NIOBIUM - HF

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

1.1 Product Identifier

Product form	Liquid
Chemical Name	NIOBIUM - HF
Index No.	Mixture
EC No.	Mixture
CAS No.	Mixture

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: Local Emergency Services.

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification Regulation (EC) No 1272/2008 (CLP):
Skin Corr. 1B, H314
Eye Dam 1, H318
Ac tox (orl) 4, H303
Ac tox (Der) 3, H311
Full text of hazard classes and H statements: see Section 16.

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

2.2 Label Elements

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

Signal word: DANGER

Hazard Statements:
H314 – Causes severe skin burns and eye damage.
H311 – Toxic in contact with skin.
H303 – Harmful if swallowed.

Precautionary Statements:
P261 - Do not breathe mist, vapour, fume, or spray.
P264 – Wash thoroughly after handling.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P302+P353 - IF ON SKIN (or hair): Wash with plenty of water/shower.
P311 – Call POISON CENTRE or doctor/physician.
P361 – Immediately remove all contaminated clothing.

P363 – Wash contaminated clothing before re-use.
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 and continue rinsing.
P310 -Immediately call a POISON CENTER/doctor.
P405 – Store locked up.
P500 – Dispose of contents/container to registered hazardous waste site.
Hazard determining components: Hydrofluoric acid.

Reduced Labelling (< = 125 ml)

Signal Word: Danger
Hazard Statements:
Causes severe skin burns and eye damage.
Toxic in contact with skin.
Harmful if swallowed.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
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/doctor

2.3 Other hazards

Other hazards not contributing to the classification:

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 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Not applicable.

3.2 Mixture

Name	Product Identifier	%	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	2.0	Ac tox 2, 300; Ac tox 2 330; Ac tox 1 310; Skin Corr. 1A, H314; Eye dam 1 318
Niobium chloride	(CAS No.) 10026-12-7 (EC No.) 233-059-8	0.01 – 10 000 µg/mL as Nb	Ac tox 4 302; Sk corr. 1B 314; eye dam 1 318 STOT SE 3 335
			Specific concentration limits: HF (>=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
Obtain medical attention in all cases of exposure. Take off immediately all contaminated clothing. First aiders need to protect themselves.

First aid measures after inhalation
Remove person to fresh air and keep comfortable for breathing. Obtain medical attention.

First aid measures after skin contact
Rinse skin with water/shower. Call a doctor/physician immediately. It may be necessary to treat with calcium gluconate gel, or if not available apply several dressings thoroughly moistened with 20% calcium gluconate solution.

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 doctor/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 doctor/physician immediately.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms/effects after skin contact	Causes burns. Absorbed through the skin. The fluoride ion can reduce serum calcium levels causing possible fatal hypocalcemia.
Symptoms/effects after eye contact	Causes serious damage to eyes. Risk of blindness.
Symptoms/effects after ingestion/inhalation	Causes burns.

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

Treat symptomatically.

SECTION 5: FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	Water spray. Dry powder. Foam. Carbon dioxide.
Unsuitable	Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Fire hazard	Product not combustible.
Hazardous decomposition products in case of fire	Toxic fumes may be released. Nitrogen oxides (NOx).

5.3 Advice for firefighters

Protection during firefighting	In case of fire and/or explosion do not breathe fumes. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus. Wear full chemical protective clothing.

5.4 Further Information

No further information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment, and emergency procedures

6.1.1 **For non-emergency personnel**

Emergency procedures	Use personal protective equipment as required. Avoid contact with skin, eyes and clothes. Do not breathe vapour/spray.

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	Take up liquid spill into non-combustible absorbent material.
Other Information	Dispose of materials or solid residues at an authorized site

6.4 Reference to other sections

For further information refer to section 5, 8, 13

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Precautions for safe handling	Wear recommended personal protective equipment. See section 8. Avoid contact with eyes and skin. Do not inhale vapour, or mist.
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 in a well-ventilated place. Keep container tightly closed. Keep only in original container. May cause decomposition by long-term light influence. Protect from UV radiation/sunlight, contact with air/oxygen. Recommended storage temperature: 20 ± 5°C
Incompatible materials	Strong alkali, various metals, combustible materials.
Packaging	Original container.

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 TWA (8Hr) WEL STEL (15min)	1.8 ppm / 1.5 mg/m^3 3 ppm / 2.5 mg/m^3
South Africa; HCA Regulations (Restricted Level)	TWA (8Hour) STEL (15min)	1 ppm 4 ppm

8.2 Exposure controls

Appropriate engineering controls Ensure adequate ventilation. Provide eyewash/shower facility.

Personal protective equipment

Hand protection Protective gloves PVC, rubber

Eye protection Tightly fitting safety goggles/face mask

Skin and body protection Acid resistant protective clothing,

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment.

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	Colorless
Odour	No data available
Odour threshold	No data available
pH	~ 3 @ 20ºC
Relative evaporation rate (butylacetate = 1)	No data available
Melting point/Freezing Point	No data available
Initial Boiling point	~100ºC
Flash point	Not applicable
Auto-ignition temperature	Not applicable
Flammability (solid, gas)	Not applicable
Vapour pressure	No data available
Vapour density	No data available
Relative vapour density @ 20ºC	No data available
Density	~1.01 g/cm^3 @ 20ºC
Solubility (water)	Miscible
Log Pow	No data available
Viscosity, kinematic	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
UV radiation/sunlight. Keep away from heat.

10.5 Incompatible materials
Metals, alkali metals, strong bases, glass.

10.6 Hazardous decomposition products
No hazardous decomposition if stored and handled correctly. Thermal decomposition releases hydrogen fluoride gas, fatal if inhaled.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects.
(ATE calculated)

Niobium - HF	
LD50 (oral)	529 mg/kg
LD50 (dermal)	531 mg/kg
LC50 (Inhal)	62.5 mg/L Mist, vapour, spray.

Acute toxicity (oral)	May be harmful if swallowed.
Acute toxicity (Dermal)	Toxic in contact with skin.
Acute toxicity (Respiratory)	Mixture/product does not meet classification criteria.

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

Niobium chloride	
LD50 (oral)	1400 mg/kg

Skin corrosion/irritation:	Causes severe skin burns and eye damage.
Respiratory or skin sensitisation	Not classified
Germ cell mutagenicity	Not classified
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.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Ecology - general	Mixture/product does not meet classification criteria.
Acute aquatic toxicity	Mixture/product does not meet classification criteria.
Chronic aquatic toxicity	Mixture/product does not meet classification criteria.

12.2 Persistence and degradability Not applicable for inorganic compounds.

12.3 Bioaccumulative potential Not applicable for inorganic compounds.

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, bio accumulative or toxic (PBT), or very persistent and very bio accumulative (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 information.

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 SOLUTION	HYDROFLUORIC ACID SOLUTION	HYDROFLUORIC ACID SOLUTION	
Hazard Class	8	8	8	
Subsidiary hazard class	6.1	6.1	6.1	
Packing Group	III	III	III	
Marine pollutant	No	No	No	

Limited/Excepted quantity: 5L

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 not contain 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.

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 hazard classes and statements:

Sk cor. Cat 1B, H314	Skin corrosion, Category 1B, Causes seveve skin burns.
Eye Dam Cat 1, H318	Eye Damage Category 1, Causes serious eye damage
Ac tox (Der), 3, H311	Acute toxicity, Category 3, Toxic in contact with skin.
Ac tox (orl) 4, H303	Ac tox Category 4, Harmful if swallowed.
Sk cor. Cat 1A, H314	Skin corrosion, Category 1A, Causes seveverskin burns and eye damage.
Ac tox 2, 300;	Acute toxicity, Category 2, Fatal if swallowed
Ac tox 1 310;	Acute toxicity, Category 1, Fatal in contact with skin.
Ac tox 2 330;	Acute toxicity, Category 2, Fatal if inhaled.
Ac tox 4, 302	Acute toxicity Category 4 Harmful if swallowed.
STOT SE 3 335	Specific target orgn toxicity, Single Exposure, May causes respiratory irritation.
WEL STEL	Workplace Exposure Limit; Short term Exposure Limit
TWA	Time weighted average

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Revision history	Changes	Date
Revision 1.0	Original document.	
Revision 2.0	Document updated to GHS Standard	31-08-2024