174, *Water quality — Determination of total chromium — Atomic absorption spectrometric methods*

## 3 Description

### 3.1 Identification

#### 3.1.1 Chemical name

Sodium chlorite.

[SIST EN 938:2016](https://standards.iteh.ai/catalog/standards/sist/31c25e26-fb0b-4d24-8a45-56bd9df6a33f/sist-en-938-2016)

<https://standards.iteh.ai/catalog/standards/sist/31c25e26-fb0b-4d24-8a45-56bd9df6a33f/sist-en-938-2016>

#### 3.1.2 Synonym or common name

None.

#### 3.1.3 Relative molecular mass

90,44.

#### 3.1.4 Empirical formula

NaClO<sub>2</sub>.

#### 3.1.5 Chemical formula

NaClO<sub>2</sub>.

#### 3.1.6 CAS Registry Number <sup>1)</sup>

7758-19-2.

1) Chemical Abstracts Service Registry Number.



**3.1.7 EINECS reference <sup>2)</sup>**

231-836-6.

**3.2 Commercial form**

The product is supplied as an aqueous solution of sodium chlorite.

**3.3 Physical properties****3.3.1 Appearance**

The products are greenish-yellow aqueous solution.

**3.3.2 Density**

The density of sodium chlorite is given in Table 1.

**Table 1 — Density of sodium chlorite**

Aqueous solution concentration % (mass fraction)	Density g/ml at 20 °C
25	1,210
31	1,270

**3.3.3 Solubility in water**

The solubility of sodium chlorite depending on temperature is given in Table 2

**Table 2 — Solubility of sodium chlorite**

Temperature °C	Solubility g/l
5	340
17	390
30	460
45	530
60	550

**3.3.4 Vapour pressure**

Not applicable.

**3.3.5 Boiling point at 100 kPa <sup>3)</sup>**

Not applicable.

**3.3.6 Crystallization point**

The crystallization point of sodium chlorite depending on concentration is given in Table 3.

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

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

Table 3 — Crystallization point of sodium chlorite

Aqueous solution concentration % (mass fraction)	Crystallization point °C
25	– 14,5
31	3

### 3.3.7 Specific heat

Not known.

### 3.3.8 Viscosity (dynamic)

The viscosity of sodium chlorite depending on concentration is given in Table 4.

Table 4 — Viscosity of sodium chlorite

Aqueous solution concentration % (mass fraction)	Viscosity mPa.s at 20 °C
25	2,33
31	3,26

### 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

Sodium chlorite is a strong oxidizing agent. It generates chlorine dioxide with acidic solutions or chlorine and reacts with organic compounds.

## 4 Purity criteria

### 4.1 General

This European Standard specifies the minimum purity requirements for Sodium chlorite 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 the 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 the product standard.

Limits have been given for impurities and chemicals 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 sodium chlorite is available as an aqueous solution with sodium chlorite content of 24,5 percent by mass fraction to 35 percent by mass fraction.

Solutions of 25 percent by mass fraction and 31 percent by mass fraction of sodium chlorite are the most commonly used.

The content of sodium chlorite shall be equal to or greater than the manufacturer's declared value.

## 4.3 Impurities and main by-products

The product shall conform to the requirements specified in Table 5.

**Table 5 — Impurities**

Impurity	Limit
	g/kg sodium chlorite 100 % mass fraction
Sodium chlorate (NaClO <sub>3</sub> ) max.	40
NOTE Sodium chlorate can be a by-product of the manufacturing process.	

## 4.4 Chemical parameters

NOTE For the purpose of this standard, "chemical parameters" are those defined in the EU Directive 98/83/EC of November 13,1998 (see [1]).

The content of chemical parameters shall conform to the requirements specified in Table 6.

**Table 6 — Chemical parameters**

Parameter		Limit in mg/kg of sodium chlorite 100 % of mass fraction	
		Type 1	Type 2
Arsenic (As)	max.	1,1	7,5
Cadmium (Cd)	max.	1,5	7,5
Chromium (Cr)	max.	1,1	7,5
Mercury (Hg)	max.	1,1	3,7
Nickel (Ni)	max.	1,1	7,5
Lead (Pb)	max.	1,1	7,5
Antimony (Sb)	max.	1,1	7,5
Selenium (Se)	max.	1,1	7,5
NOTE Cyanide which does not exist in a strong oxidizing medium such as sodium chlorite is not a relevant chemical parameter. Pesticides and polycyclic aromatic hydrocarbons are not by-products of the manufacturing process.			

## 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 the 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 5.1.2.3.

**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.