

SVENSK STANDARD

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Kemikalier för behandling av vatten för simbassänger – Svavelsyra

Chemicals used for treatment of swimming pool water – Sulfuric acid

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Denna standard ersätter SS-EN 15078:2006, utgåva 1.

The European Standard EN 15078:2013 has the status of a Swedish Standard. This document contains the official version of EN 15078:2013.

This standard supersedes the Swedish Standard SS-EN 15078:2006, edition 1.

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Denna standard är framtagen av kommittén för Vattenreningskemikalier och industrikalk, SIS/TK 431.

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EUROPEAN STANDARD

EN 15078

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2013

ICS 71.100.80

Supersedes EN 15078:2006

English Version

Chemicals used for treatment of swimming pool water - Sulfuric acid

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

Produkte zur Aufbereitung von Schwimm- und Badebeckenwasser - Schwefelsäure

This European Standard was approved by CEN on 21 March 2013.

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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Foreword

This document (EN 15078:2013) 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 2013, and conflicting national standards shall be withdrawn at the latest by November 2013.

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 15078:2006.

Significant technical differences between this edition and EN 15078:2006 are as follows:

- Replacement of warning and safety precautions notes by labelling according to Regulation (EC) No 1272/2008 [2].

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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.

SS-EN 15078:2013 (E)

Introduction

In respect of potential adverse effects on the quality of water intended for swimming pools, 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.

1 Scope

This European Standard is applicable to sulfuric acid used directly or for the production of formulations for the treatment of water for swimming pools. It describes the characteristics and specifies the requirements and the corresponding test methods for sulfuric acid. It gives information on its use for treatment of water for swimming pools. It also determines the rules relating to safe handling and use (see Annex B).

2 Normative reference

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 899, *Chemicals used for treatment of water intended for human consumption — Sulfuric acid*

3 Description

3.1 Identification

3.1.1 Chemical name

Sulfuric acid.

3.1.2 Synonym or common name

Oil of vitriol.

3.1.3 Relative molecular mass

98.

3.1.4 Empirical formula

H₂SO₄.

3.1.5 Chemical formula

H₂SO₄.

3.1.6 CAS Registry Number ¹⁾

7664-93-9.

3.1.7 EINECS reference ²⁾

231-639-5.

1) Chemical Abstracts Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

SS-EN 15078:2013 (E)

3.2 Commercial forms

Sulfuric acid is available as aqueous solutions.

NOTE For some water treatment applications, diluted acid can be used.

3.3 Physical properties

3.3.1 Appearance

The product is clear or slightly turbid, colourless liquid.

3.3.2 Density

1,84 g/ml for sulfuric acid concentration of mass fraction of 96 % at 20 °C.

1,71 g/ml for sulfuric acid concentration of mass fraction of 78 % at 20 °C.

1,18 g/ml for sulfuric acid concentration of mass fraction of 25 % at 20 °C.

3.3.3 Solubility in water

At all concentrations, the product is miscible with water.

3.3.4 Vapour pressure

Below 0,000 01 kPa for sulfuric acid concentration of mass fraction of 96 % at 20 °C.

Below 0,1 kPa for sulfuric acid concentration of mass fraction of 78 % at 20 °C.

Below 1,9 kPa for sulfuric acid concentration of mass fraction of 25 % at 20 °C.

3.3.5 Boiling point at 100 kPa ³⁾

+ 310 °C for sulphuric acid concentration of mass fraction of 96 %.

Approximately + 200 °C for sulfuric acid concentration of mass fraction of 78 %.

+ 106,5 °C for sulfuric acid concentration of mass fraction of 25 %.

3.3.6 Melting point

+ 5 °C for sulfuric acid concentration of mass fraction of 98 %.

- 10 °C for sulfuric acid concentration of mass fraction of 96 %.

- 11 °C for sulfuric acid concentration of mass fraction of 78 %.

- 22 °C for sulfuric acid concentration of mass fraction of 25 %.

3.3.7 Specific heat

1,465 kJ/(kg.K) for sulfuric acid concentration of mass fraction of 96 % at 20 °C.

3) 100 kPa = 1 bar.

3.3.8 Viscosity (dynamic)

22 mPa.s for sulfuric acid concentration of mass fraction of 96 % at 20 °C.

16,7 mPa.s for sulfuric acid concentration of mass fraction of 78 % at 20 °C.

3.3.9 Critical temperature

Not applicable.

3.3.10 Critical pressure

Not applicable.

3.3.11 Physical hardness

Not applicable.

3.4 Chemical properties

Concentrated sulfuric acid reacts violently:

- with bases or with water (exothermic reaction);
- with reducing agents due to oxidising properties;
- with combustible materials due to oxidising and dehydrating properties.

The concentrated acid is a strong oxidising agent and can cause ignition in contact with organic materials.

Sulfuric acid (of sulfuric acid content less than a mass fraction of 70 %) attacks most common metals, e.g. iron, zinc, liberating the flammable gas hydrogen.

WARNING — Mixing with water produces a marked temperature rise. Therefore ALWAYS ADD THE ACID TO THE WATER (NEVER THE REVERSE), slowly and agitating continuously.

4 Purity criteria

4.1 General

This European Standard specifies the minimum purity requirements for sulfuric acid used for the treatment of water for swimming pools. 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 this product should check the national regulations in order to clarify whether it is of appropriate purity for treatment of water for swimming pools, taking into account raw water quality, contents of other impurities and additives used in the products not stated in the 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.