HYDROFLUORIC ACID 42%

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SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

1.1 Product Identifier

Product form	Liquid
Chemical Name	HYDROFLUORIC ACID 42%
Index No.	009-003-00-1
EC No.	231-634-8
CAS No.	7664-39-3

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

1.2.1	Relevant identified uses:	Laboratory Chemical
1.2.2	Uses advised against	No additional information available.

1.3 Details of the supplier of the safety data sheet.

De Bruyn Spectroscopic Solutions
70/145 Chattan Road
Glenferness
Midrand, 2191 Gauteng
South Africa

1.4 Emergency telephone number

RSA: 086 100 0366
Namibia: 080 010 0366
Other Countries: Contact Local Emergency Services.

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

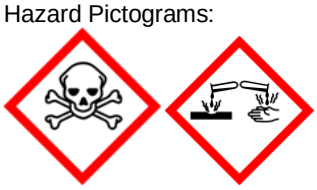
Classification Regulation (EC) No 1272/2008 (CLP):
Acute Tox 2, orl H300
Acute tox 2, Inh H330
Acute tox 1, Der H310
Skin Corr. 1A, H314
Eye dam 1, H318

Full text of hazard classes and H statements: see Section 16.

Adverse physicochemical, human health and environmental effects:
Fatal if swallowed, in contact with skin, and if inhaled. Causes severe skin burns and eye damage.

2.2 Label Elements

Labelling (Regulation (EC) No 1272/2008
Hazard Pictograms:



Signal word: DANGER
Hazardous ingredients: Hydrofluoric acid

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

Precautionary Statements:
P260 - Do not breathe mist or vapours

P270 – Do not eat, drink or smoke when using this product.
P280 - Wear protective gloves/protective clothing/eye protection/face protection/respiratory protection.
P303+P361+P353 - IF ON SKIN (or hair): Immediately remove/take off all contaminated clothing. Rinse skin with water/shower.
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
P304+P340 – IF INHALED: remove person to fresh air and keep at rest in a position suitable for breathing.
P310 -Immediately call a POISON CENTER/doctor

Supplementary hazard statements: None

2.3 Other hazards

Other hazards not contributing to the classification:
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Not applicable.

3.2 Mixture

Name	Product Identfier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Hydrofluoric Acid	(CAS-No.) 7664-39-3 (EC-No.) 231-634-3 (EC Index-No.) 009-003-00-1	30-50	Ac tox 2, 300; Ac tox 2 330; Ac tox 1 310; Skin Corr. 1A, H314; Eye dam 1 318 Specific concentration limits: (>=7%) Skin Corr. 1A, H314; (1-7%) Skin Corr. 1B, H314; (0.1-1%) Skin Irr. 2, H319

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

First aid measures general
Hydrofluoric acid burns require IMMEDIATE AND SPECIALISED TREATMENT. Show this Safety Data Sheet to the doctor in attendance.

First aid measures after inhalation
Remove person to fresh air and keep comfortable for breathing. Call a physician/doctor IMMEDIATELY. Keep respiratory tract clear. If breathing stops, apply artificial respiration, if necessary, oxygen.

First aid measures after skin contact
Rinse skin with plenty of water for at least 10 minutes. Take off immediately all contaminated clothing. Call a physician IMMEDIATELY. Apply calcium gluconate gel and massage into the skin until the pain subsides. In between apply fresh water and apply fresh gel for another 15 minutes after the pain has subsided. If no calcium gluconate gel is available, apply several dressings thoroughly moistened with 20% calcium gluconate solution. Transport patient to medical care.

First aid measures after eye contact
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician IMMEDIATELY.

First aid measures after ingestion
Rinse mouth. Drink plenty of water, add calcium gluconate or calcium lactate. Milk, Milk of Magnesia, chewable calcium carbonate can be given to conscious patients. Do not induce vomiting. Call a physician IMMEDIATELY.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation	Fatal on inhalation of mist or vapour.
Symptoms/effects after skin contact	Fatal on skin contact. Absorbed through the skin.
Symptoms/effects after eye contact	Serious damage to eyes. Risk of blindness.
Symptoms/effects after ingestion	Fatal on ingestion. Severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.

4.3 Indication of any immediate medical attention and special treatment needed

Damage can occur due to penetration /absorption of the fluoride ion. Treatment should be towards binding the fluoride ion as well as the effects of exposure. Apply a 2.5% gluconate gel to the skin and repeat until burning ceases. Serious skin exposures may require subcutaneous calcium gluconate except for the digital area due to potential for tissue injury from increased pressure unless the physician is experienced in this technique.

Note to doctor: It is recommended to consult a doctor with experience in the treatment of lesions caused by hydrofluoric acid. If a systemic effect is suspected, monitoring and treatment in an intensive care unit is urgently required. Caution, ventricular fibrillation due to electrolyte imbalance may occur.

SECTION 5: FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	Use extinguishing media suitable for the surrounding environment.
Unsuitable extinguishing media	No limitations

5.2 Special hazards arising from the substance or mixture

Fire hazard	Product not combustible. Fire may produce hazardous emissions.
Hazardous decomposition products in case of fire	Toxic fumes may be released. Hydrogen fluoride.

5.3 Advice for firefighters

Protection during firefighting	Do not attempt to act without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

5.4 Further Information — Suppress (knock down) gases/vapours/mists with a water spray jet. Cool closed containers exposed to fire with water spray. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment, and emergency procedures

6.1.1 **For non-emergency personnel**

Emergency procedures	Avoid substance contact. Do not breathe vapours, aerosols. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

6.1.2 **For emergency responders**

Protective equipment	Do not attempt to act without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2 Environmental precautions — Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up	Cover drains, absorb liquid spill into suitable absorbent material and neutralising agent.
Other Information	Dispose of materials or solid residues at an authorized site

6.4 Reference to other sections — For further information refer to section 8, 13

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Precautions for safe handling	Work under a fume hood if possible. Wear recommended personal protective equipment. See section 8. Avoid contact with eyes and skin. Do not inhale vapour/aerosols. Apply preventive skin protection.
Hygiene measures	Handle in accordance with good industrial hygiene and safety practice. Immediately change contaminated clothing. Wash hands before breaks and at the end of workday. Do not eat, drink or smoke while working.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions	Store locked up. Store tightly closed in a well-ventilated place. Keep cool. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Incompatible materials	Metals, alkali metals, strong bases, glass.

Packaging Polyethylene containers. Do not store in glass.

7.3 Specific end users No additional information.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Exposure Limits

Hydrofluoric Acid (CAS: 7664-39-3)		
United Kingdom	WEL STEL (mg/m^3) WEL STEL	2.6 mg/m^3 1 ppm
WEL STEL (15min)	TWA (8 Hour) STEL (15 min)	4 ppm 8 ppm

8.2 Exposure controls

Appropriate engineering controls Ensure adequate ventilation of the workstation. Fume hood if available.

Personal protective equipment

Hand protection Protective gloves. Recommended material: Viton; chloroprene.

Eye protection Tightly fitting safety goggles / face mask

Skin and body protection Acid resistant protective clothing, PVC apron. Rubber or plastic boots.

Respiratory protection In case of emission of vapours or aerosol, wear suitable respiratory equipment. Recommended Filter type: ABEK. Maintenance, cleaning and testing must be carried out and properly documented.

Environmental exposure controls Avoid release to the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Product form:	Liquid
Appearance	Colourless
Odour	No data available
Odour threshold	No data available
pH	Weak acid
Relative evaporation rate (butylacetate=1)	No data available
Melting point/Freezing Point	-40ºC
Initial Boiling point	No data available
Flash point	Not applicable
Auto-ignition temperature	Not applicable
Flammability (solid, gas)	Not applicable
Vapour pressure	No data available
Vapour pressure @ 50ºC	No data available
Vapour density	No data available
Relative vapour density @ 20ºC	No data available
Density	1.16 g/cm^3 @ 20ºC
Solubility (water)	Soluble @ 20ºC

Log Pow	No data available
Viscosity, kynematic	No data available
Viscosity, dynamic	No data available
Explosive properties	Not classified as explosive
Explosive limits	Not applicable
Oxidising properties	None

9.2 Additional information

No additional data available.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

The product is non-reactive under recommended conditions of use, storage and transport.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

Incompatible products.

10.5 Incompatible materials

Metals, alkali metals, strong bases, glass.

10.6 Hazardous decomposition products

No hazardous decomposition if stored and handled correctly. **T**hermal decomposition releases hydrogen fluoride gas, fatal if inhaled.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity (oral)	Category 2 Fatal if swallowed.
Acute toxicity (Dermal)	Category 1 Fatal on contact with skin.
Acute toxicity (Respiratory)	Category 2 Fatal if inhaled.

Hydrofluoric acid CAS 7664-39-3 (ATE Calculation method)	
LD50 (oral)	10.63 mg/kg
LD50 (dermal)	10.63 mg/kg
LD50 (inhalation) 4 hour	1.25 mg/ℓ – vapour

Skin corrosion/irritation:	Causes severe skin burns and eye damage.
Serious eye damage/irritation	Serious eye damage, category 1, implicit
Respiratory or skin sensitisation	Not classified
Germ cell mutagenicity	Not classified (Ames test: Negative)
Carcinogenicity	Not classified
Reproductive toxicity	Not classified
STOT-SE	Not classified
STOT RE	Not classified
Aspiration hazard	Not classified

11.2 Additional Information

Endocrine disrupting properties

This substance/mixture does not contain components considered to have endocrine disrupting properties affecting human health, according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

The fluoride ion can reduce serum calcium levels causing possible fatal hypocalcemia. The product is extremely destructive to tissue of mucous membranes and upper respiratory tract, eyes, skin necrosis. The full extent of tissue damage may not be evident for 12 -24 hours after exposure.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Ecology - general	Not classified.
Acute aquatic toxicity	No data available
Chronic aquatic toxicity	No data available

12.2 Persistence and degradability Not applicable

12.3 Bioaccumulative potential Does not accumulate.

12.4 Mobility No data available.

12.5 Results of PBT and vPvB assessment

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

12.6 Endocrine disrupting properties

Assessment This substance/mixture does not contain components considered to have endocrine disrupting properties for environment , according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

12.7 Other adverse effects

No additional data available.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods: Product and packaging:

The generation of waste should be avoided or minimised wherever possible. This material and packaging must be disposed of in a safe way in consultation with licensed waste disposal company in accordance with local legal requirements.

SECTION 14:TRANSPORT INFORMATION

In accordance with ADR / IMDG / IATA

	ADR	IMDG	IATA	Class Diamond
UN Number	1790	1790	1790	
Proper Shipping Name	HYDROFLUORIC ACID	HYDROFLUORIC ACID	HYDROFLUORIC ACID	
Hazard Class	8	8	8	
Subsidiary hazard class	6.1	6.1	6.1	
Packing Group	II	II	II	
Marine pollutant	No	No	No	

Limited/Excepted quantity: 1L

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health, and environmental regulations/legislation specific for the substance or mixture

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

Authorisations and/or restrictions on use:

This product does contains a substance listed on Annex XIV of the REACH Regulation (EC) Nr. 1907/2006. Regulation (EU) 2019/1148 on the marketing and use of explosives precursors: nitric acid.

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) : No restrictions.

National Regulations:

Occupational Health and Safety Act 85 of 1993.
Hazardous Chemical Agents Regulations.
SANS 10228, 10229, 10232-4.

15.2 Chemical Safety Assessment

No chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

Full text of R-, H- and EUH-statements:

Ac tox orl 2 H300	Acute toxicity, Oral, Category 2, Fatal if swallowed
Ac tox 1 (der) H310	Acute toxicity, Dermal, Category 1, Fatal on skin contact
Ac tox 2 (inh) H330	Acute toxicity, Inhalation, Category 2, Fatal if inhaled (mist aerosol).
Sk cor. Cat 1A, H314	Skin corrosion, Category 1A, Causes seveverskin burns and eye damage.
Eye dam 1 H318	Eye damage Category 1, Causes serious eye damage.
WEL STEL	Workplace Exposure Limit; Short term Exposure Limit
TWA	Time weighted average
ATE	Acute toxicity Estimate
STOT-RE	Specific Target Organ Toxicity- Repeated Exposure

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Revision history	Changes	Date
Revision 2.0	Original document.	31-05-2024