



SLOVENSKI STANDARD

SIST EN 12876:2001

01-december-2001

Kemikalije, ki se uporabljajo za pripravo pitne vode - Kisik

Chemicals used for treatment of water intended for human consumption - Oxygen

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Sauerstoff

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

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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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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12876

May 2000

ICS 71.100.80

English version

Chemicals used for treatment of water intended for human consumption - Oxygen

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Sauerstoff

This European Standard was approved by CEN on 3 April 2000.

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 November 2000, and conflicting national standards shall be withdrawn at the latest by November 2000.

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.

Annex A is informative.

The annexes B and C are normative.

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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.

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1 Scope

This European Standard is applicable to oxygen used for treatment of water intended for human consumption. It describes the characteristics of oxygen and specifies the requirements and the corresponding test methods for oxygen. It gives information on its use in water treatment.

2 Normative reference

This 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.

EN 1089-3, *Transportable gas cylinder – Cylinder identification – Part 3 : Colour coding.*

3 Description

3.1 Identification

3.1.1 Chemical name

Oxygen.

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3.1.2 Synonym or common name

None.

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3.1.3 Relative molecular mass

32,00

3.1.4 Empirical formula

O₂

3.1.5 Chemical formula

O = O

3.1.6 CAS Registry Number¹⁾

7782-44-7.

3.1.7 EINECS reference²⁾

231-956-9.

3.2 Commercial forms

Gas or cryogenic liquid.

1) Chemical Abstract Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

3.3 Physical properties

3.3.1 Appearance, odour and taste

The product is a colourless, odourless, tasteless gas or a bluish liquid.

3.3.2 Density

Liquid : 1,141 g/ml at -183 °C.

Gas : 1,337 g/dm³ at 15 °C and 101,3 kPa³⁾.

3.3.3 Solubility of pure oxygen (in water)

The solubility in pure water at 101,3 kPa³⁾ (pressure of the equilibrating gas phase) is :

61 mg/l at 5 °C ;

45 mg/l at 15 °C ;

36 mg/l at 25 °C.

3.3.4 Vapour pressure

Oxygen is a gas at NTP (Normal Temperature Pressure, 273 K and 101,3 kPa).

3.3.5 Boiling point at 100 kPa³⁾

- 182,97 °C.

3.3.6 Melting point

Not applicable.

3.3.7 Specific heat

At a constant pressure 100 kPa :

919 J/(kgxK) at 15 °C ;

920 J/(kgxK) at 25 °C.

3.3.8 Viscosity (dynamic)

2,0720 x 10⁻² mPaxs at 100 kPa and 27 °C.

3.3.9 Critical temperature

- 118,6 °C.

3.3.10 Critical pressure

5 043 kPa.

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3) 100 kPa = 1 bar.

3.3.11 Physical hardness

Not applicable.

3.4 Chemical properties

Oxygen is an oxidizing agent and a supporter of combustion. Dangerous reactions are possible with organic compounds and other combustible substances.

NOTE Oxygen-rich atmospheres (higher than 25 % (V/V) of oxygen) increase the rate of combustion which can lead to explosive reactions.

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

Two grades of oxygen exist varying from the manufacturing process :

Grade A for cryogenically derived oxygen, the minimum concentration of oxygen shall be 99,5 % (V/V).

Grade B for oxygen manufactured with non cryogenic methods, the minimum concentration of oxygen shall be 90 % (V/V).

4.2 Impurities and main by-products

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The hydrocarbons content (as Methane Index) shall not exceed 50 ppm (V/V)

NOTE Depending on the production route, the product can contain quantities of water, nitrogen, argon, carbon dioxide and other rare gases which do not affect its use in water treatment.

4.3 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 [1]).

Commercial oxygen does not contain significant levels of toxic substances.

5 Test methods

5.1 Sampling

All or part of the gas flow is sent through the analyzer. Sample in a volumetric pipette of a few litres with a positive pressure from 150 kPa to 200 kPa or with an automatic sampler.

When sampling gaseous oxygen the following shall apply :

- sample lines and ancillary equipment shall be compatible with use with oxygen, be clean, leak tight and have the appropriate pressure rating to deliver the sample safely to the analyzer ;
- ensure that the gas admitted to the analyzer is representative of the bulk sample and that sample pressures and flow rates comply with the analyzer manufacturer's recommended operating procedures.

NOTE Flow rates to the analyzer can require precise control, following pressure regulation, if automatic flow control devices are not an integral part of the measurement system.