

5.3 Impurities and main by-products

Impurities must not exceed the requirements specified in Table 1.

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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

5.4 Chemical parameters

The product shall conform to the requirements specified in Table 2.

Table 2 — Chemical parameters

Parameter		Limit
		mg/kg H ₂ SiF ₆ (100 %)
Antimony (Sb)	max.	80
Arsenic (As)	max.	400
Cadmium (Cd)	max.	40
Chromium (Cr)	max.	400
Lead (Pb)	max.	400
Mercury (Hg)	max.	10
Nickel (Ni)	max.	400
Selenium (Se)	max.	80

NOTE Other chemical parameters and indicator parameters are not relevant in hexafluorosilicic acid because the raw materials used in the manufacturing process are free of them. For parametric values of hexafluorosilicic acid on trace metal content in drinking water, see [1].

6 Test methods

6.1 General

SAFETY PRECAUTIONS Hexafluorosilicic acid shall be handled with extreme care, see B.1.

All equipment in contact with hexafluorosilicic acid shall be made of plastics (for example polyethylene or polytetrafluoroethylene (PTFE)); avoid contact with glass.

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Annex A (informative)

General information on hexafluorosilicic acid

A.1 Origin

A.1.1 Raw materials

Hexafluorosilicic acid is manufactured from compounds and minerals containing both fluoride and silica (e.g. fluorite, apatite) and an acid (usually sulfuric acid).

A.1.2 Manufacturing process

The compounds and minerals containing fluoride are reacted with the acid.

A.2 Use

A.2.1 Function

Hexafluorosilicic acid is used for the fluoridation of drinking water to increase the resistance of consumers to dental decay.

A.2.2 Form in which it is used

Hexafluorosilicic acid is used as an aqueous solution either as supplied or diluted with potable water.

A.2.3 Treatment dose

A typical dose of hexafluorosilicic acid of mass fraction 20 % is 6,3 mg/l to achieve a final concentration of 1 mg/l as F⁻ in the drinking water. It is important to avoid overdosing. In the EU Directive 98/83/EC, the parameter value is 1,5 mg/l of fluoride.

A.2.4 Means of application

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It is usually applied using a metering pump.

A.2.5 Secondary effects

None.

A.2.6 Removal of excess product

It is practically impossible to remove excess product.