Safety Data Sheet · OSHA HCS 2024

Hydrofluorosilicic Acid 23% (HFS)

Technical · 23% w/w

Standard	Revised	Emergency
OSHA HCS 2024 · GHS Rev. 7	2026-11-12	Chemtel 1-800-255-3924 (24/7)

1 Identification

Product Identifier	Hydrofluorosilicic Acid 23% (HFS)
Grade	Technical
Concentration	23% w/w
CAS Number	16961-83-4
Chemical Formula	H2SiF6
Molecular Weight	144.09 g/mol
Manufacturer	Alliance Chemical 204 South Edmond Street, Taylor, TX 76574
Emergency Phone	Chemtel 1-800-255-3924 (24/7)
Synonyms	Fluorosilicic acid; hexafluorosilicic acid; fluosilicic acid; silicofluoric acid; HFS; FSA
Recommended Use	Chemical intermediate; metal surface treatment and etching; glass and ceramics etching; water treatment.
Restrictions on Use	Do not use for drinking-water fluoridation unless the product is certified to NSF/ANSI/CAN 60 for that use. Never store or handle in glass or metal containers.

2 Hazard Identification



Corrosive



Acute toxicity

Classification	Corrosive to metals, Category 1 Acute toxicity (oral), Category 4 Acute toxicity (dermal), Category 3 Skin corrosion/irritation, Category 1 Serious eye damage/eye irritation, Category 1 Acute toxicity (inhalation), Category 4
Signal Word	**Danger**
Hazard Statements	H290 May be corrosive to metals H302 Harmful if swallowed H311 Toxic in contact with skin H314 Causes severe skin burns and eye damage H332 Harmful if inhaled

Precautionary Statements

P234 Keep only in original packaging.

P260 Do not breathe dust, fume, gas, mist, vapors or spray.

P262 Do not get in eyes, on skin, or on clothing.

P264 Wash hands and face thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves, protective clothing, and eye/face protection.

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER or doctor.

P312 Call a POISON CENTER or doctor if you feel unwell.

P321 Specific treatment (see first-aid information on this label).

P362 Take off contaminated clothing and wash before reuse.

P363 Wash contaminated clothing before reuse.

P390 Absorb spillage to prevent material damage.

P405 Store locked up.

P406 Store in a corrosion resistant container with a resistant inner liner.

P501 Dispose of contents and container in accordance with local, regional, national, and international regulations.

Classification, hazard (H) and precautionary (P) statements and pictograms per OSHA HCS 2024 (29 CFR 1910.1200, Appendices A–C), aligned with GHS Rev. 7.

3 Composition / Information on Ingredients

Component	CAS No.	Formula	Concentration
Fluorosilicic acid	16961-83-4	H2SiF6	23-25% (w/w)
Hydrogen fluoride	7664-39-3	HF	<= 1% (w/w)
Water	7732-18-5	H2O	Balance (w/w)

Concentrations are nominal; lot-specific values appear on the Certificate of Analysis. Components not contributing to classification are omitted.

4 First-Aid Measures

Eyes Rinse with plenty of water for at least 15 minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek medical attention immediately.

Skin Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing. Wash with soap. Get medical attention immediately.

Inhalation Move person to fresh air and keep comfortable for breathing. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention immediately.

Ingestion	Do Not Induce Vomiting! Never give anything by mouth to an unconscious person. If conscious, wash out mouth with water. Get medical attention immediately.
Most Important Symptoms and Effects	Causes burns to the skin, eyes and mucous membranes; eye contact may cause permanent damage including blindness; ingestion burns the mouth, throat and stomach. Ingestion may cause nausea, vomiting and abdominal pain; larger amounts may cause systemic poisoning. Absorption through the skin may cause systemic poisoning. Inhalation may cause coughing, shortness of breath and headache; high concentrations may cause systemic poisoning.
Immediate Medical Attention and Special Treatment	Immediate medical attention is required after eye or skin contact or ingestion; tissue damage may continue after exposure ends. Get immediate medical attention after any significant exposure; symptoms may be delayed.

5 Fire-Fighting Measures

Suitable Extinguishing Media	Dry chemical, CO2, water spray. Use water spray to cool containers.
Unsuitable Extinguishing Media	Do not use a solid water stream as it may scatter and spread fire.
Specific Hazards Arising from the Chemical	Fire may release corrosive and toxic gases. Containers may rupture when heated.
Protective Equipment	Wear self-contained breathing apparatus and full protective clothing.
Hazardous Combustion Products	Hydrogen fluoride and silicon tetrafluoride on heating or evaporation; hydrogen gas in contact with metals.

6 Accidental Release Measures

Personal Precautions	Use PPE as described in Section 8. Ensure adequate ventilation. Evacuate personnel to safe areas.
Hazard-Specific Precautions	Do not touch spilled material without protective equipment. Neutralize residue only with a method suitable for the material, then collect.
Environmental Precautions	Prevent leakage or spillage from entering drains, sewers, or waterways.
Containment & Cleanup	Absorb with inert material. Collect in appropriate waste container. Dispose per applicable regulations.

7 Handling and Storage

Safe Handling	Use with adequate ventilation. Avoid contact with skin, eyes, and clothing. Wash thoroughly after handling. Keep container closed when not in use.
Safe Storage	Store in a cool, dry, well-ventilated area. Use corrosion-resistant containers. Keep away from incompatible materials (see Section 10). Keep containers tightly closed.
Specific Storage Precautions	Store in tightly closed polyethylene or other acid-resistant plastic containers — never glass or metal. Keep cool and ventilated, away from bases, metals and oxidizers, with corrosion-resistant secondary containment.

8 Exposure Controls / Personal Protection

Occupational Exposure Limits

Limit	Value
OSHA PEL	2.5 mg/m³ TWA (F)
ACGIH TLV	2.5 mg/m³ TWA (fluorides, as F); hydrogen fluoride 0.5 ppm TWA, 2 ppm ceiling (as F)
NIOSH REL	2.5 mg/m³ TWA (F)
IDLH	250 mg/m³ (F)
Other Limits	Hydrogen fluoride: NIOSH REL 3 ppm TWA, 6 ppm ceiling (15 min); IDLH 30 ppm

Engineering Controls	Use adequate ventilation. Provide eyewash stations and quick-drench showers accessible to areas of use.
Eye/Face Protection	Wear chemical safety goggles or face shield.
Skin Protection	Wear chemical-resistant gloves and protective clothing.
Respiratory Protection	Where mist, spray or dust is generated (e.g., spraying, atomization, pressure washing), use a NIOSH-approved half-face air-purifying respirator with combination acid gas / P100 cartridges. Ensure local exhaust ventilation.

Exposure limits sourced from NIOSH Pocket Guide, OSHA 29 CFR 1910.1000 and ACGIH TLVs.

9 Physical & Chemical Properties

Appearance	Colorless, fuming liquid
Odor	Pungent, acrid
Odor Threshold	No data available
pH	Below 1 as supplied (strong acid); 1.5–2 as a 10% solution
Melting Point / Freezing Point	-20 to -16 °C (-4 to 3 °F), freezing point (aqueous solution)
Boiling Point	Approx. 106–108 °C (223–227 °F); decomposes
Flash Point	Not applicable
Evaporation Rate	No data available
Flammability (solid, gas)	No data available
Upper/Lower Flammability or Explosive Limits	No data available
Vapor Pressure	17–24 mmHg at 20–25 °C
Vapor Density	No data available
Relative Density	1.185–1.215 at 15.6 °C (water = 1)
Solubility	Completely miscible with water
Partition Coefficient (n-octanol/water)	No data available
Auto-ignition Temperature	No data available
Decomposition Temperature	Decomposes on heating (from about 108 °C), releasing hydrogen fluoride and silicon tetrafluoride

Viscosity	No data available
Particle Characteristics	Not applicable
Form	Liquid
Color	water white to straw yellow
Density	1.19 g/cm^3 (23% w/w aqueous solution, 20 °C)

Values shown reflect product-specific canonical data. Lot-specific ranges may vary; see the Certificate of Analysis for the shipped lot.

10 Stability and Reactivity

Reactivity	May be corrosive to metals.
Chemical Stability	Stable under recommended storage conditions.
Possibility of Hazardous Reactions	None under normal processing conditions.
Conditions to Avoid	Heat and evaporation (release hydrogen fluoride and silicon tetrafluoride); contact with metals and glass. Always add acid to water.
Incompatible Materials	Metals (releases flammable hydrogen gas); glass, ceramics and stoneware (etched); bases and alkalis (violent reaction); strong oxidizers; concentrated acids (release hydrogen fluoride and silicon tetrafluoride).
Hazardous Decomposition Products	Hydrogen fluoride and silicon tetrafluoride on heating or evaporation; hydrogen gas in contact with metals.

11 Toxicological Information

See below for route-specific acute toxicity data.

Likely Routes of Exposure	Inhalation, skin contact, eye contact, ingestion.
Symptoms	Causes burns to the skin, eyes and mucous membranes; eye contact may cause permanent damage including blindness; ingestion burns the mouth, throat and stomach. Ingestion may cause nausea, vomiting and abdominal pain; larger amounts may cause systemic poisoning. Absorption through the skin may cause systemic poisoning. Inhalation may cause coughing, shortness of breath and headache; high concentrations may cause systemic poisoning.
Delayed and Chronic Effects	No delayed or chronic effects identified beyond the classification in Section 2.

Route	Value
LD50 Oral (rat)	125–430 mg/kg (fluorosilicic acid); product ATE about 390–500 mg/kg
LD50 Dermal (rabbit)	Product ATE (dermal) about 375–500 mg/kg
LC50 Inhalation	1.11 mg/L (fluorosilicic acid, 1 h); product ATE (mist) about 3.6–3.8 mg/L

Carcinogen Classification

Agency	Status
IARC	Not evaluated. See Section 2 for GHS hazard classification.

Agency	Status
NTP	Not evaluated. See Section 2 for GHS hazard classification.
OSHA	Not evaluated. See Section 2 for GHS hazard classification.

12 Ecological Information

Ecotoxicity	Data not available. Avoid release to the environment.
Persistence & Degradability	Hydrolyzes in water to fluoride + silica; aquatic toxicity pH/fluoride-driven (corrosive, pH 1.5–2.0)
Bioaccumulative Potential	Not Available
Mobility in Soil	Complete water solubility; dissociates

13 Disposal Considerations

Dispose of contents/container in accordance with applicable federal, state, and local regulations. Do not dispose of into drains or waterways.

EPA RCRA Waste Codes	D002 (corrosive, pH ≤ 2). Not a P- or U-listed waste (U134 covers hydrogen fluoride as a commercial chemical product, not fluorosilicic acid).

If discarded, this material may be a corrosive hazardous waste (EPA RCRA D002, 40 CFR 261.22): aqueous with pH ≤ 2 or ≥ 12.5, or a liquid that corrodes steel at more than 6.35 mm per year. The waste generator must make the final hazardous-waste determination.

14 Transport Information

US DOT (49 CFR)

UN Number	UN1778
Proper Shipping Name	Fluorosilicic acid
Hazard Class	8
Packing Group	II

IMDG / IATA classifications may differ from US DOT. Verify current regulations before international shipment.

15 Regulatory Information

Inventory / List	Status
California Proposition 65	Not listed
US EPA TSCA Active Inventory	Listed
EPCRA SARA 313 (TRI)	Contains Hydrogen fluoride (CAS 7664-39-3) at <= 1%; listed (de minimis 1.0%).
CERCLA Reportable Quantity (RQ)	Fluorosilicic acid is not a CERCLA hazardous substance. The product contains up to 1.0% free hydrogen fluoride (RQ 100 lb); no single Alliance package holds enough to reach that RQ.

SARA 311/312 hazard categories correspond to the GHS classification in Section 2. Data retrieved as of: California Proposition 65 2026-11-02; US EPA TSCA Active Inventory 2026-11-02; EPCRA SARA 313 (TRI) 2026-11-02.

16 Other Information

Revision Date	2026-11-12
Format	16-section format per OSHA HCS 2024 (29 CFR 1910.1200, Appendix D), aligned with GHS Rev. 7.

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