SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name	Hydrofluoric Acid 5% Solution
CAS number	7664-39-3
Synonyms	Hydrofluoride, Hydrogen fluoride

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Laboratory Chemicals

1.3 Details of the supplier of the safety data sheet

Company	Lab Alley, LLC 12501 Pauls Valley Road Austin, Texas 78737 U.S.A.
Telephone	512-668-9918
Fax	512-886-4008

1.4 Emergency telephone

Emergency Phone #	US & Canada: 1-800-535-5053	INFOTRAC
	International 1-352-323-3500	INFOTRAC

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity - Oral Category 2
Acute toxicity - Dermal Category 1
Acute toxicity - Inhalation (Gases) Category 2
Acute toxicity - Inhalation (Dusts/Mists) Category 2
Skin corrosion/irritation Category 1 Sub-category A
Serious eye damage/eye irritation Category 1
Specific target organ toxicity (repeated exposure) Category 1
Corrosive to metals Category 1

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal Word: Danger

Hazard statements:
Fatal if swallowed
Fatal in contact with skin
Fatal if inhaled
Causes severe skin burns and eye damage
Causes damage to organs through prolonged or repeated exposure
May be corrosive to metals

Precautionary statements:
Prevention:
Wash face, hands and any exposed skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Do not get in eyes, on skin, or on clothing.
Wear protective gloves/protective clothing/eye protection/face protection.
Do not breathe dust/fume/gas/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
Wear respiratory protection.
Keep only in original container.
Response:
Immediately call a POISON CENTER or doctor/physician.
Absorb spillage to prevent material damage.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.Immediately call a POISON CENTER or doctor/physician.
Immediately call a POISON CENTER or doctor/physician.
Wash contaminated clothing before reuse.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
Rinse mouth.
Do NOT induce vomiting.
Storage:
Store locked up.
Store in a well-ventilated place. Keep container tightly closed.
Store in corrosive resistant container with a resistant inner liner.
Disposal:
Dispose of contents/container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

Not Applicable.

SECTION 3: Composition/information on ingredients

3.1 Components

Chemical name	Common name and synonyms	CAS number	Concentration
Water	-	7732-18-5	95%
Hydrogen fluoride	Hydrofluoride	7664-39-3	5%

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice

National Capital Poison Center in the United States can provide assistance if youhave a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222.

If inhaled

Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. WARNING! It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

In case of skin contact

Wash off immediately with soap and plenty of water. Continue flushing with plenty of waterfor at least 15 minutes. Immediate medical attention is required. While waiting for medical attention, it has been shown that flushing the affected area with water for at least one minute and then massaging HF Antidote Gel into the wound until there is a cessation of pain is a most effective first aid treatment. HF Antidote Gel contains 2% Calcium Gluconate which combines with HF for formation of insoluble Calcium Fluoride, thus preventing the extraction of calcium from the body tissue and bones. Another alternative first aid treatment, after thorough washing of the burned area, is to immerse the burned area in a solution of 0.2% iced aqueous Hyamine 1622 or 0.13% iced aqueous Zephiran Chloride. If immersion is inpractical, towels should be soaked with one of the above solutions and used as compresses for the burn area. Hyamine 1622 is a trade name for Tetracaine Benzethonium Chloride. Zephiran is a trade name for Benzalkonium Chloride. Again, seek medical attention as soon as possible for burns regardless of how they may appear initially. Call a physician or Poison Control Centre immediately.

In case of eye contact

Flush eyes with water for 15 minutes. Immediate medical attention is required. Call a physician or Poison Control Centre immediately.

If swallowed

Fatal if swallowed. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. If victim is conscious, give water or milk. Follow with milk of magnesia. Administer 4 to 8 ounces (120 to 240 mL) of milk or water and milk of magnesia (not to exceed 4 ounces/120 mL in a child). Avoid large amounts of liquid, as this may induce vomiting (emesis). Do not give Sodium Bicarbonate (Baking Soda). Immediate medical attention is required. Call a physician or Poison Control Center immediately.

4.2 Most important symptoms and effects, both acute and delayed

Corrosive. Severe skin and eye irritation or burns. Causes eye damage. Severe irritation or burns of the digestive tract (mouth, throat, stomach, intestines) with necrotic leisons, and hemorrhagic gastritis. Severe abdominal pain. Nausea. May cause diarrhea. Severe irritation or burns of the respiratory tract and possible lung injury. Coughing. Dyspnea(Shortness of breath and difficulty breathing). May cause cyanosis. Fluorosis. Hypomagnesemia. Hyperkalemia. May cause hypocalcemia. May affect the cardiovascular system. It may affect the kidneys. May affect the liver.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media The product is not flammable. If it is involved in a fire, extinguish the fi

Unsuitable extinguishing media No information available.

5.2 Specific hazards arising from the substance or mixture

Hydrogen fluoride gas. Contact with metals may evolve flammable hydrogen gas. May form acid vapors, hydrogen fluoride. Reacts explosively with Cyanogen fluoride (polymerizes explosively), glycerol plus nitric acid (evolves gas from oxidation), methane sulfonic acid (evolves oxygen difluoride).

5.3 Special protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

5.4 Further information

Flash Point No information available.

Autoignition Temperature No information available.

Explosion limits

Upper No data available.
Lower No data available.

Sensitivity to Mechanical Impact No information available.
Sensitivity to Static Discharge No information available.

NFPA

Health	Flammability	Instability	Physical hazards
4	0	1	N/A

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Keep people away from and upwind of spill/leak. All equipment used when handling the product must be grounded. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not get water inside containers. Remove all sources of ignition. Use a vapor supressing foam to reduce vapors; do not put water directly on leak, spill area or inside container.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and materials for containment and cleaning up

Stop leak if you can do it without risk. Neutralize the spill with Calcium carbonate or Calcium oxide. Dilute with water. Absorb spill using polypropylene pads. Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Do not use use vermiculite, silica or sand-based material to absorb the spill. Clean contaminated surface thoroughly.

6.4 Reference to other sections

No additional information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Wear personal protective equipment. Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. Keep away from incompatible materials. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Do not ingest. Do not smoke. Never add water to this product.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Store away from incompatible materials. May corrode glass. Store in appropriate container. May corrode metallic surfaces. Do not store in uncoated metallic containers.

Incompatibilities

Metals
Organic materials
Alkalis
Alkali Metals
Glass
Acid anhydrides
2-amino ethanol
ammonium hydroxide
Arsenic
Bismuthic acid
Calcium oxide
Chlorosulfonic acid
Dialuminum octavanadium tridecasilicide
Ethylene diamine
Ethyleneimine
Fluorine
Mercuric oxide
Nitric acid
Olen-Phenylazopiperidine
Phosphoric anhydride
Potassium permanganate
Potassium tetrafluorosilicate(2-)
beta-Propiolactone
Propylene oxide
Sodium hydroxide
Sodium
Sulfuric acid
Vinyl acetate

SECTION 8: Exposure controls/personal protection

8.1 Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Component	Type	Value
Hydrogen Fluoride	TWA	3 ppm

US. ACGIH Threshold Limit Values

Component	Type	Value
Hydrogen Fluoride	Ceiling F	2 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Component	Type	Value
Hydrogen Fluoride	TWA	2.5 mg/m3

Biological occupational exposure limits
No information available.

8.2 Exposure controls

Appropriate engineering controls

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Personal protective equipment

Eye/face protection
Face-shield and Goggles.

Skin protection
Gloves.

Body Protection
Chemical resistant protective suit. Gloves. Boots.

Respiratory protection
Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

Control of environmental exposure
Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical State	Liquid
Appearance	Clear, colorless
Odor	Acrid, strong
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-37°C/-34.6°F
Boiling Point/Range	112°C/ 233.6°F
Evaporation Rate	No information available
Flammability (solid)	Not flammable
Flammability or explosive limit	No information available
Upper	No information available
Lower	No information available
Vapor Pressure	1.65 @ 20°C (kPa)
Vapor Density	No information available
Density	1.16-1.18
Solubility	Easily soluble in cold water Easily soluble in hot water Very soluble in Acetone Slightly soluble in Ether
Partition coefficient; n-octanol/water	No information available
Autoignition Temp	No information available
Decomposition Temp	No information available

Viscosity	No information available
Molecular Formula	HF
Molecular Weight	20.01
VOC Content(%)	No information available
Oxidizing properties	No information available

9.2 Other safety information
No information available.

SECTION 10: Stability and reactivity

10.1 Reactivity
Incompatible with glass, ceramics, concrete, alkali materials, and will generate hydrogen gas on contact with metals, leather, rubber, common metals, carbonates, sulfides, cyanides, oxides of silicon, fluorine.
Reacts violently with: Acetic anhydride, 2-amino ethanol, Ammonium hydroxide, Arsenic trioxide, Bismuthic acid (produces oxygen), Calcium oxide, Chlorosulfonic acid, Dialuminum octavanadium tridecasilicide, Ethylene diamine, Ethyleneimine, Fluorine,Mercuric oxide, Mercury (II) oxide plus organic materials(above zero degree C), Nitric acid plus lact ic acid (mixtures are unstable) ,Nitric acid plus propylene glycol , Olen-Phenylazopiperidine, Phosphoric anhydride (Phosphorus pentoxide unites with hydrogen fluoride vigorously, even at 19.5 degrees C, HSDB 1990) , Potassium permanganate, Potassium tetrafluorosilicate(2-) (evolvessilicon tetrafluoride gas), Propriolactone (beta-), Propylene glycol and silver nitrate (gas evolution and formation of silver fulminate),Propylene oxide, Sodium, Sodium hydroxide, Sodium tetrafluorosilicate, Sulfuric acid, Vinyl acetate.

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
Hazardous polymerization does not occur.

10.4 Conditions to avoid
Incompatible materials.

10.5 Incompatible materials

Metals
Organic materials
Alkalis
Alkali Metals
Glass
Acid anhydrides
2-amino ethanol
ammonium hydroxide
Arsenic
Bismuthic acid
Calcium oxide
Chlorosulfonic acid
Dialuminum octavanadium tridecasilicide
Ethylene diamine
Ethyleneimine
Fluorine
Mercuric oxide
Nitric acid
Olen-Phenylazopiperidine
Phosphoric anhydride
Potassium permanganate
Potassium tetrafluorosilicate(2-)
beta-Propiolactone
Propylene oxide
Sodium hydroxide
Sodium
Sulfuric acid
Vinyl acetate

10.6 Hazardous decomposition products

Hydrogen Fluoride

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Product Information, Component Information

Acute toxicity

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Water	> 90 mL/kg Oral LD50 Rat	No information available	No information available
Hydrogen Fluoride	342 ppm 1h Oral Mouse	No information available	1276 ppm Inhalation LC50 Rat 1 h

Skin corrosion/irritation

Fatal if absorbed through skin. Causes severe irritation and burns. Causes irreversible destruction of the skin. Readily penetrates the skin and mucous membranes. The burns may not be painful or visible.

Serious eye damage/eye irritation

Causes severe irritation and burns. Causes irrevsible destruction of the eyes.

Respiratory or skin sensitization
No information available.

Germ cell mutagenicity
May affect genetic material based on animal test data.

Carcinogenicity
No components are known to be carcinogenic.

Specific target organ toxicity - single exposure
Respiratory Tract. central nervous system.

Specific target organ toxicity - repeated exposure
Causes damage to organs through prolonged or repeated exposure.
Target Organs: Respiratory system. Lungs. Skin. Eyes. Bones. Teeth.

Reproductive toxicity
No information available.

Chronic effects
Repeated exposure to airborne concentrations of 3 ppm or less could be tolerated with no apparent ill effects for 6 hours/day for up to 50 days; redness of the skin and irritation and burning of the eyes and nose were noted at airborne concentrations between 3 ppm and 4.7 ppm (ACGIH, 1992). No significant changes in pulmonary function occurred with occupational exposure to airborne levels averaging 1.03 ppm (ACGIH). Effects of chronic exposure by inhalation and ingestion include systemic fluoride toxicity (FLUOROSIS), skeletal/bone structure abnormalties (osteosclerosis, and mottling of the teeth (Clayton & Clayton, 1994;White, 1980; Waldbott & Lee, 1978). Hypocalcemia, metabolic acidosis, chronic bronchitis, pulmonary edema, and death can occur from high-level chronic exposure. Chronic exposure may affect the liver and kidneys.

11.2 Additional Information
No additional information.

SECTION 12: Ecological information

12.1 Toxicity
May be harmful to the aquatic environment.

Hydrogen fluoride - 7664-39-3
Freshwater Fish Species Data: 660 mg/L LC50 Leuciscus idus 48 h 1
Water Flea Data: 270 mg/L EC50 Daphnia species 48 h

12.2 Persistence and degradability
No information available.

12.3 Bio accumulative potential
No information available.

12.4 Mobility in soil
No information available.

12.5 Results of PBT and vPvB assessment
No information available.

12.6 Endocrine disrupting properties
No information available.

12.7 Other adverse effects
No information available.

SECTION 13: Disposal considerations

13.1 Waste Disposal Methods
Waste must be disposed of in accordance with Federal, State and Local regulation.

SECTION 14: Transport information

DOT (US)

UN Number	UN1790
Proper Shipping name	Hydrofluoric acid solution
Hazard Class	8, 6.1
Packaging Group	II

IMDG

UN Number	UN1790
Proper Shipping name	Hydrofluoric acid solution
Hazard Class	8, 6.1
Packaging Group	II

IATA

UN Number	UN1790
Proper Shipping name	Hydrofluoric acid solution
Hazard Class	8, 6.1
Packaging Group	II

SECTION 15: Regulatory information

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

No substances are subject to TSCA 12(b) export notification requirements.

CERCLA Hazardous Substance List (40 CFR 302.4)
Listed, Hydrogen Fluoride = 100 lb final RQ.

SARA 304 Emergency release notification
Listed, Hydrogen Fluoride = 100 lb final RQ.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)
No information available.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance
Listed, Hydrogen Fluoride = 100 lb TPQ.

SARA 311/312 Hazardous
Acute Health Hazard, Chronic Health Hazard.

SARA 313 (TRI reporting)
Hydrofluoric acid, 7664-39-3, >= 30 - < 50 %.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
No information available.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
No information available.

Safe Drinking Water Act
No information available.

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace

No information available.

US state regulations

Massachusetts RTK: Present
Massachusetts EHS: extraordinarily hazardous
New Jersey RTK Hazardous Substance List: 3759
New Jersey (EHS) List: 3759 100 lb TPQ
1014 500 lb TPQ
New Jersey - Discharge Prevention - List of Hazardous Substances: Present
New Jersey TCPA - EHS: =1000lbTQ
=500lbTQ
=700lbTQ
Pennsylvania RTK: Environmental hazard
Pennsylvania RTK - Environmental Hazard List Present
Pennsylvania RTK - Special Hazardous Substances Present
Michigan PSM HHC: = 1000 lb TQ
Minnesota - Hazardous Substance List: Present
New York Release Reporting - List of Hazardous Substances:
= 100 lb RQ
Louisana Reportable Quantity List for Pollutants: Listed
California Directors List of Hazardous Substances: Present
California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.
Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65.
Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65.

SECTION 16: Other information

Date of Issue: 5/28/2025

SECTION 17: Disclaimer

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.