



**SLOVENSKI STANDARD**  
**SIST EN 897:1999**

**01-april-1999**

---

**Kemikalije, ki se uporabljajo za pripravo pitne vode – Natrijev karbonat**

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumcarbonat

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

**iTeh STANDARD PREVIEW**

(standards.itih.ai)

[SIST EN 897:1999](https://standards.itih.ai/catalog/standards/sist/93f919f1-5fba-4c1d-9a9e-10a4c05bef/sist-en-897-1999)

**Ta slovenski standard je istoveten z: EN 897:1998**

<https://standards.itih.ai/catalog/standards/sist/93f919f1-5fba-4c1d-9a9e-10a4c05bef/sist-en-897-1999>

---

**ICS:**

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

**SIST EN 897:1999**

**en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 897:1999

<https://standards.iteh.ai/catalog/standards/sist/93f919fd-5fba-4c1d-9a9e-10af4e05befc/sist-en-897-1999>

EUROPEAN STANDARD

EN 897

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 1998

ICS 71.100.80

Descriptors: potable water, water treatment, chemical compounds, sodium carbonates, description, physical properties, chemical properties, impurities, toxic substances, tests, labelling, storage, utilization

English version

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

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Natriumcarbonat

This European Standard was approved by CEN on 1 July 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.

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.



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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

## Contents

<b>Foreword</b> .....	<b>3</b>
<b>Introduction</b> .....	<b>4</b>
<b>1 Scope</b> .....	<b>4</b>
<b>2 Normative references</b> .....	<b>4</b>
<b>3 Description</b> .....	<b>5</b>
3.1 Identification .....	5
3.2 Commercial forms.....	5
3.3 Physical properties.....	6
3.4 Chemical properties .....	7
<b>4 Purity criteria</b> .....	<b>7</b>
4.1 General.....	7
4.2 Composition of commercial product.....	7
4.3 Impurities and main by-products .....	7
4.4 Toxic substances .....	8
<b>5 Test methods</b> .....	<b>8</b>
5.1 Sampling.....	8
5.2 Analyses.....	8
<b>6 Labelling - Transportation - Storage</b> .....	<b>10</b>
6.1 Means of delivery.....	10
6.2 Risk and safety labelling according to the EU Directives .....	10
6.3 Transportation regulations and labelling.....	10
6.4 Marking.....	10
6.5 Storage.....	11
<b>Annex A (informative) General information on sodium carbonate</b> .....	<b>12</b>
<b>Annex B (normative) Analytical methods</b> .....	<b>13</b>
<b>Annex C (normative) General rules relating to safety</b> .....	<b>21</b>
<b>Annex D (informative) Bibliography</b> .....	<b>22</b>



## 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 January 1999, and conflicting national standards shall be withdrawn at the latest by January 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.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 897:1999](https://standards.iteh.ai/catalog/standards/sist/93f919fd-5fba-4c1d-9a9e-10af4e05befc/sist-en-897-1999)

<https://standards.iteh.ai/catalog/standards/sist/93f919fd-5fba-4c1d-9a9e-10af4e05befc/sist-en-897-1999>

## 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 anhydrous sodium carbonate used for treatment of water intended for human consumption. It describes the characteristics of sodium carbonate and specifies the requirements and the corresponding test methods for sodium carbonate. It gives information on its use in water treatment.

## 2 Normative references

This present 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.

<https://standards.iteh.ai/catalog/standards/sist/93f919fd-5fba-4c1d-9a9e-10a4e05befc/sist-en-897-1999>

EN ISO 3696	Water for analytical laboratory use - Specification and test methods (ISO 3696 - 1987)
ISO 740	Sodium carbonate for industrial use - Determination of total soluble alkalinity - Titrimetric method
ISO 746	Sodium carbonate for industrial use - Determination of matter insoluble in water at 50 degrees C
ISO 2460	Sodium hydrogen carbonate for industrial use - Determination of iron content - 1,10 - Phenanthroline photometric method
ISO 3165	Sampling of chemical products for industrial use - Safety in sampling
ISO 5666-1:1983	Water quality - Determination of total mercury by flameless atomic absorption spectrometry - Part 1 : Methode after digestion with permanganate-peroxodisulfat
ISO 6206	Chemical products for industrial use - Sampling - Vocabulary
ISO 8213	Chemical products for industrial use - Sampling techniques - Solid chemical products in the form of particles varying from powders to coarse lumps

### 3 Description

#### 3.1 Identification

##### 3.1.1 Chemical name

Sodium carbonate.

##### 3.1.2 Synonym or common names

Soda ash, anhydrous sodium carbonate, light soda ash, heavy soda ash.

##### 3.1.3 Relative molecular mass

105,99.

##### 3.1.4 Empirical formula

Na<sub>2</sub>CO<sub>3</sub>.

##### 3.1.5 Chemical formula

Na<sub>2</sub>CO<sub>3</sub>.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 897:1999

[https://standards.iteh.ai/catalog/standards/sist/93f919fd-5fba-4c1d-9a9e-](https://standards.iteh.ai/catalog/standards/sist/93f919fd-5fba-4c1d-9a9e-10af4e05befc/sist-en-897-1999)

##### 3.1.6 CAS Registry Number <sup>1)</sup>10af4e05befc/sist-en-897-1999

497-19-8.

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

207-838-8.

#### 3.2 Commercial forms

The product is available as dry powder or fine granules and described as light soda or heavy soda according to bulk density (see 3.3.2).

---

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

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

### 3.3 Physical properties

#### 3.3.1 Appearance

The product is a white powder or crystals, slightly hygroscopic.

#### 3.3.2 Density

Solid : 2,53 g/cm<sup>3</sup>.

Bulk density :

- ranging from 0,5 kg/dm<sup>3</sup> to 0,65 kg/dm<sup>3</sup> (light soda ash) ;
- ranging from 0,8kg/dm<sup>3</sup> to 1,2 kg/dm<sup>3</sup> (heavy soda ash).

#### 3.3.3 Solubility in water

212 g/l at 20 °C.

#### 3.3.4 Vapour pressure

Not applicable.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 897:1999](https://standards.iteh.ai/catalog/standards/sist/93f919fd-5fba-4c1d-9a9e-10af4e05befc/sist-en-897-1999)

[https://standards.iteh.ai/catalog/standards/sist/93f919fd-5fba-4c1d-9a9e-](https://standards.iteh.ai/catalog/standards/sist/93f919fd-5fba-4c1d-9a9e-10af4e05befc/sist-en-897-1999)

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

Not applicable.

#### 3.3.6 Melting point

851 °C.

#### 3.3.7 Specific heat

1,043 kJ/kg.K.

#### 3.3.8 Viscosity, dynamic

Not applicable.

---

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



### 3.3.9 Critical temperature

Not applicable.

### 3.3.10 Critical pressure

Not applicable.

### 3.3.11 Physical hardness

The hardness of solid sodium carbonate is given as 1 to 2 on the Mohs'scale of hardness.

## 3.4 Chemical properties

Sodium carbonate reacts exothermically with acids with formation of carbon dioxide.

Sodium carbonate is slightly hygroscopic and dissolution in water is an exothermic reaction.

## 4 Purity criteria

### 4.1 General

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.

### 4.2 Composition of commercial product

The product shall contain not less than 99 % (*m/m*) of Na<sub>2</sub>CO<sub>3</sub>.

### 4.3 Impurities and main by-products

The product shall conform to the requirements specified in table 1.

The concentration limits refer to Na<sub>2</sub>CO<sub>3</sub>.

**Table 1 : Impurities**

Impurity	Limit in mg/kg of Na <sub>2</sub> CO <sub>3</sub>
Iron(II) <sup>1)</sup> max.	20
Insolubles <sup>2)</sup> max.	200
1) : Iron(II) can cause organoleptic problems.	
2) : Indicate the presence of foreign matter.	

#### 4.4 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 D.1).

The content of toxic substances shall conform to the requirements specified in table 2.

The concentration limits are specified in milligrams per kilogram of  $\text{Na}_2\text{CO}_3$ .

Table 2 : Toxic substances

Element		Limit in mg/kg of $\text{Na}_2\text{CO}_3$
Arsenic (As)	max.	2
Cadmium (Cd)	max.	2
Chromium (Cr)	max.	2
Mercury (Hg)	max.	0,1
Nickel (Ni)	max.	2
Lead (Pb)	max.	2
NOTE : Antimony, selenium, cyanides, pesticides and polycyclic aromatic hydrocarbons are not relevant toxic substances as listed in EU Directive 80/778/EEC because they are not likely to be found in the raw materials.		

## 5 Test methods

SIST EN 897:1999

<https://standards.iteh.ai/catalog/standards/sist/93f919fd-5fba-4c1d-9a9e-10af4e05befc/sist-en-897-1999>

### 5.1 Sampling

Take a sample in accordance with ISO 8213, taking account of ISO 3165 and also ISO 6206.

### 5.2 Analyses

#### 5.2.1 Main product

The percentage by mass (% *m/m*) of  $\text{Na}_2\text{CO}_3$  shall be determined by titration of the total alkalinity with a standard volumetric acid solution in accordance with ISO 740.

#### 5.2.2 Impurities

##### 5.2.2.1 Iron

The iron content shall be determined by a spectrometric method with 1,10-phenanthroline in accordance with ISO 2460 replacing sodium bicarbonate by sodium carbonate.

### 5.2.2.2 Insolubles

The percentage by mass (% (m/m)) of the insolubles in water shall be determined at 50 °C in accordance with ISO 746.

### 5.2.3 Toxic substances

The contents of toxic substances except for mercury, shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES).

#### 5.2.3.1 Arsenic

The arsenic content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

#### 5.2.3.2 Cadmium

The cadmium content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

#### 5.2.3.3 Chromium

The chromium content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

#### 5.2.3.4 Mercury

The mercury content shall be determined by cold vapour atomic absorption spectrometry in accordance with ISO 5666-1, (see B.2).

#### 5.2.3.5 Nickel

The nickel content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

#### 5.2.3.6 Lead

The lead content shall be determined by inductively coupled plasma optical emission spectrometry (ICP/OES) (see B.1).

iteh STANDARD PREVIEW  
(standards.iteh.ai)

SIST EN 897:1999  
https://standards.iteh.ai/catalog/standards/sist/93f919fd-5fba-4c1d-9a9e-10af4e05befc/sist-en-897-1999