



SLOVENSKI STANDARD

SIST EN 15074:2006

01-oktober-2006

Kemikalije, ki se uporabljajo za pripravo bazenske vode – Ozon

Chemicals used for treatment of swimming pool water - Ozone

Produkte zur Aufbereitung von Schwimm und Badebeckenwasser - Ozon

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

Ta slovenski standard je istoveten z: EN 15074:2006

[SIST EN 15074:2006](https://standards.iteh.ai/catalog/standards/sist/8bfb83dd-4330-47f4-b039-53457b9e3933/sist-en-15074-2006)

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ICS:

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EUROPEAN STANDARD

EN 15074

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ICS 71.100.80

English Version

Chemicals used for treatment of swimming pool water - Ozone

Produits chimiques utilisés pour le traitement de l'eau des
piscines - OzoneProdukte zur Aufbereitung von Schwimm- und
Badebeckenwasser - Ozon

This European Standard was approved by CEN on 13 April 2006.

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, 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

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 15074:2006) 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 2006, and conflicting national standards shall be withdrawn at the latest by November 2006.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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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Introduction

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

- a) this European Standard provides no information as to whether the products 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 these products remain in force.

NOTE Conformity with the European Standard does not confer or imply acceptance or approval of the products 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 ozone used for treatment of water for swimming pools. It describes the composition of ozone. It gives information on its use in swimming pool water treatment. It also determines the rules relating to safe handling and use (see Annex B).

2 Normative reference

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 1278 *Chemicals used for treatment of water intended for human consumption – Ozone*

3 Description

The identification, the form, the physical properties and the chemical properties are given in the relevant clauses of EN 1278.

4 Purity criteria

4.1 Composition of product

Typical concentrations obtainable in air are in the range of 15 g/m³ to 45 g/m³ at Normal Temperature and Pressure, 273 K and 101,3 kPa (NTP). [SIST EN 15074:2006](https://standards.iteh.ai/catalog/standards/sist/8bfb83dd-4330-47f4-b039-511f7b8723f4/type-15074-2006)

The ozone concentration obtained under specified operating conditions shall be equal to or greater than the value declared by the manufacturer of the ozone generator.

4.2 Impurities and main by-products

Traces of nitrogen oxides can be formed during ozone generation.

5 Test methods

The method for determination of ozone concentration is described in EN 1278.

6 Labelling - Transportation - Storage

6.1 Labelling

Not applicable, except for safety instructions inside users' premises.

6.2 Material acceptable for contact with ozone

For local buffer storage of brief duration and also in case of recycling of the process gas, stainless steel is preferable. Magnesium containing alloys shall be avoided. Cast aluminium is satisfactory and polyvinylchloride (PVC) (hard, 1,6 MPa standard) can be convenient if the plasticizer content is low but some formulations can

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be subject to ageing when exposed to ozone at high concentrations. Rubber and plastics materials e.g. for joints shall be proven specifically for resistance to ozone.

6.3 Stability

6.3.1 Temperature can influence the decomposition rate (see EN 1278).

6.3.2 The auto-decomposition of ozone is kinetically of first order.

6.3.3 In a dry process gas at 100 kPa and 25 °C, the half-life time of ozone is greater than 2 h.

6.3.4 When dissolved in water the half-life time of ozone is in the range of 20 min to 30 min depending on the mineral composition of the water. The presence of reactive organic substances can promote the decomposition of ozone by reaction. In such cases the reactions are generally of second order.

6.3.5 Decomposition is accelerated in alkaline solution. A typical value of the pseudo first order overall kinetic constant is $k_1 = 2 \times 10^{-2} s^{-1}$ (at pH = 10 and an alkalinity in the range of 5 mg/l CaCO₃ to 500 mg/l CaCO₃).

6.3.6 Decomposition of ozone also occurs through synergetic processes (the so-called Advanced Oxidation Processes, "AOPs"), involving ozone together with hydrogen peroxide, UV-radiation or catalysts.

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Annex A (informative)

General information on ozone

A.1 Origin

A.1.1 Raw materials

Ozone for treatment of swimming pool water is obtained by processes involving the dissociation of molecular oxygen contained in air into oxygen radicals which can react with molecular oxygen to form ozone.

The concentration of hydrocarbons in the process gas should be minimized. At 1 % volume fraction of hydrocarbons in air, practically no ozone is generated; the drop in yield is linear with respect to the hydrocarbon content of the process gas. An optional analytical method for "methane index" is given in EN 1278.

A.1.2 Manufacturing process

The most common method is the silent electrical discharge, also called corona discharge, in which electrons are used as source of energy for the dissociation of oxygen in dry air (dew point below -50 °C).

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A.2 Use

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A.2.1 Function <https://standards.iteh.ai/catalog/standards/sist/8bfb83dd-4330-47f4-b039-53457b9e3933/sist-en-15074-2006>

Ozone is applicable in swimming pool water treatment for disinfection, oxidation of organic contaminants and as a reagent promoting coagulation ("microflocculation").

A.2.2 Form in which the product is used

Ozone is generated at or near the site of use and applied as a mixture in air.

A.2.3 Treatment dose

The required ozone dose depends on the swimming pool water quality and the objective of the treatment. General guidelines are at least 3 min contact time with a dissolved ozone concentration depending on the temperature as follows:

Water temperature	Ozone concentration
≥ 28 °C	≥ 0,8 mg/l
> 28 °C ≤ 32 °C	≥ 1 mg/l
> 32 °C ≤ 35 °C	≥ 1,2 mg/l
> 35 °C	≥ 1,5 mg/l