SLOVENSKI STANDARD
SIST EN 13177:2003

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Kemikalije, ki se uporabljajo za pripravo pitne vode - Metanol

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Methanol

Produits chimiques utilisés pour le traitement de l'eau destinée a la consommation humaine - Méthanol

Ta slovenski standard je istoveten z: **EN 13177:2002**

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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

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English version

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

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Methanol

This European Standard was approved by CEN on 25 July 2002.

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 Management Centre 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 Management Centre 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, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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Contents

Foreword

This document EN 13177:2002 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 March 2003, and conflicting national standards shall be withdrawn at the latest by March 2003.

Annex A is informative.

Annex B is normative.

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, Malta, Netherlands, Norway, Portugal, 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:

a) this standard provides no information as to whether the product can 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.

1 Scope

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

NOTE Conformity with this standard does not confer of 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.

2 Normative references

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 (including amendments).

EN 1483, *Water quality - Determination of mercury*.

EN ISO 3696:1995, *Water for analytical laboratory use - Specification and test methods (ISO 3696:1987).*

EN 26595, *Water quality - Determination of total arsenic - Silver diethyldithiocarbamate spectrophotometric method (ISO 6595:1982).*

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

ISO 3856-2, *Paints and varnishes - Determination of "soluble" metal content - Part 2 : Determination of antimony content - Flame atomic absorption spectrometric method and Rhodamine B spectrophotometric method.*

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*.

ISO 9965, *Water quality - Determination of selenium - Atomic absorption spectrometric method (hydride technique).*

3 Description

3.1 Identification

3.1.1 Chemical name

Methanol.

3.1.2 Synonym or common names

Methyl alcohol, carbinol.

3.1.3 Relative molecular mass

32,04.

3.1.4 Empirical formula

CH_4O.

3.1.5 Chemical formula

CH_3OH.

3.1.6 CAS Registry Number [1)]

67-56-1.

3.1.7 EINECS reference [2)]

200-65-96.

3.2 Commercial form

The product is available as colourless liquid.

3.3 Physical properties

3.3.1 Appearance

The product is a colourless liquid at 20 °C.

3.3.2 Density

The density at 20 °C is given in Table 1 (see [3] and [4]).

Table 1 — Density

Concentration mass fraction of methanol, %	**Density** g/ml
90	0,8219
92	0,8163
94	0,8103
96	0,8048
98	0,7990
99,85	0,7936
100	0,7931

3.3.3 Solubility in water

Miscible.

3.3.4 Vapour pressure

12,7 kPa at 20 °C (for pure methanol).

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1) Chemical Abstracts Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

3.3.5 Boiling point at 100 kPa [3)]

64,6 °C (for pure methanol).

3.3.6 Melting point

- 98 °C (for pure methanol).

3.3.7 Specific heat

2,53 kJ /kg.K at 25 °C (for pure methanol).

3.3.8 Viscosity, dynamic

0,594 mPa.s at 20 °C (for pure methanol).

3.3.9 Critical temperature (for gas)

Not applicable.

3.3.10 Critical pressure (for gas)

Not applicable.

3.3.11 Physical hardness

Not applicable.

3.4 Chemical properties

Methanol is a polar and protic organic solvent.

4 Purity criteria

Limits have been given for impurities and chemical parameters 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 a minimum mass fraction of 99,85 % pure synthetic methanol.

4.2 Impurities and main by-products

The propan-2-one content shall be less than 30 mg/kg of mass fraction of 100 % methanol.

NOTE The product contains traces of water and ethanol which do not affect its use in water treatment.

4.3 Chemical parameters

The product shall conform to the requirements specified in Table 2.

[3)] 100 kPa = 1 bar.

Table 2 — Chemical parameters

Parameter		Limit in mass fraction of 100 % methanol mg/kg
Arsenic (As)	max.	0,01
Cadmium (Cd)	max.	0,01
Chromium (Cr)	max.	0,01
Mercury (Hg)	max.	0,01
Nickel (Ni)	max.	0,01
Lead (Pb)	max.	0,01
Antimony (Sb)	max.	0,01
Selenium (Se)	max.	0,01
NOTE For parametric values of methanol on trace metal content in drinking water (see [1]).		

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 5.1.2.1.3.

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.

5.2 Analysis

5.2.1 Methanol (main product)

5.2.1.1 Principle

The methanol content is determined by measuring the density using a digital density meter.

The measuring principle of the digital density meter is based on the change of the frequency of a hollow oscillator when filled with different liquids. The mass and thus the density of the liquid changes this frequency due to a gross mass change of the oscillator caused by the introduction of the liquid.

The oscillator consists of a hollow elastic glass tube which is electronically excited in an undamped harmonic fashion. The density meter gives a direct read-out of the density result.

5.2.1.2 Apparatus

5.2.1.2.1 Digital density meter capable of measuring density at (20 ± 0,1) °C.

5.2.1.2.2 Glass syringe, 2 ml capacity.

5.2.1.3 Procedure

5.2.1.3.1 Determination

Introduce the required volume of methanol into the oscillator cell thermo regulated at (20 ± 0,1) °C. Record the density measurement from the digital density meter.

5.2.1.4 Expression of results

Obtain the value of the methanol concentration (c_1), as a mass fraction in %, from the measured density using Table 1.

5.2.1.5 Repeatability limit

The absolute difference between two single test results, obtained under repeatability conditions, shall not be greater than the repeatability limit, r, as calculated from the following equation:

$$r = 0{,}0001\ z$$

where