

SVENSK STANDARD

SS-EN 12175:2013



Fastställt/Approved: 2013-05-26
Publicerad/Published: 2013-05-30
Utgåva/Edition: 3
Språk/Language: engelska/English
ICS: 13.060.20; 71.100.80

Processkemikalier för beredning av dricksvatten – Hexafluorokiselsyra

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

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Denna standard ersätter SS-EN 12175:2006, utgåva 2.

I enlighet med Livsmedelsverkets föreskrifter (SLVFS 2001:30) om dricksvatten är hexafluorokiselsyra inte tillåten som processkemikalie för beredning av dricksvatten vid de dricksvattenanläggningar i Sverige som omfattas av föreskrifterna.

The European Standard EN 12175:2013 has the status of a Swedish Standard. This document contains the official version of EN 12175:2013.

This standard supersedes the Swedish Standard SS-EN 12175:2006, edition 2.

According to the National Food Agency's regulations (SLVFS 2001:3) on drinking water, hexafluorosilicic acid is not permitted as a process chemical for treatment of water intended for human consumption in Sweden.

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

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EUROPEAN STANDARD

EN 12175

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2013

ICS 71.100.80

Supersedes EN 12175:2006

English Version

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

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

Produkte zur Aufbereitung von Wasser für den menschlichen Gebrauch - Hexafluorkieselsäure

This European Standard was approved by CEN on 28 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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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 12175:2013) 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 12175:2006.

Significant differences between this edition and EN 12175:2006 are as follows:

- The replacement of warning and safety precautions notes by labelling according to Regulation (EC) No 1272/2008.

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.

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Introduction

In respect of potential adverse effects on the quality of water intended for human consumption, 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 European Standard is applicable to hexafluorosilicic acid used for treatment of water intended for human consumption. It describes the characteristics of hexafluorosilicic acid and specifies the requirements and the corresponding test methods for hexafluorosilicic acid. It gives information on its use in water treatment. It also determines the rules relating to safe handling and use of hexafluorosilicic acid (see Annex B).

2 Normative references

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 ISO 3696, *Water for analytical laboratory use — Specification and test methods (ISO 3696)*

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

ISO 5440, *Sodium hexafluorosilicate for industrial use — Determination of phosphate content — Molybdovanadate spectrophotometric method*

ISO 5993, *Sodium hydroxide for industrial use — Determination of mercury content — Flameless atomic absorption spectrometric method*

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

ISO 6353-1, *Reagents for chemical analysis — Part 1: General test methods*

3 Description

3.1 Identification

3.1.1 Chemical name

Hexafluorosilicic acid.

3.1.2 Synonym or common names

Hydrofluosilicic acid.

Silicate-hexafluoro-dihydrogen.

Fluorosilicic acid.

HFSA.

3.1.3 Relative molecular mass

144,09.

3.1.4 Empirical formula

H₂SiF₆.

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3.1.5 Chemical formula

H₂SiF₆.

3.1.6 CAS-Registry Number¹⁾

16961-83-4.

3.1.7 EINECS reference²⁾

241-034-8.

3.2 Commercial form

The product is an aqueous solution.

3.3 Physical properties

3.3.1 Appearance and odour

The product is a clear, colourless liquid with a pungent odour.

3.3.2 Density

The density of a mass fraction 35 % solution at 25 °C is 1,35 g/ml.

The density of a mass fraction 20 % solution at 25 °C is 1,18 g/ml.

3.3.3 Solubility (in water)

The product is miscible in any proportion.

3.3.4 Vapour pressure

The vapour pressure at 20 °C is approximately 3 kPa³⁾.

3.3.5 Boiling point at 100 kPa

The product boils and decomposes at 110 °C.

3.3.6 Crystallisation point

A solution of mass fraction of 35 % crystallises at -30 °C and of a mass fraction of 20 % crystallises at -11,6 °C.

3.3.7 Specific heat

Not known.

3.3.8 Viscosity dynamic

A solution of a mass fraction of 20 % has a dynamic viscosity of 1,4 MPa.s at 25 °C.

1) Chemical Abstracts Service Registry Number.

2) European Inventory of Existing Commercial Chemical Substances.

3) 100 kPa = 1 bar.

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

Hexafluorosilicic acid is only stable in an aqueous solution. On evaporation, it decomposes to hydrogen fluoride (HF) and silicon tetrafluoride (SiF₄).

It produces hydrogen on contact with metals, e.g. steel, nickel and aluminium. It is a strong acid and reacts violently with alkalis. It forms hydrogen fluoride (HF) on contact with concentrated acids. It attacks glass.

4 Purity criteria

4.1 General

This European Standard specifies the minimum purity requirements for hexafluorosilicic acid used for the treatment of water intended for human consumption. 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.

Users of this product should check the national regulations in order to clarify whether it is of appropriate purity for treatment of water intended for human consumption, taking into account raw water quality, required dosage, contents of other impurities and additives used in the products not stated in this document.

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.

4.2 Composition of commercial product

The product shall contain between a mass fraction of 20 % and 40 % hexafluorosilicic acid, the remainder being water.

The concentration of hexafluorosilicic acid shall be within ± 5 % of the manufacturer's declared value.

4.3 Impurities and main by-products

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

Table 1 — Impurities

Impurity	Limit in mass fraction in % of commercial product
Phosphate as P ₂ O ₅ max.	0,75
Free hydrogen fluoride as HF max.	1,5