

SVENSK STANDARD

SS-EN 899:2009

Fastställt/Approved: 2009-03-19
Publicerad/Published: 2009-04-23
Utgåva/Edition: 3
Språk/Language: engelska/English
ICS: 13.060.20; 71.100.80

Processkemikalier för beredning av dricksvatten – Svavelsyra

Chemicals used for treatment of water intended for human consumption – Sulphuric acid

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Denna standard ersätter SS-EN 899, utgåva 2.

I enlighet med Statens livsmedelsverks föreskrifter om dricksvatten, SLV FS 2001:30, är svavelsyra tillåtet som processkemikalie för beredning av dricksvatten i Sverige.

The European Standard EN 899:2009 has the status of a Swedish Standard. This document contains the official English version of EN 899:2009.

This standard supersedes the Swedish Standard SS-EN 899, edition 2.

According to The National Food Administration's Ordinance on drinking water, SLV FS 2001:30, sulphuric acid is permitted as a process chemical for treatment of water intended for human consumption in Sweden.

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 899

March 2009

ICS 71.100.80

Supersedes EN 899:2003

English Version

Chemicals used for treatment of water intended for human consumption - Sulphuric acid

Produits chimiques utilisés pour le traitement de l'eau destinée à la consommation humaine - Acide sulfurique

Produkte Zur Aufbereitung von Wasser für den menschlichen Gebrauch - Schwefelsäure

This European Standard was approved by CEN on 8 February 2009.

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 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 Management Centre has the same status as the official versions.

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Foreword

This document (EN 899:2009) 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 2009, and conflicting national standards shall be withdrawn at the latest by September 2009.

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 899:2003.

Differences between this edition and EN 899:2003 are editorial to harmonize the text with other standards in this series.

Annex A is informative; Annex B is normative.

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, 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 the United Kingdom.

Introduction

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by this standard:

- a) this standard provides no information as to whether the product may be used without restriction in any of 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 the 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 for treatment of water intended for human consumption. It describes the characteristics of sulfuric acid and specifies the requirements and the corresponding test methods for sulfuric acid. It gives information on its use in water treatment.

2 Normative references

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 1483, *Water quality – Determination of mercury – Method using atomic absorption spectrometry*

EN 26595, *Water quality - Determination of total arsenic – Silver diethyldithiocarbamate spectrophotometric method (ISO 6595:1982)*

EN ISO 3696, *Water for analytical laboratory use – Specification and test methods (ISO 3696:1987)*

EN ISO 11885, *Water quality – determination of 33 elements by inductively coupled plasma atomic emission spectroscopy (ISO 11885:1996)*

ISO 910, *Sulphuric acid and oleum for industrial use – Determination of total acidity, and calculation of free sulphur trioxide content of oleum – Titrimetric method*

ISO 3165, *Sampling of chemical products for industrial use – Safety in sampling*

ISO 3423, *Sulphuric acid and oleums for industrial use – Determination of sulphur dioxide content - Iodometric method*

ISO 6206, *Chemical products for industrial use – Sampling – Vocabulary*

ISO 6332, *Water quality – Determination of iron – Spectrometric method using 1,10-phenanthroline*

ISO 8288, *Water quality – Determination of cobalt, nickel, copper, zinc, cadmium and lead – Flame atomic absorption spectrometric methods*

ISO 9174, *Water quality – Determination of chromium – Atomic absorption spectrometric methods*

ISO 9965, *Water quality – Determination of selenium – Atomic absorption spectrometric method (hydride technique)*

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.

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.

1) Chemical Abstracts Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

3.3.4 Vapour pressure

Below 0,00001 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.

3.3.8 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) 100 kPa = 1 bar.