



SLOVENSKI STANDARD

SIST EN 902:2009

01-maj-2009

Nadomešča:
SIST EN 902:2000

Kemikalije, ki se uporabljajo za pripravo pitne vode - Vodikov peroksid

Chemicals used for treatment of water intended for human consumption - Hydrogen peroxide

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Wasserstoffperoxid

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

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Ta slovenski standard je istoveten z: EN 902:2009

ICS:

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

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 902

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English Version

Chemicals used for treatment of water intended for human consumption - Hydrogen peroxide

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

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This European Standard was approved by CEN on 5 December 2008.

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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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, 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 document (EN 902:2009) 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of an identical text or by endorsement, at the latest by July 2009, and conflicting national standards shall be withdrawn at the latest by July 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 902:1999.

The significant technical differences between this edition and EN 902:1999 are as follows:

- a) deletion of the reference to EU Directive 80/778/EEC of July 15,1980 in order to take into account the latest Directive in force (see [1]);
- b) notification that the standard applies to pure chemical and not to mixtures with other chemicals;
- c) replacement of ISO 5666-1 by EN 1483;
- d) use of the changed classification and labelling (see [2]).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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.

NOTE Conformity with this 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 document is applicable only to hydrogen peroxide and not to mixtures with other chemicals used for treatment of water intended for human consumption. It describes the characteristics of hydrogen peroxide and specifies the requirements and the corresponding test methods for hydrogen peroxide. It gives information on its use in water treatment. It also determines the rules relating to safe handling and use (see Annex B).

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 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 3696:1987)

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 chromium - Atomic absorption spectrometric methods*

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3 Description

3.1 Identification

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3.1.1 Chemical name

Hydrogen peroxide

3.1.2 Synonym or common name

None

3.1.3 Relative molecular mass

34,02

3.1.4 Empirical formula

H₂O₂

3.1.5 Chemical formula

H₂O₂

3.1.6 CAS Registry Number¹⁾

7722-84-1

3.1.7 EINECS reference²⁾

231-765-0

3.2 Commercial form

The product is supplied as an aqueous solution.

1) Chemical Abstracts Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

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3.3 Physical properties

3.3.1 Appearance and odour

The product is colourless liquid, slightly pungent odour.

3.3.2 Density

The density of hydrogen peroxide is given in Table 1.

Table 1 — Density

Solution concentration Mass fraction in%	Density g/ml at 20 °C
20	1,075
30	1,114
35	1,132
50	1,195
60	1,241
70	1,289

3.3.3 Solubility in water

The product is miscible with water in all proportions.

3.3.4 Vapour pressure

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The vapour pressure of hydrogen peroxide depending on concentration is given in Table 2.

Table 2 — Vapour pressure

Solution concentration Mass fraction in %	Vapour pressure kPa at 20 °C
20	2,0
30	1,8
35	1,7
50	1,3
60	1,1
70	0,8

3.3.5 Boiling point at 100 kPa³⁾

The boiling point of hydrogen peroxide depending on concentration is given in Table 3.

Table 3 — Boiling point

Solution concentration Mass fraction in %	Boiling point °C at 100 kPa
20	103
30	106
35	108
50	114
60	119
70	125

3.3.6 Crystallization point

The crystallisation point of hydrogen peroxide depending on concentration is given in Table 4.

Table 4 — Crystallization point

Solution concentration Mass fraction in %	Crystallization point °C
20	- 14,6
30	- 25,7
35	- 32,5
50	- 51
60	- 55
70	- 37

3.3.7 Specific heat

The specific heat of hydrogen peroxide depending on concentration is given in Table 5.

Table 5 — Specific heat

Solution concentration Mass fraction in %	Specific heat kJ/(kg.K)
20	3,82 at 20 °C
50	3,32 at 20 °C
100	2,63 at 25 °C

3) 100 kPa = 1 bar.

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3.3.8 Viscosity, dynamic

The viscosity of hydrogen peroxide depending on concentration is given in Table 6.

Table 6 — Viscosity

Solution concentration Mass fraction in %	Viscosity MPa.s at 20 °C
20	1,04
30	1,07
35	1,10
50	1,17
60	1,20
70	1,24
100	1,25

3.3.9 Critical temperature

The critical temperature of pure hydrogen peroxide is 457 °C.

3.3.10 Critical pressure

The critical pressure of pure hydrogen peroxide is 21,7 mPa.

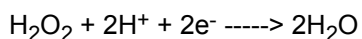
3.3.11 Physical hardness <https://standards.iteh.ai/catalog/standards/sist/a52e9979-1e89-4359-9f59-879c3817d9bd/sist-en-902-2009>

Not applicable.

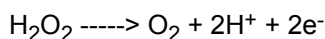
3.4 Chemical properties

Hydrogen peroxide is a weak acid.

According to species in solution, it is an oxidizing agent ($E^\circ = 1,776 \text{ V}$) or a reducing agent ($E^\circ = 0,682 \text{ V}$).
Oxidizing agent:



Reducing agent:



NOTE 1 It can be activated by ultraviolet light, ozone or metals to generate free radicals.

NOTE 2 Singlet oxygen can be obtained by reaction of hydrogen peroxide with hypochlorite.

4 Purity criteria

4.1 General

This European Standard specifies the minimum purity requirements for hydrogen peroxide 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 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 lead 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 hydrogen peroxide is usually available in concentrated solution with concentration within the range of mass fraction of 20 % to 70 %. Diluted products are also available.

The concentration of hydrogen peroxide shall be equal to or greater than the manufacturer specified value.

4.3 Impurities and main by-products

Not applicable.

4.4 Chemical parameters

The product shall conform to the requirements specified in Table 7.

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