

MATERIAL SAFETY DATA SHEET

HYDROFLUORIC ACID 40% AR

MSDS CAS: 7664-39-3

Section 1: Chemical Product and Company Identification

Section 1: Chemical Product

Product Name: HYDROFLUORIC ACID

CAS#: 7664-39-3

Synonym:

Chemical Name: Not available.

Chemical Formula:

Molecular Weight:

Brand: OXFORD

Details Of The Supplier Of The Safety Data Sheet:

Company identification:

OXFORD LAB FINE CHEM LLP

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Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
HYDROFLUORIC ACID	7664-39-3	100

Toxicological Data on Ingredients: Not available.

Section 3: Hazards Identification

Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 2), H300

Acute toxicity, Inhalation (Category 2), H330

Acute toxicity, Dermal (Category 1), H310

Skin corrosion (Category 1A), H314

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

T+ Very toxic R26/27/28

C Corrosive R35

For the full text of the R-phrases mentioned in this Section, see Section 16.

Other hazards

This substance/mixture contains no components considered to be either persistent, bio accumulative and toxic (PBT), or very persistent and very bio accumulative (vPvB) at levels of 0.1% or higher.

Section 4: First Aid Measures

Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Hydrofluoric (HF) acid burns require immediate and specialized first aid and medical treatment. Symptoms may be delayed up to 24 hours depending on the concentration of HF. After decontamination with water, further damage can occur due to penetration/absorption of the fluoride ion. Treatment should be directed toward binding the fluoride ion as well as the effects of exposure. Skin exposures can be treated with a 2.5% calcium gluconate gel repeated until burning ceases. More serious skin exposures may require subcutaneous calcium gluconate except for digital areas unless the physician is experienced in this technique, due to the potential for tissue injury from increased pressure. Absorption can readily occur through the subungual areas and should be considered when undergoing decontamination. Prevention of absorption of the fluoride ion in cases of ingestion can be obtained by giving milk, chewable calcium carbonate tablets or Milk of Magnesia to conscious victims. Conditions such as hypocalcemia, hypomagnesaemia and cardiac arrhythmias should be monitored for, since they can occur after exposure.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

Section 4: First Aid Measures (continued)

In case of skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 203.89°C (399°F) - 223 C (433 F)

Flash Points: CLOSED CUP: -4°C (24.8°F). (TAG) OPEN CUP: -1.1111°C (30°F).

Flammable Limits: LOWER: 1.05% UPPER: 6.7%

Products of Combustion: These products are carbon oxides (CO, CO₂).

Fire Hazards in Presence of Various Substances: Highly flammable in presence of open flames and sparks, of heat.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. **Risks of explosion of the product in presence of static discharge:** Not available. Slightly explosive in presence of heat.

Fire Fighting Media and Instructions:

Flammable liquid, insoluble in water. SMALL FIRE: Use DRY chemical powder. **LARGE FIRE:** Use water spray or fog.

Special Remarks on Fire Hazards:

Flaming occurs when liquid chlorine in n-Heptane is added to added to red phosphorous. Vapors may form explosive mixtures with air. Vapor may travel considerable distance to source of ignition and flash back.

Special Remarks on Explosion Hazards: Vapors may form explosive mixtures in air.

Section 6: Accidental Release Measures

Small Spill:

Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:

Flammable liquid, insoluble in water. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk.

Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities

Section 7: Handling and Storage

Precautions:

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Safety glasses. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self- contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

TWA: 500 (ppm) from OSHA (PEL) [United States] TWA: 2000 (mg/m³) from OSHA (PEL) [United States] TWA: 350 CEIL: 1800 (mg/m³) from NIOSH [United States] TWA: 85 CEIL: 440 (ppm) from NIOSH [United States] TWA: 400 STEL: 500 (ppm) from ACGIH (TLV) [United States] TWA: 500 (ppm) [United Kingdom (UK)] TWA: 400 STEL: 500 (ppm) [Canada] TWA: 1640 STEL: 2049 (mg/m³) [Canada] TWA: 400 STEL: 500 (ppm) [Belgium] TWA: 200 (ppm) [Norway] TWA: 300 STEL: 500 (ppm) [Finland] TWA: 500 (ppm) [Austria] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Hydrocarbon. Gasoline-like

Taste: Not available.

Molecular Weight: 100.21 g/mole

Color: Clear Colorless.

PH (1% soln/water): Not applicable.

Boiling Point: 98.4 (209.1°F)

Melting Point: -90.7°C (-131.3°F)

Critical Temperature: Not available.

Specific Gravity: 0.6838 (Water = 1)

Vapor Pressure: 5.3 kPa (@ 20°C)

Vapor Density: 3.5 (Air = 1)

Volatility: Not available.

Odor Threshold: 150 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; $\log(\text{oil/water}) = 4.7$

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:

Soluble in diethyl ether, acetone. Insoluble in cold water. Soluble in alcohol. Solubility in Chloroform, Petroleum Ether, Ether,

Acetone: >10% Floats on water

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources (flames, sparks), incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents.

Section 10: Stability and Reactivity Data (continued)

Corrosivity: Not considered to be corrosive for metals and glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur

Section 11: Toxicological Information

Routes of Entry:

Absorbed through skin. Inhalation.

Toxicity to Animals:

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute toxicity of the vapor (LC50): 103000 mg/m³ 4 hours [Rat].

Chronic Effects on Humans:

May cause damage to the following organs: lungs, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS).

Other Toxic Effects on Humans:

Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals:

Not available.

Special Remarks on Chronic Effects on Humans:

Not available

Section 11: Toxicological Information (continued)

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: **Skin:** Causes skin irritation. It can be absorbed through the skin. **Eyes:** Contact with liquid may cause eye irritation. Contact with vapors is not expected to cause eye irritation. **Inhalation:** Inhalation of vapor or mist causes respiratory tract and mucous membrane irritation. It can affect behavior/central nervous system and cause central nervous system effects (mild excitement followed CNS depression which is characterized by headache, nausea, dizziness, hilarity, hallucinations, lightheadness, distorted perceptions, convulsions, weakness, loss of judgement and coordination, narcosis, semi-consciousness, coma and death at higher doses). It may cause cardiac effects (irregular heartbeat/cardiac arrhythmias, or heart to stop beating), and pulmonary edema. It is readily absorbed by the inhalation route. **Ingestion:** Causes gastrointestinal tract irritation with nausea, vomiting, swelling of the abdomen. Aspiration into the lungs can produce chemical pneumonitis. It can also affect behavior/central nervous system with symptoms paralleling those of inhalation. **Chronic Potential Health Effects:** **Skin:** Prolonged or repeated skin contact can defat the skin and product irritation and dermatitis. **Inhalation:** Repeated or prolonged inhalation may affect behavior/central nervous system (symptoms similar to acute inhalation) and may produce minimal peripheral nerve damage (polyneuropathy) with numbness and tingling of the extremities in a stocking-and -glove pattern. Reversible of polyneuropathy as been reversible by a year following removal from exposure. It may also affect the brain, blood (anemia), and hearing (mild change in auditory threshold), and may also cause weight loss, **Ingestion:** Prolonged or repeated ingestion may affect the liver, urinary system, blood (changes in blood serum composition).

Section 12: Ecological Information

Eco toxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

OXFORD LAB FINE CHEM LLP

ISO 9001-2008 Certified Company

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Section 13: Disposal Considerations

Waste Disposal: Waste must be disposed of in accordance with federal, state and local environmental control regulations

Section 14: Transport Information

Land transport (ADR-RID)

General information : Not regulated.

Sea transport (IMDG) [English only]

General information : Not regulated.

Air transport (ICAO-IATA) [English only]

General information : Not regulated.

Section 15: Other Regulatory Information

Federal and State Regulations:

Connecticut hazardous material survey.: n-heptane Illinois toxic substances disclosure to employee act: n-heptane Rhode Island RTK hazardous substances: n-heptane Pennsylvania RTK: n-heptane Minnesota: n-heptane Massachusetts RTK: nheptane Massachusetts spill list: n-heptane New Jersey: n-heptane California Director's List of Hazardous Substances: nheptane TSCA 8(b) inventory: n-heptane TSCA 4(a) proposed test rules: n-heptane TSCA 8(d) H and S data reporting: nheptane: Effective date: 1/26/94; Sunset date: 6/30/98

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances

Section 15: Other Regulatory Information (continued)

Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer,

Birth defects or other reproductive harm, which would require a warning under the statute:

Hydrazine hydrate California prop.

65: This product contains the following ingredients for which the State of California has found to cause cancer which would

Require a warning under the statute: Hydrazine hydrate TSCA 8(b) inventory: Hydrazine hydrate SARA 302/304/311/312

Extremely hazardous substances: Hydrazine hydrate

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):

CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).

CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASS

E: Corrosive liquid.

DSCL (EEC):

R23/25- Toxic by inhalation and if swallowed. R35- Causes severe burns. R43- May cause sensitization by skin contact.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 2

Reactivity: 2

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 2

Reactivity: 2

Specific hazard:

Protective Equipment:

Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

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ISO 9001-2008 Certified Company

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Section 16 - Additional Information

References: Not available.

Other Special Considerations: Not available.

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