



SLOVENSKI STANDARD
SIST EN 15513:2014

01-junij-2014

Nadomešča:
SIST EN 15513:2008

Kemikalije, ki se uporabljajo za pripravo bazenske vode - Ogljikov dioksid

Chemicals used for treatment of swimming pool water - Carbon dioxide

Produkte zur Aufbereitung von Schwimm- und Badebeckenwasser - Kohlenstoffdioxid

Produits chimiques utilisés pour le traitement de l'eau des piscines - Dioxyde de carbone
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Ta slovenski standard je istoveten z: ~~SIST EN 15513:2014~~ EN 15513:2014

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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,fr,de

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EUROPEAN STANDARD

EN 15513

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2014

ICS 71.100.80

Supersedes EN 15513:2007

English Version

Chemicals used for treatment of swimming pool water - Carbon dioxide

Produits chimiques utilisés pour le traitement de l'eau des piscines - Dioxyde de carbone

Produkte zur Aufbereitung von Schwimm- und Badebeckenwasser - Kohlenstoffdioxid

This European Standard was approved by CEN on 5 January 2014.

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

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey 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 15513:2014) 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 September 2014 and conflicting national standards shall be withdrawn at the latest by September 2014.

This document supersedes EN 15513:2007.

The significant technical difference between this edition and EN 15513:2007 is as follows:

- Updating of 6.2 in line with current legislation.

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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

WARNING – The use of this standard may involve hazardous materials, operations and equipment. This standard does not purport to address all the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

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Introduction

With respect for potential adverse effects on the quality of swimming pool water, caused by the product covered by this European Standard:

- a) this European 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;
- 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.

NOTE Conformity with this European 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 European Standard is applicable to carbon dioxide used for treatment of swimming pool water. It describes the characteristics of carbon dioxide and specifies the requirements and the corresponding test methods for carbon dioxide. It gives information on its use in swimming pool water treatment.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 936, *Chemicals used for treatment of water intended for human consumption - Carbon dioxide*

3 Description

3.1 Identification

3.1.1 Chemical name

Carbon dioxide.

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3.1.2 Synonym or common name

Carbonic acid gas (carbonic anhydride). [SIST EN 15513:2014](#)

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3.1.3 Relative molecular mass

44,011.

3.1.4 Empirical formula

CO₂.

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.

1) Chemical Abstracts Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

EN 15513:2014 (E)**3.2 Commercial form**

The carbon dioxide is supplied as a liquefied gas.

3.3 Physical properties**3.3.1 Appearance**

The carbon dioxide is a colourless gas or liquid.

3.3.2 Density

The density of the gas at 0 °C and 101,3 kPa³⁾ is 1,9 768 kg/m³, while the density of the liquid at 0 °C and 4 000 kPa is 933,318 kg/m³.

3.3.3 Solubility in water

The solubility of the gas in water is 1,72 g/l at 20 °C and 101,3 kPa.

3.3.4 Vapour pressure

The vapour pressure of the liquid is 5 733,0 kPa at 20 °C.

3.3.5 Boiling point at 100 kPa³⁾

(See 3.3.6).

3.3.6 Melting point

The sublimation point of solid CO₂ is -78,9 °C and 101,3 kPa.

3.3.7 Specific heat

The specific heat of carbon dioxide is 0,827 kJ/kg x K at 0 °C and 100 kPa.

3.3.8 Viscosity (dynamic)

The viscosity of the liquid is 147×10^{-7} Pa x s at 20 °C.

3.3.9 Critical temperature

The critical temperature of the liquid is 31 °C.

3.3.10 Critical pressure

The critical pressure of the carbon dioxide is 7 383 kPa.

3.3.11 Physical hardness

Not applicable.

3) 100 kPa = 1 bar

3.4 Chemical properties

The carbon dioxide CO₂ forms a weak acid when dissolved in water. It reacts with alkalis to form carbonates and bicarbonates.

4 Purity criteria

4.1 General

This European Standard specifies the minimum purity requirements for carbon dioxide used for the treatment of swimming pool water. 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 the relevant authorities.

Users of the product should check national regulations in order to clarify whether it is of appropriate purity for treatment of swimming pool water, taking into account water quality, required dosage, and contents of other impurities and additives used in the product not stated in the product European Standard.

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 the production process or raw materials lead to significant quantities of other impurities, by-products or additives being present, this shall be notified to the user.

4.2 Composition of commercial product

The products shall conform to the requirements specified in Table 1.

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Table 1 — Composition of commercial product

Carbon dioxide, CO ₂	≥ 99,9 % (V/V)
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NOTE The minimum requirements of the commercial product are defined in the EU Directive 2008/84/EC of August 27, 2008 (see^[2]) and additional Changes RL 2010/67/EU from 20th October 2010.

4.3 Impurities and main by-products

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