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**YÜZME HAVUZU SULARININ ARITIMINDA KULLANILAN
KİMYASAL MADDELER - SÜLFÜRİK ASİT**

Chemicals used for treatment of swimming pool water -
Sulfuric acid

TÜRK STANDARDLARI ENSTİTÜSÜ
Necatibey Caddesi No.112 Bakanlıklar/ANKARA

TÜRK STANDARDI

Önsöz

- Bu standard, Türk Standardları Enstitüsü tarafından ilgili Avrupa standardı esas alınarak Türk Standardı olarak kabul edilmiştir.

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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 13 April 2006.

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Foreword

This document (EN 15078:2006) 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of an identical text or by endorsement, at the latest by November 2006, and conflicting national standards shall be withdrawn at the latest by November 2006.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.

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

3 Description

The identification, the commercial form, the physical properties and the chemical properties are given in the relevant subclauses of EN 899.

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 relevant authorities.

NOTE 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 water quality, required dosage, contents of other impurities and additives used in the products not stated in this product standard.

Limits have been given for impurities and trace elements 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.

4.2 Composition of commercial product

Sulfuric acid sold as concentrated acid has a mass fraction between 96 % and 98 %.

Other concentrations of sulfuric acid are also commercially available.

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

4.3 Chemical parameters and indicator parameters

The content of sulfur dioxide, iron, arsenic, cadmium, chromium, mercury, nickel, lead, antimony and selenium of the product shall conform to the requirements specified in EN 899.

NOTE Cyanide (CN) which does not exist in a strong oxidizing medium such as sulfuric acid is not a relevant chemical parameter. Pesticides and polycyclic aromatic hydrocarbons are not relevant since the raw materials used in the manufacturing process are free of them.

5 Test methods

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

6 Labelling - Transportation - Storage

6.1 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.

6.2 Risk and safety labelling according to the EU Directives ¹⁾

The following labelling requirements apply to sulfuric acid at the date of the publication of this European Standard.

For sulfuric acid of mass concentration greater than a mass fraction of 15 %:

- Symbols and indications of danger:
 - C: Corrosive.
- Nature of special risks attributed to dangerous substances:
 - R 35. Causes severe burns,
- Safety advice concerning dangerous chemical substances:
 - S 2: Keep out of reach of children.
 - S 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 - S 30: Never add water to this product.
 - S 45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

For sulfuric acid of mass concentrations between a mass fraction of 5 % and 15 % H₂SO₄:

- Symbols and indications of danger:
 - Xi: Irritating.
- Nature of special risks attributed to dangerous substances:

¹⁾ See [1], 6

- R 36/38: Irritating to eyes and skin.
- Safety advice concerning dangerous chemical substances:
 - S 2: Keep out of reach of children.
 - S 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
 - S 30: Never add water to this product.
 - S 45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

NOTE Annex I of the Directive 67/548/EEC on Classification, packaging and labelling of dangerous substances and its amendments and adaptations in the European Union contains a list of substances classified by the EU. Substances not in this annex I should be classified on the basis of their intrinsic properties according to the criteria in the Directive by the person responsible for the marketing of the substance.

6.3 Transportation regulations and labelling

Sulfuric acid of concentration greater than a mass fraction of 51 % is listed as UN number ²⁾ 1830

RID ³⁾/ADR ⁴⁾: class 8, classification code C1, packing group II.

IMDG ⁵⁾: class 8, packing group II. IATA ⁶⁾: class 8, packing group II.

6.4 Marking

The marking shall include the following information:

- name "sulfuric acid", trade name and mass fraction;
- net mass;
- name and address of supplier and/or manufacturer;
- statement "this product conforms to EN 15078".

6.5 Storage

NOTE There is a risk of concentrated sulfuric acid freezing at temperatures below 10 °C

6.5.1 Long term stability

The product is stable if the container is made of suitable material (see EN 899) and tightly closed

²⁾ United Nations Number.

³⁾ Regulations concerning International carriage of Dangerous goods by rail.

⁴⁾ European Agreement concerning the international carriage of Dangerous goods by Road.

⁵⁾ International Maritime transport of Dangerous Goods.

⁶⁾ International Air Transport Association.

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6.5.2 **Storage incompatibilities**

The product shall not be allowed to come into contact with moisture, alkalis, metal powders, sulfides, sulfites, nitrates, chlorates, chlorites, hypochlorites or organic materials.

Annex A (informative) General information on sulfuric acid

A.1 Origin

A.1.1 Raw materials

Sulfuric acid is manufactured from sulfur dioxide gas, which is produced, for example, by burning elemental sulfur or roasting of metal sulfide ores.

A.1.2 Manufacturing process

Sulfuric acid is produced by the catalytic oxidation of sulfur dioxide (SO_2) to sulfur trioxide (SO_3), absorption of sulfur trioxide in sulfuric acid and dilution with water to the required grade,

A.2 Use

A.2.1 Function

In the treatment of water for swimming pools, sulfuric acid is used to adjust the pH value.

A.2.2 Form in which it is used

Sulfuric acid used for treatment of swimming pool water typically has a content of 30 % mass fraction to 45 % mass fraction and is used as delivered.

A.2.3 Treatment dose

The treatment dose depends on the chemical characteristic of the swimming pool water to be treated, e.g. pH value, sulfate content, and on the type of the water treatment.

A.2.4 Means of application

The treatment dose is usually applied using a metering pump.

A.2.5 Secondary effects

Temperature rise at the injection point

Corrosion of equipment and piping can occur, if sulfuric acid is added in excess.

A.2.6 Removal of excess product

The excess product is removed by neutralization.

Annex B (normative) General rules relating to safety

B.1 Rules for safe handling and use

The supplier shall provide current safety instructions.

The place where sulfuric acid is stored or handled shall be made of acid-proof material inside a bunded area, to catch any spillage.

B.2 Emergency procedures

B.2.1 First aid

Immediately take off all contaminated clothing.

In case of contact with skin, wash immediately with plenty of water.

In case of contact with eyes : if even small amounts of sulfuric acid enter the eyes, immediately rinse with water for at least 15 min, with the eye lids held open. Immediately consult a doctor.

B.2.2 Spillage

Dilute small spillages with plenty of water, neutralize with lime or sodium carbonate. Small quantities shall be rinsed off with plenty of water.

Never use flammable material to absorb acid spills.

Large spillage: the acid shall be contained (see B.1), pumped to an appropriate container or tank. Seek expert assistance.

Sulfuric acid is not combustible.

Extinguishing media: no restriction in fire situations, however concentrated sulfuric acid reacts violently with water.

Bibliography

- [1] 67/548/EEC: *Council Directive of 27th June 1967 on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances and its amendments and adaptations.*