

TECHNICAL DATA SHEET

Hydrofluorosilicic Acid 23% (HFS)

Technical · 23%

CAS NUMBER	ALLIANCE CODE	GENERATED
16961-83-4	hydrofluorosilicic-acid-23-hfs	2026-08-31
REVISION	REVIEWED	
1.3	2026-07-17 · Andre Taki	

IDENTITY & COMPOSITION

PRODUCT NAME	ALLIANCE CODE
Hydrofluorosilicic Acid 23% (HFS)	hydrofluorosilicic-acid-23-hfs
GRADE	CONCENTRATION
Technical	23%
CAS NUMBER	FORMULA
16961-83-4 PubChem	F6H2Si PubChem
MOLECULAR WEIGHT	PRODUCT TYPE
144.091 PubChem	solution

SPECIFICATIONS

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Assay (H2SiF6)	23.0 min.	24.0	—	Supplier specification
Free acid (HF)	1.0 maximum %	0.3 %	—	Supplier specification

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Free hydrofluoric acid (HF)	maximum of 1 percent	Passes test	—	AWWA standard
Heavy Metals (as lead, Pb)	<0.02%	0.0005 %	—	Supplier specification
Suspended matter	clean and free of visible suspended matter	Passes test	—	AWWA standard
Arsenic (As)	10 mg/kg maximum	1.0 mg/kg	ICP-MS	Interpreted
Sulfate (SO4)	0.5 % maximum	0.15 %	Ion chromatography / gravimetric (BaSO4)	Interpreted

Specification values are guaranteed limits. Typical values are representative of production lots and are not guaranteed. Lot-specific certificates of analysis ship with every order.

AVAILABLE GRADES SAME CAS, ALTERNATE GRADES AND CONCENTRATIONS

GRADE	CONCENTRATION	TYPICAL ASSAY	SKU
THIS GRADE Technical	23%	—	current
ACS Grade	23%	—	hydrofluorosilicic-acid-23-acs

Typical assay shown is the rolling-window mean from the sibling product's most recent lots. Grade selection drives downstream end-use — verify the sibling grade matches your specification before substitution.

PHYSICAL & CHEMICAL PROPERTIES

One or more physical-property values are temporarily suppressed pending verification against vendor COA data. For complete properties refer to the Safety Data Sheet (SDS) or contact sales@alliancechemical.com.

PROPERTY	VALUE	SOURCE
Form	Liquid	Published reference
Color	water white to straw yellow	AWWA standard
Odor	Sour, pungent	Published reference
Specific Gravity (20 °C)	1.185 – 1.215	Interpreted
Density	1.19 (23% w/w aqueous solution, 20 °C)	Published reference
Boiling Point	Not characterized for the 23% solution	Published reference
Melting Point	Not characterized for the 23% solution	Published reference
Solubility (water)	DECOMP AT MP; DELIQUESCENT; WHITE CRYSTALS; SOL IN ALKALI; SOL IN COLD AND HOT WATER /DIHYDRATE/	Published reference

Strong acid — density and vapor-pressure values shown are at 20 °C; values shift markedly with concentration and temperature. Reference concentration-temperature curves before specifying equipment.

MATERIALS OF CONSTRUCTION

MATERIAL	RATING	CONDITIONS	SOURCE
polyethylene	Compatible	—	s3.amazonaws.com

MATERIAL	RATING	CONDITIONS	SOURCE
cross-linked high-density polyethylene (with UV stabilizer)	Compatible	polyethylene must be high-density, cross-linked, with a minimum of 0.25 percent ultraviolet stabilizer	s3.amazonaws.com
rubber-lined steel	Compatible	—	s3.amazonaws.com
glass	Not recommended	—	s3.amazonaws.com
ceramics	Not recommended	—	s3.amazonaws.com
steel (unlined)	Not recommended	—	s3.amazonaws.com
concrete	Not recommended	—	s3.amazonaws.com
wood	Not recommended	—	s3.amazonaws.com
rubber lining / saran	Compatible	source product is a 23–25 % H ₂ SiF ₆ aqueous solution (TDS typical analysis 23.5 %)	cdn-contenu.quebec.ca
polyethylene shipping containers (vs. glass carboys)	Compatible	23–25 % H ₂ SiF ₆ aqueous solution per the TDS typical analysis	cdn-contenu.quebec.ca
high-density, cross-linked polyethylene	Compatible	—	s3.amazonaws.com
unlined steel	Not recommended	—	s3.amazonaws.com

Compatibility is drawn from published manufacturer and supplier documentation for this product; each rating is sourced. Confirm against your specific duty cycle before equipment selection.

REGULATORY & TRANSPORT

DOT / 49 CFR

UN NUMBER

UN1778 [49 CFR 172.101](#)

PACKING GROUP

II [Adjudicated](#)

HAZARD CLASS

8 [Adjudicated](#)

PROPER SHIPPING NAME

Fluorosilicic acid [Adjudicated](#)

GHS / OSHA HAZCOM 2012

SIGNAL WORD

Danger [Adjudicated](#)

H-CODES (HAZARD STATEMENTS)

H290, H302, H312, H314, H332 [Adjudicated](#)

P-CODES (PRECAUTIONARY STATEMENTS)

P260, P264, P270, P271, P280,
P301+P330+P331, P303+P361+P353,
P304+P340, P305+P351+P338, P310, P312,
P321, P363, P405, P501

[Adjudicated](#)

OCCUPATIONAL EXPOSURE LIMITS

OSHA PEL (29 CFR 1910.1000)

— [no canonical](#)

ACGIH TLV

— [no canonical](#)

NIOSH REL

— [no canonical](#)

NIOSH IDLH

— [no canonical](#)

Transport descriptions reflect 49 CFR 172.101 lookup at time of publication. Sourced data: ECHA CLP Annex VI for harmonised classifications, NIOSH Pocket Guide for REL/IDLH, OSHA Z-Tables for PEL. Always verify against the latest regulatory text before shipment-critical decisions.

APPLICATIONS

Fluoridation of public drinking water supplies (NSF/ANSI 60-certified, AWWA B703 water-treatment grade material)

[cdn-contenu.quebec.ca](#)

Dosed to a water supply to reach about one part per million total fluoride for reduction of tooth decay

[cdn-contenu.quebec.ca](#)

Fed undiluted into water with liquid-feeding devices and metering pumps in water treatment plants

[s3.amazonaws.com](#)

Raw material for the production of silicofluoride salts [s3.amazonaws.com](#)

Used in the ceramic, brewing, paint and metallurgical industries [s3.amazonaws.com](#)

Used as the principal raw material in the production of silicofluoride salts. s3.amazonaws.com

Applications are drawn from published manufacturer and supplier documentation; each is sourced. Suitability for a specific use is the buyer's to confirm.

STORAGE & HANDLING

RECOMMENDED STORAGE

Bulk storage tanks and other containers can be made of polyethylene, rubber-lined steel, or other appropriate materials; in plant installations, rubber-lined vented storage tanks are usually mounted outside the building.

s3.amazonaws.com

INCOMPATIBILITIES

glass, ceramics, steel, concrete, wood

s3.amazonaws.com

HANDLING PRECAUTIONS

Use full PPE including face shield, acid-resistant gloves and apron. Add acid to water slowly with stirring; never reverse. Ventilation required.

Class-level guidance — not product-specific; the SDS controls.

SHELF LIFE

Consult Technical Services for product-specific shelf life

For full hazard, PPE, and emergency response guidance, refer to the Safety Data Sheet (SDS) for this product. The SDS controls in all cases where guidance differs.

PACKAGING & LOGISTICS

SHIPPING DESCRIPTION (US DOT)

UN1778, Fluorosilicic acid, 8, PG II

Sourced from 49 CFR 172.101. Confirm against shipping documents and carrier requirements before tender.

NMFC CLASS 60	PLACARD Corrosive	PACKING GROUP PG II
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REVISION HISTORY

Last reviewed 2026-07-17 by Andre Taki, DOT Hazmat Specialist.

VERSION	DATE	CHANGE	TRIGGER
1.3	2026-08-05	Canonical data updated: 4 fields changed via the provenance/adjudication pipeline. - hazardClass · canonical change (coa.data_provenance / adjudication) - packingGroup · canonical change (coa.data_provenance / adjudication) - signalWord · canonical change (coa.data_provenance / adjudication) - unNumber · canonical change (coa.data_provenance / adjudication)	canonical_change
1.2	2026-07-22	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. dotSubsidiaryHazardClass · canonical change (coa.data_provenance / adjudication)	canonical_change
1.1	2026-07-17	Canonical data re-verified: 6 fields updated against independent vendor SDSs, CLP Annex VI, 49 CFR, and OSHA HazCom 2024 (GHS classification, hazard/precautionary codes, signal word, physical properties as applicable). - countryOfOrigin · canonical adjudication / reground (coa.data_provenance) - ghsClassification · canonical adjudication / reground (coa.data_provenance) - hazard_h_codes · canonical adjudication / reground (coa.data_provenance) - hazard_p_codes · canonical adjudication / reground (coa.data_provenance) - hsCode · canonical adjudication / reground (coa.data_provenance) - physicalProperties · canonical adjudication / reground (coa.data_provenance)	canonical_change
1.0	2026-05-20	Initial URL-first TDS published from canonical chemistry registry.	initial

This Technical Data Sheet is provided for technical reference. The Safety Data Sheet (SDS) controls in all cases where guidance differs. Values reflect Alliance Chemical canonical data at time of generation; subsequent revisions are recorded in the Revision History above.