SAFETY DATA SHEET

Hydrofluoric Acid (39–51 %) — Laboratory Reagent, Analytical Reagent, PV Pure and Ultrapure PPB grades

Prepared in accordance with 29 CFR 1910.1200 (OSHA Hazard Communication Standard, 2024 amendment / GHS Rev. 7), UN GHS, US DOT 49 CFR Parts 171–180 and Canada HPR (SOR/2015-17)

SDS number	**HP-SDS-25400-US-01**
Version / Revision	Version 1.0
Issue date	01 November 2026
Supersedes	Not applicable (first issue)
Review due	01 November 2029, or earlier if new hazard information becomes available
Companion sheet	A GB/EU sheet for supply by Highpuris Ltd will be issued separately. Do not substitute one sheet for the other — the classification is the same but the exposure limits, supply restrictions and legal references are not.

1 SECTION 1: IDENTIFICATION

1.1 Product identifier

Product name	**Hydrofluoric Acid (39–51 %)**
Product description	Aqueous solution of hydrogen fluoride (hydrofluoric acid), 39 – 51 % w/w HF depending on grade: Laboratory Reagent 39.0 – 41.0 %; Analytical Reagent 39.5 – 40.5 %; PV Pure 48.0 – 50.0 %; Ultrapure PPB 47.0 – 51.0 %. The sheet covers the Highpuris 40 % (Laboratory / Analytical Reagent) and 49 % (PV Pure / Ultrapure PPB) grades. All grades carry the same hazard classification and transport description.
Synonyms	Hydrogen fluoride solution; Fluorhydric acid; Fluoric acid; Acide fluorhydrique
CAS number	7664-39-3
EC (EINECS) number	231-634-8
EU Index number	009-003-00-1
REACH registration number	Not applicable to supply in the United States. A REACH registration (or coverage under a registrant's supply chain) is required before placement in the EU/EEA or Northern Ireland; UK REACH applies to Great Britain.
Molecular formula	HF (aq)
Molecular weight	20.01 g/mol (HF)
Highpuris product code	**25400** — the 9-digit catalogue SKUs below are built as product code · grade · pack
Pack sizes covered	250 mL, 500 mL and 1 L HDPE / PurePak or PFA bottles (never glass), 5 L and 25 L HDPE containers, 200 L HDPE drums and 1000 L IBCs, in UN-certified packaging

Catalogue SKUs covered by this SDS

Grade	HF assay	Pack size and SKU
Laboratory Reagent	39.0–41.0 %	5 L **254000144** · 25 L **254000162** · 200 L **254000164** · 1000 L **254000181**
Analytical Reagent	39.5–40.5 %	5 L **254000244** · 25 L **254000262** · 200 L **254000264** · 1000 L **254000281**
PV Pure	48.0–50.0 %	25 L **254000362** · 200 L **254000364** · 1000 L **254000381**
Ultrapure PPB	47.0–51.0 %	250 mL **254000422** · 500 mL **254000423** · 1 L **254000441**

1.2 Relevant identified uses of the substance and uses advised against

- **Identified uses:** laboratory analytical reagent; acid for the digestion and dissolution of silicates, quartz and glass-containing samples; etching and cleaning of silicon, quartz and ceramic parts; trace-metal (ppb) applications in semiconductor, photovoltaic and ICP-MS laboratories; further formulation and repackaging by professional users trained and equipped to handle hydrofluoric acid.
- **Uses advised against:** not for food, drug, cosmetic, medicinal, household or consumer use, including rust-removal, wheel-cleaning or other consumer cleaning products. Not intended for use by the general public or by persons without hydrofluoric acid training. Not to be used in any application resulting in human ingestion or direct dermal application, and never in glass or metal equipment.

1.3 Details of the supplier of the safety data sheet

Supplier	**Highpuris LLC** 9920 Pacific Heights Blvd, Suite 150 San Diego, CA 92121-4361 United States of America
Telephone	+1 (401) 288-1196
E-mail (SDS contact)	admin@highpuris.com · noreply@highpuris.com
Website	www.highpuris.com

1.4 Emergency telephone number

24-hour emergency (USA / Canada)	**CHEMTREC 1-800-424-9300**
24-hour emergency (international)	**CHEMTREC +1 703-527-3887** (collect calls accepted)
CHEMTREC contract number	**CCN 1024800** — Highpuris LLC, registered August 2026. Quote this number when calling; it must appear with the emergency telephone number on shipping papers under 49 CFR 172.604
Non-emergency (business hours)	+1 (401) 288-1196, 09:00 – 17:00 Pacific Time, Monday to Friday

2 SECTION 2: HAZARD(S) IDENTIFICATION

2.1 Classification of the substance or mixture

Classification under 29 CFR 1910.1200 (OSHA HCS 2024), UN GHS Rev. 7, EU CLP (EC) No 1272/2008 and Canada HPR:

Hazard class	Category	Hazard statement
Corrosive to metals	Category 1	H290 — May be corrosive to metals
Acute toxicity — oral	Category 2	H300 — Fatal if swallowed
Acute toxicity — dermal	Category 1	H310 — Fatal in contact with skin
Acute toxicity — inhalation (vapours)	Category 2	H330 — Fatal if inhaled
Skin corrosion / irritation	Category 1A	H314 — Causes severe skin burns and eye damage
Serious eye damage / eye irritation	Category 1	H318 — Causes serious eye damage
Specific target organ toxicity, single exposure (respiratory tract irritation)	Category 3	H335 — May cause respiratory irritation

H318 is not required on the label where H314 is assigned (GHS labelling precedence rules). The dermal category shown (Category 1) is that of the manufacturer's OSHA classification; the harmonised EU classification is the same hazard statement (H310) at Category 2. The harmonised EU classification for hydrofluoric acid (Index No. 009-003-00-1, hydrofluoric acid … %) is Acute Tox. 2, H330, H310, H300; Skin Corr. 1A, H314, with specific concentration limits: Skin Corr. 1A at C ≥ 7 %; Skin Corr. 1B at 1 % ≤ C < 7 %; Acute Tox. 2 applies at C ≥ 7 %. The GHS07 exclamation mark is not used: the skull and crossbones (GHS06) and corrosion (GHS05) pictograms already signal the acute toxicity and the respiratory-tract and skin/eye irritation effects.

2.2 GHS label elements

Hazard pictograms — required on the label and on every shipped container:



GHS06 — Skull and crossbones



GHS05 — Corrosion

Pictograms must be a square set on a point, with a black symbol on a white ground and a red border wide enough to be clearly visible. Minimum size is one-fifteenth of the label surface area and never smaller than 10 mm × 10 mm (16 mm × 16 mm where the package holds more than 3 L). Where the corresponding DOT transport label is displayed on the outer packaging, the duplicate GHS pictogram may be omitted from that outer packaging under 29 CFR 1910.1200(f)(5); all pictograms remain required on the inner container label.

Signal word	**DANGER**
Hazard statements	H290 — May be corrosive to metals. H300 + H310 + H330 — Fatal if swallowed, in contact with skin or if inhaled. H314 — Causes severe skin burns and eye damage. H335 — May cause respiratory irritation.

Precautionary statements — Prevention

- P234 — Keep only in original packaging.
- P260 — Do not breathe mist, vapours or spray.
- P262 — Do not get in eyes, on skin or on clothing.
- P264 — Wash hands and exposed skin 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, eye protection and face protection.
- P284 — Wear respiratory protection.

Precautionary statements — Response

- P301 + P310 — IF SWALLOWED: Immediately call a POISON CENTER or doctor.
- 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.
- P320 — Specific treatment is urgent (see Section 4 of this SDS: apply 2.5 % calcium gluconate gel to skin contact).
- P361 + P364 — Take off immediately all contaminated clothing and wash it before reuse.
- P390 — Absorb spillage to prevent material damage.

Precautionary statements — Storage and disposal

- P403 + P233 — Store in a well-ventilated place. Keep container tightly closed.
- P404 — Store in a dry place.
- P405 — Store locked up.
- P406 — Store in a corrosive-resistant polypropylene or polyethylene container with a resistant inner liner. Do not store in glass or metal.
- P501 — Dispose of contents and container in accordance with federal, state, provincial and local regulations.

2.3 Other hazards which do not result in classification

- Hydrofluoric acid is a contact and systemic poison. The fluoride ion penetrates the skin and tissue, binds calcium and magnesium and can cause deep, painful tissue destruction, bone damage and life-threatening hypocalcaemia and cardiac arrhythmia; skin exposure to more than about 1 % of body surface area, any inhalation and any ingestion must be treated as a medical emergency (see Section 4). Calcium gluconate gel must be available at every point of use.
- Burns from dilute solutions (< 20 %) may be painless and delayed by up to 24 hours; at the 40 – 50 % concentrations supplied here pain and tissue damage are usually immediate, but the systemic hazard is not reduced.
- Attacks glass, ceramics, quartz, concrete and other silicate materials, liberating toxic, corrosive silicon tetrafluoride gas. Never store, handle or transfer in glass or in glass-lined equipment.
- Contact with common metals liberates flammable hydrogen gas, which can accumulate in container headspace and confined spaces. Reacts violently and exothermically with bases and ammonia; contact with cyanides or sulfides liberates hydrogen cyanide or hydrogen sulfide.
- The concentrated solution fumes in air and releases hydrogen fluoride vapour, which is heavier than air and corrosive to the eyes and respiratory tract at concentrations below those causing obvious discomfort. Dilution with water is exothermic — always add acid slowly to water.
- The substance does not meet PBT or vPvB criteria under REACH Annex XIII and is not an identified endocrine disruptor.

2.4 Unknown acute toxicity

Not applicable. Acute toxicity data are available for the substance; no component of unknown acute toxicity is present.

3 SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Mixture — aqueous solution of hydrogen fluoride; covers the Highpuris 40 % (LR/AR) and 49 % (PV Pure/PPB) grades.

Chemical name	CAS No.	EC No.	Conc. (% w/w)	GHS classification of the ingredient
Hydrogen fluoride (hydrofluoric acid)	7664-39-3	231-634-8	39 – 51	Acute Tox. 2 (oral, dermal, inhalation), H300 + H310 + H330; Skin Corr. 1A, H314; Eye Dam. 1, H318
Water	7732-18-5	231-791-2	49 – 61	Not classified

EU Index number for hydrofluoric acid: 009-003-00-1. Specific concentration limits in EU CLP Annex VI: Skin Corr. 1A / H314 at C ≥ 7 %; Skin Corr. 1B / H314 at 1 % ≤ C < 7 %; Acute Tox. 2 (H300, H310, H330) applies at C ≥ 7 %.

Impurities and stabilising additives: none deliberately added. Trace impurities are controlled to the grade specification and are not present at levels that alter the classification.

4 SECTION 4: FIRST-AID MEASURES

4.1 Description of first-aid measures

General. Immediate, specialised first aid and medical treatment are required — speed is of the essence. Move the casualty out of the danger area. Rescuers must protect themselves: wear chemical-resistant gloves (neoprene, butyl or heavy nitrile), eye/face protection and, where vapour or mist is present, respiratory protection, and avoid contact with contaminated clothing. Remove all contaminated clothing and footwear immediately while flushing. Never give anything by mouth to an unconscious or convulsing person. Call emergency services (911) and tell them that the casualty has been exposed to HYDROFLUORIC ACID. Show this Safety Data Sheet to the attending physician. Immediate medical attention is required for ALL exposures, however minor they appear. Keep calcium gluconate gel at every hydrofluoric acid workstation and check its expiry date.
Inhalation. Move the casualty to fresh air at once and keep at rest in a position comfortable for breathing. Any inhalation of hydrogen fluoride vapour or mist is a medical emergency. If breathing is difficult, trained personnel should give oxygen; a nebulised solution of 2.5 % calcium gluconate may be administered with oxygen by inhalation (medical personnel). If breathing has stopped, give artificial respiration — do not use mouth-to-mouth; use a pocket mask with one-way valve, bag-valve mask or other mechanical device. Obtain medical attention immediately. Pulmonary oedema may be delayed by up to 24 – 48 hours; keep the casualty under medical observation even if initially asymptomatic.
Skin contact. Immediately flush the affected area with copious quantities of lukewarm, gently flowing water for at least 15 minutes (longer for large-area contact), removing contaminated clothing, shoes and jewellery while flushing. Then apply 2.5 % calcium gluconate gel liberally to the burned area and massage it continuously into the skin, wearing clean gloves to avoid contaminating the rescuer; re-apply every 15 minutes until pain subsides, including during transport to hospital. Calcium gluconate gel or slurry (in water or glycerine) binds the active fluoride in an insoluble form and limits burn extension and pain. If gel is not immediately available, continue flushing; soaking or immersion in iced 0.13 % benzalkonium chloride solution may be used (not in the eyes) and continued until pain is relieved. Burns may be painless and delayed by up to 24 hours for solutions below 20 %; at the 40 – 50 % supplied here pain is normally immediate, but pain is not a reliable guide to the extent of fluoride absorption. Any skin exposure covering more than about 1 % of body surface area (roughly the size of the casualty's palm) is a medical emergency because of the risk of systemic fluoride poisoning. Obtain medical attention immediately, even if the area appears small. Discard contaminated leather articles including footwear and watch straps.
Eye contact. Immediately flush the eyes with lukewarm, gently flowing water for 15 – 30 minutes, holding the eyelids wide open; do not interrupt flushing to remove contact lenses. Do not use calcium gluconate gel in the eyes. After irrigation, 1 % calcium gluconate eye drops may be instilled under medical supervision. Obtain immediate medical attention from an ophthalmologist and continue irrigation en route to medical care. Permanent corneal opacification and blindness may result.
Ingestion. Do NOT induce vomiting — re-exposure of the oesophagus and the risk of aspiration make vomiting dangerous, and the use of gastric lavage or emesis is contraindicated. Call a physician or poison control centre immediately; ingestion is a medical emergency (can be fatal). If the casualty is conscious and alert, rinse the mouth thoroughly with water; further oral treatment (for example calcium- or magnesium-containing antacids or milk, which bind fluoride) only on the instruction of a physician or poison control centre. Do not give sodium bicarbonate or other neutralising agents. Possible perforation of the stomach or oesophagus should be investigated.

4.2 Most important symptoms and effects, both acute and delayed

- Skin: severe burns, with pain that may be immediate or delayed (up to 24 hours at concentrations below 20 %); redness, blistering, white or greyish necrotic tissue, deep tissue and bone damage; systemic fluoride absorption from even small areas.
- Eyes: severe pain, lacrimation, corneal burns and opacification; risk of permanent damage and blindness.
- Inhalation: burning of the nose and throat, cough, hoarseness, chest tightness and dyspnoea; chemical pneumonitis and delayed non-cardiogenic pulmonary oedema; potentially fatal.
- Ingestion: severe burns of the mouth, throat, oesophagus and stomach; severe swelling, damage to delicate tissue and danger of perforation; vomiting, abdominal pain and circulatory collapse; potentially fatal.
- Systemic (all routes): hypocalcaemia, hypomagnesaemia and hyperkalaemia leading to cardiac arrhythmia (prolonged QT interval, ventricular fibrillation), muscle spasm and tetany, convulsions and death.

4.3 Indication of any immediate medical attention and special treatment needed

- Treat as a severe hydrofluoric acid burn with potential systemic fluoride poisoning. Apply 2.5 % calcium gluconate gel to skin burns as described above; for deep, painful or extensive burns, consider subcutaneous infiltration or intra-arterial infusion of calcium gluconate on specialist advice.
- Systemic toxicity: monitor continuously by ECG (watch for QT prolongation and ventricular arrhythmias) and measure serum calcium, magnesium and potassium repeatedly. Give intravenous calcium gluconate (or calcium chloride via a central line) to correct hypocalcaemia and replace magnesium as required; large calcium doses may be needed.
- Inhalation: give oxygen and nebulised 2.5 % calcium gluconate; monitor the airway closely, as laryngeal oedema and bronchospasm may require early intubation; observe for at least 24 – 48 hours for delayed pulmonary oedema.
- Eyes: continue irrigation, then 1 % calcium gluconate eye drops under supervision; urgent ophthalmology referral.
- Ingestion: do not induce vomiting or perform gastric lavage; consider early endoscopy once stable. Activated charcoal is of no value. Do not use chemical neutralising agents.
- Seek poison control centre or toxicology advice early (US Poison Centers 1-800-222-1222).

5 SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media

- Suitable: the product is not combustible. Use extinguishing media appropriate to the surrounding fire — dry chemical, carbon dioxide or alcohol-resistant foam; water spray or fog from a safe distance to cool fire-exposed containers and to knock down hydrogen fluoride vapour.
- Unsuitable: do NOT use dry sand or other silica-based media — silica reacts with hydrofluoric acid to give toxic silicon tetrafluoride gas. Do NOT direct a solid water jet into the product; the manufacturer notes a violent reaction with water for the concentrated acid, and dilution is strongly exothermic with risk of spattering and corrosive mist.

5.2 Special hazards arising from the substance or mixture

- Non-combustible; the product itself does not burn. No flash point or explosion limits.
- Contact with metals produces hydrogen gas, which is highly flammable and forms explosive mixtures with air (4 – 75 vol %); hydrogen may accumulate in the headspace of damaged or improperly vented containers.
- Heating or fire exposure may decompose the product to give dense, corrosive and highly toxic fumes of gaseous hydrogen fluoride (HF); contact with silicate materials (glass, concrete) liberates silicon tetrafluoride.
- Containers may rupture violently under fire conditions owing to internal pressure from vapour and evolved hydrogen.
- The product causes severe burns of the eyes, skin and mucous membranes, and fatal poisoning by inhalation, skin contact or ingestion; fire-fighting water run-off is acidic, corrosive and toxic.

5.3 Advice for fire-fighters

- Wear a positive-pressure self-contained breathing apparatus (NIOSH-approved) and full acid-resistant, gas-tight protective clothing. Structural fire-fighting turnout gear alone provides inadequate protection against hydrogen fluoride.
- Evacuate and isolate the area. Approach from upwind. Stay out of low areas where heavy vapour may collect.
- Use water spray to cool fire-exposed containers and to knock down vapour, but prevent run-off water from entering the acid or reaching drains and watercourses; withdraw immediately if a rising sound from a venting safety device or discolouration of a container occurs.
- Collect contaminated fire-fighting water separately for neutralisation and disposal; it must not be discharged to the sewer or environment.
- Fire-fighters and decontamination personnel exposed to the product must be treated as hydrofluoric acid casualties — see Section 4. Refer to ERG 2024 Guide 157 (Substances — toxic and/or corrosive, non-combustible, water-sensitive).

6 SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel. Evacuate the area immediately and move upwind and uphill. Restrict access. Do not walk through spilled material. Avoid all contact with liquid, vapour and mist — even small contact is a medical emergency. Alert the site emergency response team and notify the hospital that a hydrofluoric acid exposure may occur. Ensure calcium gluconate gel is to hand.

For emergency responders. Do not attempt response without suitable PPE: chemical splash goggles with full face shield, a gas-tight acid-resistant suit with boots, butyl rubber, neoprene or Viton gloves (double-gloved), and a NIOSH-approved positive-pressure SCBA or supplied-air respirator, since hydrogen fluoride vapour is immediately dangerous at 30 ppm. Ventilate confined spaces before entry. Initial isolation of at least 50 m (150 ft) in all directions for a small liquid spill is recommended; increase the distance for large spills and consult ERG Guide 157 for downwind protective-action distances.

6.2 Environmental precautions

- Prevent entry into drains, sewers, surface water, groundwater and soil. Dyke or bund the spill. The supplier advises that the product should not be released into the environment.

- The solution is toxic to aquatic life, depresses pH and attacks concrete, glass-containing materials and metal drainage infrastructure.
- Report releases as required by law. Under CERCLA, a release of 100 lb (45.4 kg) or more of hydrogen fluoride in a 24-hour period must be reported immediately to the National Response Center (1-800-424-8802); for this product, 100 lb of HF corresponds to approximately 250 lb (113 kg) of 40 % solution or approximately 200 lb (91 kg) of 49 % solution.

6.3 Methods and material for containment and cleaning up

- Stop the leak if it can be done without risk. Upright leaking containers and transfer the contents to a sound, labelled, HDPE, polypropylene or PFA container — never glass or metal.
- Contain and soak up the spill with an inert, NON-SILICEOUS absorbent — polypropylene pads, calcium carbonate (limestone) or hydrated lime. Do NOT use sand, diatomaceous earth, vermiculite, clay or other silica-containing absorbents, which react to give toxic silicon tetrafluoride. Do not use combustible absorbents such as sawdust, paper or cloth.
- Small spills may be neutralised with calcium hydroxide (lime) or calcium carbonate, added slowly from a distance; this converts the fluoride to insoluble calcium fluoride. Neutralisation is exothermic and may liberate heat, spray and vapour — never confine the reaction. Sodium carbonate or bicarbonate neutralise the acid but leave soluble fluoride, so lime is preferred.
- Collect the absorbed or neutralised material with non-metallic tools into a labelled, sealed, HDPE or polypropylene container for disposal. Keep in suitable, closed containers.
- Flush the residual area with large volumes of water only after the bulk has been removed, collecting the wash water for neutralisation with lime and disposal.
- Ventilate the area thoroughly and monitor for hydrogen fluoride vapour and, where metals were contacted, hydrogen before releasing the area. Decontaminate or dispose of all contaminated PPE.

6.4 Reference to other sections

See Section 8 for exposure controls and personal protection, and Section 13 for disposal considerations.

7 SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

- Handle only by trained personnel, in a chemical fume hood or under local exhaust ventilation. Open and dispense with the sash lowered. Do not work alone — use a buddy system for hydrofluoric acid operations.
- Wear the personal protective equipment specified in Section 8 at all times. Do not get in eyes, on skin or on clothing. Do not breathe mist, vapour or spray. Do not ingest; if swallowed, seek immediate medical assistance.
- Keep 2.5 % calcium gluconate gel (in date) at every hydrofluoric acid workstation and ensure that all staff know where it is and how to apply it. Ensure an emergency eyewash station and safety shower are within 10 seconds' unobstructed travel of the work area and are tested regularly.
- Use only HDPE, polypropylene, PTFE, PFA, FEP or PVDF containers, transfer lines and labware. Never use glass, quartz, ceramic or metal vessels, and do not pour into glass-containing drains or sinks.
- When diluting, ALWAYS add the acid slowly to water with stirring and cooling — never add water to the acid.
- Open containers slowly and carefully to relieve any internal pressure; point the opening away from the face and body.
- Ground and bond containers when transferring in bulk; the hydrogen that may evolve from contact with metals is flammable.
- Do not eat, drink or smoke in the handling area. Wash hands and exposed skin thoroughly after handling. Keep the container tightly closed when not in use and do not return unused material to the original container.
- Empty containers retain product residue and vapour and remain hazardous — do not cut, weld, drill or reuse.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions	Keep containers tightly closed in a dry, cool, well-ventilated corrosives area away from direct sunlight and sources of heat. Keep locked up or in an area accessible only to authorised, trained personnel. Store in the original packaging.
Recommended temperature	15 – 25 °C (59 – 77 °F). Avoid heat, which increases hydrogen fluoride vapour release. Freezing is not a practical concern (melting point approximately −35 °C).
Containment	Store in corrosion-resistant secondary containment (HDPE or polypropylene tray or bunded area) of at least 110 % of the largest container. Do not rely on bare concrete, which is attacked by hydrofluoric acid. Segregate from other chemical classes.
Suitable materials	Original supplier packaging: HDPE, PurePak (high-purity HDPE), PFA, PTFE and polypropylene containers with resistant inner liners; polyethylene or polypropylene secondary containment.
Unsuitable materials	Glass, quartz, ceramics and other silicate materials; concrete; all common metals including carbon steel, stainless steel, aluminium, zinc, galvanised surfaces, copper, brass and bronze. Do not store in metal or glass containers.

Incompatible storage	Segregate from bases and alkalis (including ammonia and amines), metals and metal powders, cyanides, sulfides, fluorine, strong oxidising agents, and silicon-containing materials. Do not store with flammable liquids.
Shelf life	Stable when stored as specified in unopened original packaging. Ultrapure grades should be opened only in a clean environment, after which trace-metal levels can no longer be guaranteed against the released specification.

7.3 Specific end use(s)

Laboratory reagent, etchant and industrial process chemical for use by trained personnel only. No further specific guidance beyond the identified uses in Section 1.2.

8 SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Occupational exposure limits — hydrogen fluoride (as F) (CAS 7664-39-3)

Source	Type	Value
OSHA PEL (29 CFR 1910.1000, Table Z-1)	8-hour TWA (as F)	3 ppm
NIOSH REL	10-hour TWA / ceiling (15-minute)	3 ppm (2.5 mg/m³) / 6 ppm (5 mg/m³)
ACGIH TLV	8-hour TWA / ceiling (as F), skin	0.5 ppm / 2 ppm
NIOSH IDLH	Immediately dangerous to life or health	30 ppm
Cal/OSHA PEL (8 CCR 5155)	8-hour TWA / STEL	3 ppm (2.5 mg/m³) / 6 ppm (5 mg/m³)
Mexico OEL (NOM-010-STPS)	TWA / ceiling	0.5 ppm (2.5 mg/m³) / 2 ppm
EU IOELV (Directive 2000/39/EC)	8-hour TWA / STEL	1.5 mg/m³ (1.8 ppm) / 2.5 mg/m³ (3 ppm)
ACGIH BEI	Biological exposure index	Fluoride in urine — consult the current ACGIH BEI documentation for sampling time and value

8.2 Exposure controls

Appropriate engineering controls

- Use only in a certified chemical fume hood with a minimum face velocity of 0.5 m/s (100 ft/min), or under equivalent local exhaust ventilation captured at the point of generation. Exhaust ducting, fans and scrubbers must be of hydrofluoric-acid-resistant construction (polypropylene, PVC or fluoropolymer).
- Provide general ventilation sufficient to keep airborne hydrogen fluoride well below the ceiling limit at all times, especially in confined areas. Where large quantities are handled, provide continuous HF gas detection with alarm and consider closed transfer systems.
- Safety shower and eyewash station must be immediately available (ANSI/ISEA Z358.1), together with in-date 2.5 % calcium gluconate gel at every workstation.

Eye and face protection

- Tight-sealing chemical splash goggles conforming to ANSI/ISEA Z87.1 or EN 166, worn together with a full face shield whenever there is any risk of splashing, pouring or pressurised release. Ordinary safety spectacles are not adequate. Contact lenses are not recommended.

Skin and body protection

- Gloves: neoprene, butyl rubber or Viton® of adequate thickness (≥ 0.5 mm for butyl) are preferred for 40 – 50 % solutions; double-gloving with a thin nitrile liner is good practice. Heavy-gauge nitrile (≥ 0.4 mm) is suitable only for incidental splash and must be changed immediately on contact; thin disposable nitrile, natural rubber latex and PVC are not suitable for concentrated hydrofluoric acid. Inspect gloves before each use and confirm performance with the glove manufacturer for the specific task.
- Body: hydrofluoric-acid-resistant apron (neoprene or PVC) or coveralls over a laboratory coat for small-scale work; a full chemically resistant suit (Type 3/4, EN 14605) with hood for bulk transfer, drumming and spill response. Wear long sleeves and no exposed skin.
- Feet: closed, chemically resistant boots or overboots (neoprene or PVC). Trouser legs worn outside the boots. Leather articles contaminated with hydrofluoric acid must be discarded.

Respiratory protection

- Not normally required where work is carried out in an effective fume hood. Where the exposure limits may be exceeded or irritation is experienced, follow the OSHA respirator regulations in 29 CFR 1910.134 or European Standard EN 149 and use a NIOSH/MSHA-approved or EN 149 respirator with acid-gas cartridges (Type E, yellow, EN 14387) within its assigned protection factor; add a P100/P3 particulate filter where

mist is present.
- For unknown concentrations, oxygen-deficient atmospheres, emergency response or concentrations at or above 30 ppm (IDLH), use a positive-pressure self-contained breathing apparatus or a supplied-air respirator with escape bottle.
- Respirator use requires a written programme under 29 CFR 1910.134, including medical evaluation, fit testing and training.

Environmental exposure controls
- Do not discharge to the environment or empty into drains. Route vent gases through a caustic scrubber where necessary. Neutralise aqueous effluent with lime (calcium hydroxide) to precipitate calcium fluoride, and adjust pH to the range permitted by the receiving authority before discharge. Hygiene measures: handle in accordance with good industrial hygiene and safety practice.

9 SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Property	Value
Physical state	Liquid
Colour	Colourless
Odour	Pungent, irritating
Odour threshold	No information available
Melting point / freezing point	−35 °C (−31 °F) (manufacturer data for the concentrated solution)
Boiling point / initial boiling point	105 °C (221 °F) (manufacturer data); depends on concentration, with hydrogen fluoride gas evolved on heating
Flammability	Not flammable (liquid); contact with metals liberates flammable hydrogen gas
Lower / upper explosion limit	No data available for the liquid; hydrogen evolved on contact with metals: 4 – 75 vol % in air
Flash point	Not applicable (non-combustible aqueous solution)
Auto-ignition temperature	No data available
Decomposition temperature	No data available; gaseous hydrogen fluoride is released on heating
pH	< 1.0 (as supplied)
Kinematic / dynamic viscosity	No data available
Solubility (water)	Completely miscible with water in all proportions, with evolution of heat
Solubility (other)	No information available
Partition coefficient n-octanol/water (log Kow)	−1.4 (hydrogen fluoride)
Vapour pressure	No data available
Density / relative density	1.15 – 1.20 g/cm³ (relative density 1.15 – 1.20); rises with HF content
Relative vapour density	2.21 (air = 1) — manufacturer value; hydrogen fluoride vapour is heavier than air and will collect in low areas
Particle characteristics	Not applicable (liquid)
Molecular weight	20.01 g/mol (HF)
Evaporation rate	No data available
Oxidising properties	None
Explosive properties	Not explosive; flammable hydrogen may form on contact with metals
Surface tension	No data available
Concentration	39.0 – 41.0 % w/w HF (Laboratory Reagent); 39.5 – 40.5 % w/w (Analytical Reagent); 48.0 – 50.0 % w/w (PV Pure); 47.0 – 51.0 % w/w (Ultrapure PPB)

9.2 Other information

No additional physical or chemical hazard information. Values above are the manufacturer's data for hydrofluoric acid solution; boiling point, melting point, density and vapour release vary with HF concentration.

10 SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Highly corrosive aqueous acid and a strong attacker of silicates and most metals. Reacts exothermically with bases and violently with strong alkalis and ammonia, and with many metals to give hydrogen. Reactive hazard: none further known under normal conditions of use.

10.2 Chemical stability

Stable under normal conditions and under the recommended storage and handling conditions. Not sensitive to mechanical impact or static discharge. Hazardous polymerisation does not occur.

10.3 Possibility of hazardous reactions

- Corrosive to metals. Contact with metals (iron, steel, aluminium, zinc and others) evolves flammable hydrogen gas, which may form an explosive atmosphere in enclosed spaces or container headspace.
- Attacks glass, quartz, ceramics, concrete, sand and other silicates, liberating toxic and corrosive silicon tetrafluoride gas and water.
- Violent, heat-generating reaction with alkalis, ammonia and amines; can cause boiling and spattering of the corrosive solution.
- Contact with cyanides liberates hydrogen cyanide; contact with sulfides liberates hydrogen sulfide.
- Dilution with water is strongly exothermic; adding water to the concentrated acid can cause violent spattering.

10.4 Conditions to avoid

Incompatible products; excess heat (which increases hydrogen fluoride vapour); contact with metals, glass and silicate materials; confinement of evolved gas in closed systems; moisture-assisted contact with metals.

10.5 Incompatible materials

Class	Examples
Metals and alloys	Carbon steel, stainless steel, aluminium, zinc, galvanised surfaces, copper, brass, bronze, lead, magnesium, metal powders (hydrogen evolution)
Cyanides and sulfides	Cyanides (hydrogen cyanide); sulfides (hydrogen sulfide)
Bases and amines	Sodium and potassium hydroxide, ammonia and ammonium hydroxide, organic amines, calcium oxide (violent when concentrated)
Fluorine	Fluorine and other strongly oxidising halogens
Glass and silicates	Glass, quartz, ceramics, sand, diatomaceous earth, vermiculite, concrete (silicon tetrafluoride evolution)
Construction materials	Concrete, unlined mild steel, leather, natural rubber; glass-lined equipment

10.6 Hazardous decomposition products

Gaseous hydrogen fluoride (HF) on heating or in a fire; silicon tetrafluoride on contact with glass or silicates; hydrogen gas on contact with metals.

11 SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in 29 CFR 1910.1200(c) / GHS

Likely routes of exposure: skin and eye contact, inhalation of vapour or mist, and accidental ingestion. The product is fatal by all three routes of exposure.

Endpoint	Data and conclusion
Acute toxicity — oral	No LD_{50} value is available from the manufacturer. May be fatal if swallowed; causes severe burns of the upper digestive and respiratory tracts, mouth, throat and stomach. Classified Acute Toxicity Category 2 (H300).
Acute toxicity — dermal	No LD_{50} value is available from the manufacturer. May be fatal if absorbed through the skin, with severe burns and systemic fluoride poisoning. Classified Acute Toxicity Category 1 (manufacturer OSHA classification) / Category 2 (EU harmonised) (H310).
Acute toxicity — inhalation	LC_{50} (rat, 1 h): 0.79 mg/L (hydrogen fluoride). May be fatal if inhaled; causes severe burns of the respiratory tract. Classified Acute Toxicity Category 2, vapours (H330).
Skin corrosion / irritation	Corrosive. Causes severe, deep chemical burns, with pain possibly delayed at concentrations below 20 %; systemic fluoride absorption can be fatal. Classified Skin Corrosion Category 1A on the basis of the harmonised EU classification and human experience.

Endpoint	Data and conclusion
Serious eye damage / irritation	Causes serious, irreversible eye damage, including corneal opacification and blindness. Classified Eye Damage Category 1.
Respiratory or skin sensitisation	Based on available data, the classification criteria are not met (respiratory and skin). Not classified.
Germ cell mutagenicity	Based on available data, the classification criteria are not met. Not classified.
Carcinogenicity	Not listed by IARC, NTP, ACGIH or OSHA as a carcinogen. Based on available data, the classification criteria are not met. Not classified.
Reproductive toxicity	Based on available data, the classification criteria are not met. Not classified.
STOT — single exposure	Category 3 — respiratory system (H335) in the manufacturer's OSHA classification; vapour and mist are irritating to the respiratory tract. This effect is subsumed within the more severe acute inhalation toxicity and corrosivity classifications.
STOT — repeated exposure	Based on available data, the classification criteria are not met; no target organs known. Prolonged overexposure to fluoride is, however, associated in the occupational literature with bone changes (skeletal fluorosis) and respiratory irritation, which is the basis of the ACGIH TLV.
Aspiration hazard	Based on available data, the classification criteria are not met.

11.2 Other information

Target organs: eyes, skin, respiratory system, gastrointestinal tract, heart (through systemic hypocalcaemia and hyperkalaemia), bone and kidney. Toxicologically synergistic products: no information available. Persons with pre-existing skin disorders, eye disease, cardiac conduction abnormalities, or chronic respiratory or renal disease may be at increased risk from exposure. Endocrine disrupting properties: this product does not contain any known or suspected endocrine disruptors.

The toxicological properties have not been fully investigated in all endpoints; the assessment above is based on the manufacturer's data for hydrofluoric acid solution, the harmonised EU classification and the well-established toxicology of the fluoride ion.

12 SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Endpoint	Value
Fish — acute	LC_{50} (Leuciscus idus, golden orfe, 48 h): 660 mg/L (hydrogen fluoride).
Aquatic invertebrates — acute	EC_{50} (Daphnia species, water flea, 48 h): 270 mg/L (hydrogen fluoride).
Algae	No data available (freshwater algae not listed by the manufacturer).
Microorganisms	No data available (Microtox not listed by the manufacturer). High concentrations of acid and fluoride are expected to inhibit activated sludge.

Do not empty into drains. Ecotoxicity arises from the combined effect of pH depression and fluoride ion. In hard or calcium-rich waters, fluoride is partly removed from solution as sparingly soluble calcium fluoride, but the release of significant quantities is harmful to aquatic life.

12.2 Persistence and degradability

Soluble in water; miscible. Persistence is unlikely based on the information available. As an inorganic substance, hydrofluoric acid is not subject to biodegradation; the fluoride ion is removed from solution by precipitation as calcium fluoride and by incorporation into minerals.

12.3 Bioaccumulative potential

No information available from the manufacturer. Partition coefficient log Pow = −1.4 (hydrogen fluoride); significant bioaccumulation is not expected, although fluoride can be taken up in bone and shell of aquatic organisms.

12.4 Mobility in soil

Likely to be mobile in the environment owing to its water solubility. Mobility is limited in calcium-rich soils by precipitation as calcium fluoride; acid solutions will also dissolve metals and silicates in soil.

12.5 Results of PBT and vPvB assessment

The substance does not meet the criteria for PBT or vPvB under REACH Annex XIII.

12.6 Other adverse effects

Germany water hazard class WGK 2 (hazardous to water). Not an ozone-depleting substance; global warming potential not applicable. Does not meet the definition of a per- or polyfluoroalkyl substance (PFAS).

13 SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

- Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste under 40 CFR 261 and must consult federal, state and local hazardous waste regulations to ensure complete and accurate classification.
- Dispose of surplus and non-recyclable material via a licensed hazardous-waste contractor or approved waste disposal plant experienced with hydrofluoric acid. Do not discharge to sewers, drains or watercourses.
- Aqueous hydrofluoric acid waste may be neutralised by trained personnel with an excess of calcium hydroxide (lime) or calcium carbonate in a polyethylene or polypropylene vessel, converting the fluoride to insoluble calcium fluoride sludge; the reaction is exothermic. The sludge and supernatant must be tested and disposed of as hazardous waste as required. Never neutralise in a closed container.
- Collect waste hydrofluoric acid only in clearly labelled HDPE, polypropylene or PFA containers, never glass or metal. Do not mix with other waste streams, bases, cyanides, sulfides or silicon-containing materials.
- Empty containers retain product residue and vapour and remain hazardous. Triple-rinse containers with water, collecting the rinsate for neutralisation and permitted disposal, before offering for recycling or reconditioning; otherwise dispose of the container as unused product.
- Dispose of the container in accordance with local regulations. RCRA "empty" criteria are set out in 40 CFR 261.7.

13.2 Waste codes

RCRA (40 CFR 261): discarded unused product exhibits the corrosivity characteristic (aqueous solutions of pH ≤ 2) — EPA hazardous waste number D002 — and, as a discarded unused commercial chemical product, is also U-listed: U134 (hydrofluoric acid / hydrogen fluoride). Not P-listed. European waste catalogue: EWC code 06 01 03* (hydrofluoric acid). Final code allocation is the responsibility of the waste producer.

14 SECTION 14: TRANSPORT INFORMATION

This product is a regulated dangerous good in all modes of transport.

14.1 Common transport classification (all modes)

UN number / UN ID number	UN 1790
UN proper shipping name	Hydrofluoric acid, with not more than 60 percent strength (also "Hydrofluoric acid solution")
Transport hazard class	Class 8 — Corrosive substances
Subsidiary hazard	Class 6.1 — Toxic substances
Packing group	II
Label(s) required	Class 8 "Corrosive" (white upper half / black lower half) and Class 6.1 "Toxic" (white with skull and crossbones) — both labels on every package
Environmental hazards	Not classified as a marine pollutant under the IMDG Code and not an environmentally hazardous substance under ADR/RID.
Special precautions for user	Transport upright, secured against movement, away from foodstuffs. Segregate from bases, cyanides, metals and Class 4.3 substances. Glass inner packagings are NOT permitted — use HDPE or PFA inner packagings only. Keep away from heat. Vehicles and containers must be of, or lined with, hydrofluoric-acid-resistant material. Carry calcium gluconate gel with the emergency kit.
Transport in bulk (MARPOL Annex II / IBC Code)	Not applicable to packaged goods. Where carried in bulk by sea, consult the IBC Code and the ship's Certificate of Fitness for the edition in force.

Transport hazard label(s) required on the package:



Class 8 — Corrosive



Class 6.1 — Toxic

Minimum 100 mm × 100 mm on each side, set on a point, with a solid inner line 5 mm inside the edge (49 CFR 172.407). Reduced-size labels are permitted only where the package is too small to bear a full-size label. Where a subsidiary hazard label is required, it is displayed next to the primary label.

14.2 US DOT — 49 CFR (road, rail and domestic transport)

Hazardous materials table entry	Hydrofluoric acid, with not more than 60 percent strength — 8, UN1790, PG II

Label codes	8, 6.1
Special provisions (49 CFR 172.102)	A6, A7, B4, B15, B70, IB2, N5, N34, T8, TP2
Packaging — exceptions	49 CFR 173.154
Packaging — non-bulk	49 CFR 173.202
Packaging — bulk	49 CFR 173.243
Quantity limitation — passenger aircraft/rail	1 L
Quantity limitation — cargo aircraft only	30 L
Vessel stowage	Location D; other stowage provisions 40
Limited quantity	Authorised under 49 CFR 173.154(b): inner packagings not exceeding 1.0 L, package gross mass not exceeding 30 kg. Limited quantity marking required in place of labels. Glass inner packagings are not permitted (special provisions N5 and N34) — use HDPE or PFA.
Reportable quantity (RQ)	100 lb (45.4 kg) of hydrogen fluoride — approximately 250 lb (113 kg) of 40 % product or approximately 200 lb (91 kg) of 49 % product. Where a single package contains an RQ or more, the letters "RQ" must appear on the shipping paper and package marking.
ERG 2024 guide number	157 — Substances — toxic and/or corrosive (non-combustible, water-sensitive)
Emergency response telephone	Required on the shipping paper under 49 CFR 172.604 — see Section 1.4
Placarding	CORROSIVE placard required for bulk packagings and for non-bulk shipments where the aggregate gross weight of Table 2 materials is 454 kg (1,001 lb) or more. A POISON subsidiary placard is not required.

14.3 IMDG Code (sea)

UN number / class / PG	UN 1790, Class 8 (6.1), PG II
Proper shipping name	HYDROFLUORIC ACID with not more than 60 % hydrofluoric acid
EmS (emergency schedules)	F-A (fire) and S-B (spillage)
Segregation group	Group 1 — Acids
Marine pollutant	No
Limited quantity	1 L
Excepted quantity	E2
Stowage and segregation	Stowage category D. Segregate from alkalis, Class 4.3 substances and cyanides; "away from" living quarters. Refer to the IMDG Code edition in force for the stowage category and segregation table.

14.4 IATA DGR / ICAO Technical Instructions (air)

UN number / class / PG	UN 1790, Class 8 (6.1), PG II
Proper shipping name	Hydrofluoric acid, with not more than 60 % hydrofluoric acid
Passenger and cargo aircraft	Packing Instruction 851 — maximum net quantity 1 L per package
Cargo aircraft only	Packing Instruction 855 — maximum net quantity 30 L per package
Limited quantity (passenger aircraft)	Packing Instruction Y840 — maximum net quantity 0.5 L per package
Excepted quantity code	E2
ERG code (ICAO)	8P
Note	Packing instruction numbers change between editions of the IATA Dangerous Goods Regulations. Verify against the edition in force on the date of shipment before completing the Shipper's Declaration.

14.5 ADR / RID / ADN (European road, rail and inland waterway)

UN number / class / PG	UN 1790, Class 8, PG II
Classification code	CT1 — corrosive substances, toxic, liquid

Labels	8 + 6.1
Tunnel restriction code	(E)
Hazard identification number (Kemler)	86
Transport category / limited quantity	Transport category 2; limited quantity 1 L
Packing instructions	P001, IBC02
Note	Verify against the ADR/RID edition in force before shipment.

14.6 Shipping documentation example

UN1790, Hydrofluoric acid, 8, (6.1), PG II — followed by the number and type of packages, total quantity, packaging authorisation, emergency response telephone number and, where applicable, the "RQ" designation and limited-quantity marking.

The shipper is responsible for confirming that packaging is UN-performance tested and marked to the required standard, that all personnel involved are trained and certified under 49 CFR 172 Subpart H (and IATA/IMDG equivalents), and that the classification remains valid under the regulatory edition in force on the date of shipment.

15 SECTION 15: REGULATORY INFORMATION

15.1 United States federal regulations

Regulation	Status
TSCA (15 U.S.C. §2601 et seq.)	Hydrogen fluoride, CAS 7664-39-3, and water are listed on the TSCA Chemical Substance Inventory with an "active" designation. No TSCA section 12(b) export notification requirement applies. Not subject to a section 5(a)(2) significant new use rule and not a TSCA 6(h) PBT substance.
OSHA Hazard Communication (29 CFR 1910.1200)	Classified as a hazardous chemical. This SDS is prepared to the HCS 2024 amendment (GHS Rev. 7), for which the compliance date for substances was 19 May 2026.
OSHA flammable liquids (29 CFR 1910.106)	Not applicable — non-combustible aqueous solution; not a flammable or combustible liquid.
OSHA PSM (29 CFR 1910.119, App. A)	"Hydrogen fluoride" is listed with a threshold quantity of 1,000 lb, which applies to anhydrous hydrogen fluoride; the aqueous solution is not individually listed — verify site inventory.
CERCLA section 103 (40 CFR 302.4)	Hazardous substance. Reportable quantity 100 lb (45.4 kg) of hydrogen fluoride. Releases at or above the RQ in any 24-hour period must be reported immediately to the National Response Center, 1-800-424-8802.
EPCRA section 302 (40 CFR 355, App. A)	Extremely hazardous substance — hydrogen fluoride, threshold planning quantity 100 lb, RQ 100 lb. APPLIES: solutions are counted by their hydrogen fluoride content. Section 302 emergency planning notification may be triggered at or above the TPQ.
EPCRA sections 311 / 312 (40 CFR 370)	Reportable. Applicable hazard classes: acute toxicity, skin corrosion (Category 1A) and serious eye damage (Category 1). Reporting threshold 100 lb on site at any one time (extremely hazardous substance).
EPCRA section 313 (TRI, 40 CFR 372)	Listed (hydrogen fluoride). Toxics Release Inventory reporting applies above the applicable thresholds.
Clean Air Act section 112 / 112(r)	Hazardous air pollutant (hydrogen fluoride). Section 112(r) (40 CFR 68.130) lists "Hydrogen fluoride/Hydrofluoric acid (conc 50 % or greater)", threshold quantity 1,000 lb: the PV Pure (48 – 50 %) and Ultrapure PPB (47 – 51 %) grades can fall within the listing; the 40 % grades do not.
Clean Water Act section 311 (40 CFR 116/117)	Designated hazardous substance; reportable quantity 100 lb. Not a section 307 priority pollutant or toxic pollutant.
RCRA (40 CFR 261)	Discarded unused product exhibits the corrosivity characteristic (D002) and is U-listed U134 (hydrofluoric acid / hydrogen fluoride). Not P-listed.
DEA / Chemical Diversion and Trafficking Act (21 CFR 1310)	Not a List I or List II regulated chemical. Not listed.
FDA / USDA	Not supplied as a food-grade, USP, FCC or NF material. Not for use in food, drug or cosmetic applications.

Regulation	Status
US Department of Homeland Security (6 CFR 27, App. A)	Chemical of interest: "Hydrofluoric acid (conc 50 % or greater)" — release-toxic, screening threshold quantity 1,000 lb. The same 50 % caveat applies as under CAA 112(r); the 40 % grades are below the concentration threshold. Theft screening quantities apply to anhydrous material only.

15.2 United States state regulations

State list	Status
California Proposition 65	Hydrogen fluoride is not listed under the Safe Drinking Water and Toxic Enforcement Act of 1986. No Proposition 65 warning is required for this product.
California — other	Cal/OSHA PEL 3 ppm TWA / 6 ppm STEL (2.5 / 5 mg/m³).
Massachusetts Right-to-Know	Listed (Substance List, 105 CMR 670).
New Jersey Right-to-Know	Listed (Hazardous Substance List; substance list). Special Health Hazard Substance — corrosive.
Pennsylvania Right-to-Know	Listed (Hazardous Substance List).
Rhode Island, Minnesota, Texas	Listed on the Rhode Island and Minnesota hazardous substance / right-to-know lists. Illinois: shown as listed in the manufacturer's state right-to-know table. Texas: no confirmed listing — verify against the current list.

15.3 International regulations

Jurisdiction	Status
Canada	Classified under the Hazardous Products Regulations (SOR/2015-17) consistently with Section 2. Listed on the Domestic Substances List (DSL). Listed under NPRI (hydrogen fluoride) — reporting applies above the applicable thresholds.
European Union — CLP	Harmonised classification, Annex VI to Regulation (EC) No 1272/2008, Index No. 009-003-00-1: Acute Tox. 2, H330, H310, H300; Skin Corr. 1A, H314, with the specific concentration limits given in Section 3.
European Union — REACH	Registered substance. Not on the Candidate List of substances of very high concern and not subject to authorisation (Annex XIV). Annex XVII restriction entry 75 applies to the use of the substance in tattoo inks only. Supplier REACH registration number to be inserted before EU/EEA placement.
Seveso III (Directive 2012/18/EU)	Captured under hazard category H2 (acute toxic, Category 2 — all exposure routes, and Category 3 — inhalation): lower tier 50 t / upper tier 200 t.
Rotterdam / Stockholm / Montreal Conventions	Not listed under the PIC procedure, not a persistent organic pollutant and not an ozone-depleting substance.
Basel Convention	Annex I — Y34 (acidic solutions or acids in solid form) when exported as waste.
Chemical Weapons Convention	Not a scheduled chemical.
Chemical inventories	Listed on TSCA (USA), DSL (Canada), EC Inventory / REACH (EU), AIIC (Australia), IECSC (China), ENCS and ISHL (Japan), KECI (Korea), PICCS (Philippines), NZIoC (New Zealand), TCSI (Taiwan) and the Indian Chemical Inventory. India: hydrogen fluoride is also listed in Schedule 1 of the Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules.
Mexico	Hazard grade: no information available. OEL (NOM-010-STPS): TWA 0.5 ppm (2.5 mg/m³); ceiling 2 ppm.
Germany	Water Hazard Class WGK 2 (hazardous to water).

15.4 Chemical safety assessment

A chemical safety assessment has been carried out for hydrogen fluoride under REACH by the registrants. No exposure scenarios are annexed to this SDS; users placing the substance on the EU/EEA market should obtain the extended SDS from the registrant.

16 SECTION 16: OTHER INFORMATION

16.1 Hazard rating systems

System	Rating	Notes
NFPA 704	Health 4 · Flammability 0 · Instability 1 · Special: none	Corrosive and toxic; commonly also marked ACID or COR
HMIS® III	Health 4 · Flammability 0 · Physical hazard 1 · PPE: X	PPE code to be assigned by the employer based on the task



Rating scale 0 = minimal, 4 = severe. These ratings are supplementary and are not a substitute for the GHS classification in Section 2.

16.2 Full text of hazard statements referred to in this SDS

- H290 — May be corrosive to metals.
- H300 — Fatal if swallowed.
- H310 — Fatal in contact with skin.
- H314 — Causes severe skin burns and eye damage.
- H318 — Causes serious eye damage.
- H330 — Fatal if inhaled.
- H335 — May cause respiratory irritation.

16.3 Abbreviations and acronyms

Abbreviation	Meaning
ACGIH	American Conference of Governmental Industrial Hygienists
ADR / RID / ADN	European agreements concerning the international carriage of dangerous goods by road / rail / inland waterway
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging
DNEL / PNEC	Derived no-effect level / predicted no-effect concentration
EmS	Emergency schedule (IMDG Code)
EPCRA	Emergency Planning and Community Right-to-Know Act
ERG	Emergency Response Guidebook (PHMSA / Transport Canada / SCT)
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
HCS	Hazard Communication Standard, 29 CFR 1910.1200
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA DGR	International Air Transport Association Dangerous Goods Regulations
IDLH	Immediately dangerous to life or health
IMDG	International Maritime Dangerous Goods Code
LC_{50} / LD_{50} / EC_{50}	Concentration / dose / effective concentration lethal or effective to 50 % of a test population
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PBT / vPvB	Persistent, bioaccumulative and toxic / very persistent and very bioaccumulative
PEL / REL / TLV	Permissible exposure limit / recommended exposure limit / threshold limit value
PG	Packing group
RCRA	Resource Conservation and Recovery Act
RQ / TPQ / TQ	Reportable quantity / threshold planning quantity / threshold quantity
SCBA	Self-contained breathing apparatus
STOT SE / RE	Specific target organ toxicity — single exposure / repeated exposure

Abbreviation	Meaning
TSCA	Toxic Substances Control Act
TWA / STEL	Time-weighted average / short-term exposure limit
WGK	Wassergefährdungsklasse (German water hazard class)

16.4 Key references

- 29 CFR 1910.1200, OSHA Hazard Communication Standard, as amended by the final rule of 19 July 2024 (89 FR 44144), aligning with GHS Revision 7.
- 49 CFR Parts 171–180, US DOT Hazardous Materials Regulations; Hazardous Materials Table, 49 CFR 172.101.
- 2024 Emergency Response Guidebook, Guide 157.
- IMDG Code and IATA Dangerous Goods Regulations, editions in force.
- 40 CFR 302.4, 40 CFR 355 Appendix A, 40 CFR 370, 40 CFR 372, 40 CFR 68.130 and 40 CFR 261.
- Regulation (EC) No 1272/2008 Annex VI, Index No. 009-003-00-1; Regulation (EC) No 1907/2006 Annex II.
- NIOSH Pocket Guide to Chemical Hazards, hydrogen fluoride (as F); ACGIH TLVs and BEIs, current edition.
- Manufacturer safety data sheet for hydrofluoric acid (US OSHA HCS 2024 format, revision 10, 18 December 2025) — source of the physical, toxicological and ecotoxicological test values reproduced here.
- ECHA registered substance dossier and PubChem CID 14917, hydrogen fluoride.

16.5 Revision information

Version	1.0
Date of issue	01 November 2026
Reason for revision	First issue under Highpuris LLC. Content prepared in the 16-section format of 29 CFR 1910.1200, Appendix D, with full US DOT 49 CFR transport detail, IMDG / IATA / ADR classification, and the complete Highpuris catalogue SKU list for hydrofluoric acid (39–51 %).
Sections revised	All — first issue
Prepared by	Regulatory Affairs, Highpuris LLC

16.6 Disclaimer

The information in this Safety Data Sheet is provided in good faith and is believed to be accurate as at the date of issue. It has been compiled from data on hydrofluoric acid (39–51 %) published by regulatory authorities, manufacturers and recognised technical sources, and relates only to the specific material identified in Section 1. It does not constitute a warranty, express or implied, of merchantability, fitness for a particular purpose or of any other kind, and Highpuris LLC accepts no liability for loss or damage arising from the handling or use of the product. The material may present hazards in combination with other substances or in processes not described here. It is the responsibility of the user to determine the suitability of this information for their own particular purpose, to comply with all applicable laws and regulations, and to ensure that the material is handled only by adequately trained personnel. Transport classifications, exposure limits and regulatory listings change. This document must be reviewed against the regulatory editions in force at the date of each shipment.

— END OF SAFETY DATA SHEET —

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