



SLOVENSKI STANDARD

SIST EN 936:1999

01-april-1999

Kemikalije, ki se uporabljajo za pripravo pitne vode – Ogljikov dioksid

Chemicals used for treatment of water intended for human consumption - Carbon dioxide

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Kohlenstoffdioxid

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Dioxyde de carbone (standards.iteh.ai)

Ta slovenski standard je istoveten z: ^{SIST EN 936:1999} EN 936:1997
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ICS:

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

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en

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NORME EUROPÉENNE
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EN 936

November 1997

ICS 71.100.80

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

English version

Chemicals used for treatment of water intended for human consumption - Carbon dioxide

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Kohlenstoffdioxid

This European Standard was approved by CEN on 24 October 1997.

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.

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

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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 May 1998, and conflicting national standards shall be withdrawn at the latest by May 1998.

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.

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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 :

- 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 carbon dioxide used for treatment of water intended for human consumption. It describes the characteristics of carbon dioxide and specifies the requirements and the corresponding analytical methods for carbon dioxide. It gives information on its use in water treatment.

2 Normative references

This European Standard incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate place 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.

ISO 3165 Sampling of chemical products for industrial use - Safety in sampling.

ISO 6206 Chemical products for industrial use - Sampling - Vocabulary.

3 Description

3.1 Identification

3.1.1 Chemical name

Carbon dioxide

3.1.2 Synonym or common name

Carbonic acid (as anhydride of carbon acid)

3.1.3 Relative molecular mass

44,011.

3.1.4 Empirical formulaCO₂.**3.1.5 Chemical formula**CO₂.**3.1.6 CAS Registry Number ¹⁾**

124-38-9.

3.1.7 EINECS reference ²⁾

204-696-9.

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3.2 Commercial form[SIST EN 936:1999](#)

As liquefied gas ; the solid form is not usual for treatment of water intended for human consumption.

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3.3 Physical properties**3.3.1 Appearance**

Colourless gas ; in gaseous, liquid or solid state.

3.3.2 DensityGas : at 0 °C and 101,3 kPa ³⁾ = 1,9 768 kg/m³.Liquid : at 0°C and 4 000 kPa = 933,318 kg/m³.**3.3.3 Solubility in water**

1,72 g/l at 20 °C and 101,3 kPa.

¹⁾ Chemical Abstracts Service Registry Number

²⁾ European Inventory of Existing Commercial Chemical Substances

³⁾ 100 kPa = 1 bar

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3.3.4 Vapour pressure

5733,0 kPa at 20 °C.

3.3.5 Boiling point at 100 kPa

(See 3.3.6).

3.3.6 Melting point

Sublimation point

- 78,9 °C (and 98,1 kPa).

3.3.7 Specific heat

0,827 kJ (kg • K) at 0°C and 100 kPa.

3.3.8 Viscosity (dynamic)

147 x 10⁻⁷ Pa • s at 20 °C.

3.3.9 Critical temperature

31,0 °C.

3.3.10 Critical pressure

7883 kPa.

3.3.11 Physical hardness

Not applicable.

3.4 Chemical properties

Non-combustible.

CO₂ forms a weak acid when it is dissolved in water. It reacts with alkalis, and forms carbonates and bicarbonates.

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4 Purity criteria

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.

4.1 Composition of commercial product

The product shall contain at least 99,7 percent by volume of CO₂ (% (V/V)).

NOTE: The composition of the commercial product is defined in the Directive 96/77/EC of December 2, 1996. (See also B.3).

4.2 Impurities and main by-products

The residual gas content consists mostly of nitrogen, oxygen and moisture.

4.3 Toxic substances

NOTE 1 : For the purpose of this standard, "toxic substances" are those defined in the Directive 80/778/EEC of July 15, 1980 (see B.1).

NOTE 2 : The inorganic toxic substances (according to EEC Directive 80/778/EEC are not found in the gaseous phase. Pesticides and polycyclic aromatic hydrocarbons are not by-products of the manufacturing process.

5 Test methods

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5.1 Sampling

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

5.2 Analysis

5.2.1 Main product

Carbon dioxide , CO₂ (see 4.1 and 4.2).

5.2.1.1 Principe

Measuring of a fixed volume of product (V_1). The residue volume (V_2) which is measured after absorption of CO₂ is to subtract from (V_1). The difference ($V_1 - V_2$) = V_3 is equivalent to the volume part of CO₂.

Absorption in potassium hydroxide solution (KOH) by a proper CO₂ appliance with an accuracy of 0 % (V/V) to 0,05 % (V/V) (calibrated in 0,01 %-steps).

Another method is practised by gas-chromatography.