



Material Safety Data Sheet

1. Product and Company Identification

Product name : **Hydrogen Fluoride**

Chemical formula : H-F

Synonyms : Hydrofluoric acid; Fluorhydric acid; Anhydrous hydrofluoric acid; Hydrofluoric acid gas; Hydrogen Fluoride, Anhydrous; UN 1052

Company : Specialty Gases of America, Inc
6055 Brent Dr.
Toledo, OH 43611

Telephone : 419-729-7732

Emergency : 800-424-9300

2. Composition/Information on Ingredients

Components	CAS Number	% Volume
Hydrogen Fluoride	7664-39-3	100%

3. Hazards Identification

Emergency Overview

Harmful if inhaled.

May cause respiratory tract burns, skin burns, eye burns, mucous membrane burns.

May react on contact with water.

Potential Health Effects

Inhalation : Burns. May cause burns, fluorosis, kidney damage, liver damage in long term exposure.

Eye contact : Burns.

Skin contact : Burns, absorption may occur.

Ingestion : Burns.

Chronic Health Hazard : None known.

4. First Aid Measures

General advice : None.

Eye contact : Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Skin contact : Remove contaminated clothing, jewelry, and shoes immediately. Rinse with water. Thoroughly clean and dry contaminated clothing before reuse. Get medical attention.

Ingestion : If swallowed, do NOT induce vomiting. Rinse mouth out with water. Get immediate medical attention.

Inhalation : If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be

administered by qualified personnel. Get immediate medical attention.

Note to physician : For inhalation, consider oxygen.
For skin contact, consider ice water bath, iced alcohol, iced magnesium sulfate, magnesium oxide/glycerin gels, calcium gluconate gel or benzalkonium chloride solution.
Avoid gastric lavage or emesis.

5. Fire-Fighting Measures

Suitable extinguishing media : Carbon dioxide, regular dry chemical, water, regular foam.
Large fires: Use regular foam or flood with fine water spray.

Specific hazards : Negligible fire hazard.

Fire fighting : Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.
Move container from fire area if it can be done without risk. Cool containers with water spray until well after fire is out. Stay away from the ends of tanks. Use extinguishing agents appropriate for surrounding fire. Flood with fine water spray. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. Accidental Release Measures

Air Release : Reduce vapors with water spray. Collect runoff for disposal as potential hazardous waste.

Soil Release : Dig holding area such as lagoon, pond or pit for containment. Dike for later disposal. Absorb with sand or other non-combustible material. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash).

Water Release : Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). Neutralize. Collect spilled material using mechanical equipment.

Occupational spill/release : Do not touch spilled material. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

Additional advice : None.

7. Handling and Storage

Handling

Do not breathe vapor or mist. Use only with adequate ventilation. Wash thoroughly after handling. Protective clothing, gloves, and/or safety goggles may be necessary. When using, do not eat, drink or smoke.

Storage

Store and handle in accordance with all current regulations and standards. Protect from physical damage. Store in a well-ventilated area. Keep separated from incompatible substances. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30). Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Store in a cool, dry place. There is a potential over-pressure hazard with long term storage of carbon steel containers and Hydrogen Fluoride. Hydrogen Fluoride in the carbon steel container reacts very slowly with the iron in the steel to form iron fluoride and hydrogen which builds pressure within the

container. Hydrogen Fluoride in carbon steel containers should not be stored for extended periods of time (recommend less than two years). Extreme caution should be taken during the handling of any carbon steel containers storing Hydrogen Fluoride that have been stored for extended periods of time. Protect from sunlight. Keep container tightly closed. Store in a secure area.

8. Exposure Controls / Personal Protection

Exposure limits

ACGIH	:	0.5 ppm TWA (as F) 2 ppm Ceiling (as F) Skin – potential significant contribution to overall exposure by the cutaneous route
OSHA (final)	:	3 ppm TWA F
OSHA (vacated)	:	6 ppm STEL F 3 ppm TWA F
NIOSH	:	3 ppm TWA; 2.5 mg/m ³ TWA 6 ppm Ceiling 15 min; 5 mg/m ³ Ceiling 15 min

IDLH

30 ppm

Engineering measures/Ventilation

Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

Personal protective equipment

Respiratory protection	:	The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA. Measurement element: F 30 ppm – Any air-purifying half-mask respirator equipped with cartridge(s) providing protection against the compound of concern. Any powered, air-purifying respirator with cartridge(s) providing protection against this substance. Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against this substance. Any supplied-air respirator. Any self-contained breathing apparatus with a full facepiece. Emergency or planned entry into unknown concentration or IDLH conditions – Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode. Escape – Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted acid gas canister. Any appropriate escape-type, self-contained breathing apparatus.
Hand protection	:	Wear appropriate chemical resistant gloves.
Eye protection	:	Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.
Skin and body protection	:	Wear appropriate chemical resistant clothing.
Protective materials	:	Neoprene, polyvinyl chloride (PVC), polyethylene

9. Physical and Chemical Properties

Form	: Gas.
Color	: Colorless.
Odor	: Irritating, pungent odor.
Molecular weight	: 20.01
Vapor pressure	: 760 mmHg @ 20°C
Vapor density	: 0.7 (air = 1)
Specific gravity	: 0.987 – 0.991 (water = 1)
Boiling point	: 68°F (20°C)
Melting point	: -117°F (-83°C)
Water solubility	: Reacts violently.
Evaporation rate	: Not applicable.
Solvent solubility	: Soluble: alcohol, organic solvents Slightly soluble: ether, benzene, toluene, m-xylene, tetrahydronaphthalene

10. Stability and Reactivity

Stability	: May react with evolution of heat on contact with water. Releases toxic, corrosive, flammable or explosive gases.
Conditions to avoid	: Avoid heat, sparks, flames or other sources of ignition. May ignite or explode on contact with combustible materials.
Materials to avoid	: Amines, bases, acids, metal oxides, cyanides, combustible materials, halogens, metals, oxidizing materials, metal salts, reducing agents. Water or moisture: hydrogen fluoride Combustion: halogenated compounds, hydrogen
Hazardous decomposition products	: Decomposition products on contact with water or moisture: hydrogen fluoride. Thermal decomposition products: halogenated compounds, hydrogen.

11. Toxicological Information

The components of this material have been reviewed in various sources and the following selected endpoints are published:

HYDROGEN	: Inhalation LC50 Rat: 850 mg/m ³ /1H
FLUORIDE (7664-39-3)	: Inhalation LC50 Rat: 1276 ppm/1H

Acute Toxicity Level

HYDROGEN	: Highly toxic: inhalation
FLUORIDE (7664-39-3)	

Component Carcinogenicity

HYDROGEN	: ACGIH: A4 – Not classifiable as a Human Carcinogen
FLUORIDE (7664-39-3)	

Local Effects

HYDROGEN	: Corrosive: inhalation, skin, eye, ingestion
FLUORIDE (7664-39-3)	

Medical Conditions Aggravated by Exposure

Bone, joint or tooth disorders, kidney disorders, respiratory disorders

12. Ecological Information

16. Other Information

Prepared by : Specialty Gases of America, Inc.

For additional information, please visit our website at www.americangasgroup.com.