SLOVENSKI STANDARD
oSIST prEN 15078:2020

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Kemikalije, ki se uporabljajo za pripravo bazenske vode - Žveplova kislina

Chemicals used for treatment of swimming pool water - Sulfuric acid

Produkte zur Aufbereitung von Schwimm- und Badebeckenwasser - Schwefelsäure

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

Ta slovenski standard je istoveten z: **prEN 15078**

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13.060.25	Voda za industrijsko uporabo	Water for industrial use
71.100.80	Kemikalije za čiščenje vode	Chemicals for purification of water

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 164.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 15078:2020) has been prepared by Technical Committee CEN/TC 164 “Water supply”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 15078:2013.

In comparison with the previous edition, the following technical modifications have been made:

a) modification of 7.3 on transportation regulations and labelling, adding the sentence “The user shall be aware of the incompatibilities between transported products.”;

b) modification of 7.4 on marking. The requirements of marking are also applied to the accompanying documents.

Introduction

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

a) this document 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 document 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 document is subject to regulation or control by National Authorities.

1 Scope

This document 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.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 899, *Chemicals used for treatment of water intended for human consumption — Sulphuric acid*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at https://www.iso.org/obp/ui
- IEC Electropedia: available at http://www.electropedia.org/

4 Description

4.1 Identification

4.1.1 Chemical name

Sulfuric acid.

4.1.2 Synonym or common name

Oil of vitriol.

4.1.3 Relative molecular mass

98.

4.1.4 Empirical formula

H_2SO_4.

4.1.5 Chemical formula

H_2SO_4.

4.1.6 CAS Registry Number [1]

7664-93-9.

4.1.7 EINECS reference [2]

231-639-5.

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1 Chemical Abstracts Service Registry Number.
2 European Inventory of Existing Commercial Chemical Substances.

4.2 Commercial forms

Sulfuric acid is available as aqueous solutions.

For safe handling and use and emergency procedures of sulfuric acid, refer to Annex B.

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

4.3 Physical properties

4.3.1 Appearance

The product is clear or slightly turbid, colourless liquid.

4.3.2 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.

4.3.3 Solubility in water

At all concentrations, the product is miscible with water.

4.3.4 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.

4.3.5 Boiling point at 100 kPa

+310 °C for sulfphuric 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 %.

NOTE 100 kPa = 1 bar.

4.3.6 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 %.

4.3.7 Specific heat

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

4.3.8 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.

4.3.9 Critical temperature

Not applicable.

4.3.10 Critical pressure

Not applicable.

4.3.11 Physical hardness

Not applicable.

4.4 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.

For additional information on sulfuric acid, see Annex A.

5 Purity criteria

5.1 General

This document 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 can 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.

5.2 Composition of commercial product

The usual commercial concentrations of sulfuric acid available have a mass fraction of 96 % or 98 %.

Other concentrations of sulfuric acid between a mass fraction of 25 % and 80 % are also available.

If sold as concentrated acid, the mass fraction of sulfuric acid shall be in the range of 92 % to 98 %.

The concentration of sulfuric acid shall be within a mass fraction of ±1 % of the manufacturer's declared value.

5.3 Chemical parameters and indicator parameters

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

Table 1 — Chemical parameters and indicator parameters

Parameter		Limit of H_2SO_4
		mg/kg
Sulfur dioxide (SO_2)	max.	100
Iron (Fe)	max.	100
Arsenic (As)	max.	0,4
Cadmium (Cd)	max.	0,1
Chromium (Cr)	max.	4
Mercury (Hg)	max.	0,1
Nickel (Ni)	max.	4
Lead (Pb)	max.	4
Antimony (Sb)	max.	1
Selenium (Se)	max.	1
NOTE For chemical parameter values of trace metals in drinking water, see [1].		

6 Test methods

The sampling and the analytical methods are those described in EN 899.

7 Labelling – Transportation – Storage

7.1 Means of delivery

Sulfuric acid shall be delivered in containers made of, or lined with, one of the materials given in EN 899, depending on the temperature and concentration of the acid.

In order that the purity of the product is not affected, the means of delivery shall not have been used previously for any different product or it shall have been specially cleaned and prepared before use.