Safety Data Sheet

Revision date: 04/08/2015 *Version: 1.0*

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

1.1. Product identifier

Trade name/designation:	Hydrofluoric Acid 48%
Product No.:	BDH3040-500MLP BDH3042-3.8LP TXBDH304238CPI
Other means of identification: Hydrogen fluoride, Fluoric acid, Fluorohydric acid, Fluorine hydride	

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

Relevant identified uses: Manufacturing and Laboratory use

1.3. Details of the supplier of the safety data sheet

Company VWR International, LLC
Radnor Corporate Center
100 Matsonford Road
Radnor, PA 19087-8660
Telephone 610.386.1700

1.4. Emergency Telephone number

CHEMTREC 800.424.9300
CANUTEC 613.996.6666

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

For the full text of the H-Statement(s) and R-phrase(s) mentioned in this Section, see Section 16.

Hazard classes and hazard categories	Hazard statements
Acute toxicity, Oral; Category 2	Fatal if swallowed
Acute toxicity, Inhalation; Category 2	Fatal if inhaled
Acute toxicity, Dermal; Category 1	Fatal in contact with skin
Skin corrosion; Category 1A	Causes severe skin burns and eye damage
Serious eye damage; Category 1	Causes serious eye damage

2.2. GHS Label elements, including precautionary statements

Pictograms 

Signal word Danger

Hazard statements	
H300+H310+H330	Fatal if swallowed, if inhaled or in contact with skin.
H314	Causes severe skin burns and eye damage.

Precautionary statements	
P260	Do not breathe fume/gas/mist/vapors/spray.
P262	Do not get in eyes, on skin, or on clothing.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P284	In case of inadequate ventilation, wear respiratory protection.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do not induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/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/doctor/physician.
P361+P364	Take off immediately all contaminated clothing and wash it before reuse.
P363	Wash contaminated clothing before reuse.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local regulations.

2.3. WHIMS Classification

Class D-1A: Poisonous and infectious material- Immediate and serious effects- Very toxic

Class D-2A: Poisonous and infectious material- Other effects- Very toxic

Class E: Corrosive material

2.4. Hazards not otherwise classified (HNOC) or not covered by GHS or WHIMS

Not Available

SECTION 3: Composition / information on ingredients

3.1. Hazard components

Chemical name	Formula	Molecular weight	CAS#	Weight%
Hydrofluoric Acid	HF	20.01 g/mol	7664-39-3	48
Water	H_2O	18.00 g/mol	7332-18-5	Balance

SECTION 4: First aid measures

4.1. General information

In case of inhalation
Move casualty to fresh air and keep at rest. If breathing is difficult, give oxygen. If not breathing, give artificial respirations. Get medical attention.

In case of skin contact
Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cold water may be used. Material is absorbed through the skin. Get medical attention immediately. While waiting for medical attention, it has been shown that flushing the affected area with water for 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 Calcium Gluconate which combines with HF for 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 impractical, towels could 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.

In case of eye contact
Immediately rinse with plenty of water for at least 15 minutes and seek medical attention. Cold water may be used. Keep the eyelids apart and away from the eyeballs during irrigation. Do not use oily drops or ointment or HF skin burn treatments on the eyes. Get medical attention immediately, preferably an eye specialist. Place ice pack on eyes until reaching emergency room.

In case of ingestion
Do Not Induce Vomiting! Never give anything by mouth to an unconscious person. If conscious, wash out mouth with water. Get medical attention immediately.

4.2. Most important symptoms and effects, both acute and delayed

Full extent of tissue damage may not exhibit itself for 12-24 hours after exposure depending on duration and extent of exposure.

Direct contact to the eyes with hydrofluoric acid can cause severe and irreversible corrosive injury with possible corneal scarring and blindness. The acid penetrates to deep tissue layers and causes severe corrosive injury.

May be fatal if absorbed through skin and penetration may continue for several days. Hydrofluoric acid is extremely corrosive and can cause very deep and excruciatingly painful burns and tissue loss. Burns are swollen, hot and painful, then develop white or yellowish areas and blistering, with deep ulceration and destruction of tissue, which tends to heal slowly. The severity of the burns and absorption of the acid (with liquefaction necrosis of soft tissue and decalcification and corrosion of the bone) have resulted in permanent scarring, disability and death. Burns from concentrated solutions (greater than 50%) are felt immediately and tissue destruction is readily apparent. Weaker solutions (20-50%) result in burns that are apparent after several hours. Burns from solutions of less than 20% may take up to 24 hours to become apparent. Weak solutions (less than 7%) penetrate deeply before causing tissue damage and surface involvement may be minimal.

May be fatal if swallowed. Hydrofluoric acid is corrosive and can cause severe burning of the mouth, throat and stomach. Perforation of the digestive system may occur. Systemic fluoride toxicity has occurred following ingestion. Symptoms such as nausea, vomiting, abdominal pain, reduced heartbeat and blood pressure, shortness of breath have been reported. In some cases, death occurred in less than one hour following ingestion. Ingestion is not a typical route of occupational exposure.

May be fatal if inhaled. Low concentrations can cause irritation of the nose, throat, eyes and respiratory tract. Higher concentrations can cause severe burns to the throat, airways and lungs. Fluid accumulation in the lungs and irregular heartbeat has led to deaths within hours following inhalation and, in some cases, concurrent skin contact with unknown concentrations of HF. Within 24-48 hours, the victim may experience a rapidly worsening difficulty in breathing, accompanied by coughing and pulmonary edema. Severe short-term exposures may result in long- lasting effects such as shortness of breath and pulmonary emphysema.

4.3. Indication of any immediate medical attention and special treatment needed

Not Available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Use appropriate media for adjacent fire. Cool unopened containers with water.

5.2. Special hazards arising from the substance or mixture

Hydrogen fluoride

5.3. Special protective equipment for firefighters

Not Available

5.4. Hazardous combustion products

Not Available

5.5. Advice for firefighters

Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots.

5.6. Additional information

Not Available

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

See section 8 for recommendations on the use of personal protective equipment.

6.2. Environmental precautions

Prevent spillage from entering drains. Any release to the environment may be subject to federal/national or local reporting requirements.

6.3. Methods and material for containment and cleaning up

Neutralize spill with sodium bicarbonate or soda lime. Absorb spill with noncombustible absorbent material, then place in a suitable container for disposal. Clean surfaces thoroughly with water to remove residual contamination. Dispose of all waste and cleanup materials in accordance with regulations.

6.4. Additional information

Not Available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

See section 8 for recommendations on the use of personal protective equipment. Use with adequate ventilation. Wash thoroughly after using. Keep container closed when not in use. Avoid formation of aerosols.

7.2. Conditions for safe storage, including any incompatibilities

Store in cool, dry, well ventilated area. Keep away from incompatible materials (see section 10 for incompatibilities).

7.3. Specific end use(s)

Not Available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Chemical Name	Limit value type & Country of Origin	Exposure Limit value	Source
Hydrofluoric Acid	0.5 ppm 0.41 mg/m^3	TLV	ACGIH
	2 ppm 1.64 mg/m^3	CEIL	ACGIH
	3 ppm	PEL	OSHA
	3 ppm 2.5 mg/m^3	REL	NIOSH
	6 ppm 5 mg/m^3	CEIL	NIOSH

8.2. Exposure controls

Appropriate engineering controls

Showers
Eye wash stations
Ventilation system

Personal protection equipment

Eye/face protection

Safety glasses or goggles with face shield

Skin protection

Nitrile or rubber gloves and full body (synthetic) covering

Respiratory protection

Provide local exhaust, preferably mechanical. If exposure levels are excessive, use an approved respirator.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practices.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

a)	Appearance:	
	Physical state	Liquid
	Color	Clear, colorless
b)	Odor	Pungent
c)	Odor Threshold	Not Available
d)	pH	<1
e)	Freezing point	-36.1°C (-33.0°F)
f)	Initial boiling point	106°C (223°F)

	and boiling range	
g)	Flash point	Not Available
h)	Evaporation rate	Not Available
i)	Flammability (solid, gas)	Not Available
j)	Upper/lower flammability or explosive limits	Not Available
k)	Vapor pressure	Not Available
l)	Vapor density	Not Available
m)	Relative density	1.1700
n)	Solublities	Not Available
o)	Partition coefficient (n-Octanol/Water)	Not Available
p)	Auto-ignition temperature	Not Available
q)	Decomposition temperature	
r)	Viscosity	Not Available
s)	Explosive properties	Not Available
t)	Oxidizing properties	Not Available

9.2. Other information

Not Available

SECTION 10: Stability and reactivity

10.1. Reactivity

Not Available

10.2. Chemical stability

Stable under normal storage conditions

10.3. Possibility of hazardous reactions

Not Available

10.4. Conditions to avoid

Exposure to moisture.

10.5. Incompatible materials

Water, glass, metals, strong bases, alkali metals.

10.6. Hazardous decomposition products

Hydrogen

SECTION 11: Toxicology

11.1. Information on toxicological effects

Acute toxicity

Oral LD_{100} – guinea pig – 80 mg/kg (2% solution)
Inhalation LC_{50} – rat – 2240-2340 ppm (gas) – 1h
Dermal NOEC
Other information on acute toxicity

Skin corrosion/irritation
NOEC (solution) – rabbit – 2% (m) – 1 min
NOEC (solution) – rabbit – 0.01% (m) – 30 min

Serious eye damage/eye irritation
Not Available

Respiratory or skin sensitization
Not Available

Germ cell mutagenicity
Not Available

Carcinogenicity
Not Available

Reproductive toxicity
NOAEL – rat – 10-14 mg/kg (sodium fluoride)

Specific target organ toxicity-single exposure
Not Available

Specific target organ toxicity-repeated exposure
Not Available

Aspiration hazard
Not Available

Additional information
Inhalation, Prolonged exposure, rat, Target Organs: Respiratory system, kidney, liver, testes, nervous system, cardiovascular system, observed effect, (gas

SECTION 12: Ecological information

12.1. Ecotoxicity

LC_{50} – Salmo gairderi – 51 mg/l – 96 h (sodium fluoride)
LC_{50} – Daphnia magna – 10.5 mg/l – 96 h (sodium fluoride)
LC_{50} – Daphnia magna – 26 mg/l – 10.5 h (sodium fluoride)
NOEC – Oncorhynchus mykiss – 4 mg/l – 21 d (sodium fluoride)
NOEC – Daphnia magna – 8.9 mg/l – 21 d (sodium fluoride)

EC_{50} – Various algae species – 43 mg/l – 96 h (sodium fluoride)
Remarks: fresh water
EC_{50} – Various algae species – 81 mg/l (sodium fluoride)
Remarks: Marine water
NOEC – Various algae species – 50 mg/l – 7 d (sodium fluoride
Remarks: fresh water, static test
NOEC – Various algae species – 50 mg/l – 7 d (sodium fluoride
Remarks: Marine water, static test

12.2. Persistence and degradability
Not Available

12.3. Bioaccumulative potential
Not Available

12.4. Mobility in soil
Not Available

12.5. Results of PBT and vPvB assessment
Not Available

12.6. Other adverse effects
Not Available

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

Land Transport DOT (U.S.)
UN Number 1790
Proper Shipping name Hydrofluoric acid
Transport Hazard Classes
Class 8
Hazard Label(s)
Packing Group II
Environmental hazard(s)

Special precautions for user

Sea Transport IMDG

UN Number 1790
Proper Shipping name Hydrofluoric acid
Transport Hazard Classes
Class 8
Hazard Label(s) 8, (6.1)
EMS- No. F-A, S-B
Packing Group II
Environmental hazard(s)
Segregration Group
Special precautions for user

Air Transport IATA

UN Number 1790
Proper Shipping name Hydrofluoric acid
Transport Hazard Classes
Class 8
Hazard Label(s) 8, (6.1)
Packing Group II
Environmental hazard(s)
Special precautions for user

SECTION 15: Regulatory information

OSHA Hazards

Corrosive, Toxic by ingestion

SARA 302 Extremely Hazardous Substances

Hydrofluoric Acid

SARA 313 (TRI reporting)

Hydrofluoric Acid

SARA 311/312 Hazardous Chemicals

Acute Health Hazard, Chronic Health Hazard

Massachusetts Right-To-Know Substance List

Hydrofluoric Acid

Pennsylvania Right-To-Know Hazardous substances

Hydrofluoric Acid
Water

New Jersey Worker and Community Right-To-Know Components

Hydrofluoric Acid
Water

California Propostion 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Inventory status:
Canada DSL Inventory List: Listed
US TSCA Inventory List: Listed
EINECS, ELINCS or NLP: 231-634-8

SECTION 16: Other information

Full text of H-Statement(s) and R-phrase(s)

H300 Fatal if swallowed.
H310 Fatal if inhaled.
H330 Fatal in contact with skin.
H314 Causes severe skin burns and eye damage.

R26 Very toxic if swallowed.
R27 Very toxic in contact with skin.
R28 Very toxic if swallowed.
R35 Causes severe burns.

Canadian Carcinogenicity hazard class
PHNOC hazard class
HHNOC hazard class
Biohazardous Infectious Materials hazard class

NFPA Rating:

Health: 4
Flammability: 0
Reactivity: 1
Special Hazard:

DISCLAIMER

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. VWR International and its Affiliates shall not be held liable for any damage resulting from handling.