

HAFMIUM - HCl

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

1.1 Product Identifier

Product form	Liquid
Chemical Name	HAFMIUM - HCl
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):

Met cor. 1 H290
Skin Irr. 2, H315
Eye Irr 2A, H319
STOT SE, 3, H335

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

Adverse physicochemical, human health and environmental effects:

May be corrosive to metals. Causes skin irritation. Causes severe eye irritation. May cause respiratory irritation.

2.2 Label Elements

Labelling (Regulation (EC) No 1272/2008

Hazard Pictograms:



Signal word: WARNING

Hazard Statements:

H290 – May be corrosive to metals.
H315 – Causes skin irritation.
H319 – Causes severe eye irritation.
H335 – May cause respiratory irritation.

Precautionary Statements:

P261 - Do not breathe mist, vapour, fume, or spray.
P271 – Use only outdoors or in a well-ventilated area.
P264 - Wash hands, forearms, and face thoroughly after handling.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353 - IF ON SKIN (or hair): Immediately remove/take off all contaminated clothing. Rinse skin with water/shower.

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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.

P304+P340 – IF INHALED: remove to fresh air and keep at rest in a position suitable for breathing.

Components contributing to classification: Hydrochloric Acid,

Reduced Labelling (< = 125 ml)

Pictogram:



Signal Word: Warning

Hazard Statements:

Causes skin irritation and severe eye irritation.

May cause respiratory irritation.

Precautionary Statements: None

Supplemental 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, 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]
Hydrochloric acid	(CAS-No.) 7647-01-1 (EC-No.) 231-595-7 (EC Index-No.) 017-002-00-2	10	Met corr. 1, H290; Skin Corr. 1B, H314; Eye dam 1, H318; STOT SE 3, H335
Hafmium oxychloride hydrate	(CAS No.)15461-28-6 (EC No.) 690-374-7	0.01 – 10000 µg/mL as Hf	Sk corr 1B, H314; Ac toc 4, H302, 312, 332

Specific concentration limits: HCl
(C ≥ 25%) Skin Corr. 1B, H314
(10 ≤ C <25%) Skin Irr. 2, H315
(10 ≤ C <25%) Eye irr. 2, H319
(C ≥ 10%) STOT SE 3, H335

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

First aid measures general

Call a physician if symptoms persist. First aiders need to protect themselves.

First aid measures after inhalation

Remove person to fresh air and keep comfortable for breathing.

First aid measures after skin contact

Rinse skin with water/shower. Take off immediately all contaminated clothing. Call a doctor if symptom persist.

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 if symptoms persist.

First aid measures after ingestion

Rinse mouth. Do not induce vomiting. Call a doctor/physician if feeling uncomfortable.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation

May cause respiratory irritation.

Symptoms/effects after skin contact

Causes skin irritation.

Symptoms/effects after eye contact

Causes severe eye irritation.

Symptoms/effects after ingestion

May cause throat and digestive system irritation.

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. Use water fog to control fumes.
- 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. Hydrogen chloride gas, chlorine.
- 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 fog. Cool closed containers exposed to fire with water spray.

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 mist, vapour, fume, or 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:
Cover spill area with inert material to avoid spread. Neutralise with lime or soda ash. Flush area.
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
Wear recommended personal protective equipment. See section 8. Avoid contact with eyes and skin. Do not breathe mist, vapour, fume, or spray.
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 cool, dry, well-ventilated area. Keep out of direct sunlight and away from heat, water, and incompatible materials. Keep containers tightly closed.
Incompatible materials
Oxidizing agents, bases, metals, organic compounds. Corrosive to mild steel.
Packaging
Polyethylene, polypropylene, polyvinyl chloride.
- 7.3 Specific end users**
No additional information.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**8.1 Exposure Limits**

Hydrochloric Acid (CAS: 7647-01-1)		
United Kingdom	WEL STEL (Gas and mist)	5 ppm / 8 mg/m ³
	WEL TWA (Gas and mist)	1 ppm / 2 mg/m
South Africa; HCA Regulations (Restricted Limit)	TWA (8Hour) (Gas and mist)	4 ppm

8.2	<u>Exposure controls</u> Appropriate engineering controls Personal protective equipment Hand protection Eye protection Skin and body protection Respiratory protection	Ensure availability of eye wash and shower in work area. Engineering measures are preferred to reduce exposure Protective gloves PVC, rubber Tightly fitting safety goggles/face mask Acid resistant protective clothing, In case of inadequate ventilation, use appropriate respiratory protection.
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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	Clear colourless
Odour	Pungent
Odour threshold	No data available
pH	<1 @ 20°C
Relative evaporation rate (butylacetate = 1)	No data available
Melting point / Freezing Point	-17°C
Initial Boiling point	102°C (at 1.013 hPa)
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 @ 20°C	No data available
Density	1.05 g/cm ³ @ 20°C
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

The product reacts with metals with release of highly flammable hydrogen gas. Reacts with alkalis with evolution of heat. Reacts with oxidizers generating toxic chlorine gas. Reacts with cyanides or sulphides generating toxic hydrogen cyanide or hydrogen sulphide gas.

10.4 Conditions to avoid

Heat, direct sunlight, contact with common metals, alkali metals, incompatible products.

10.5 Incompatible materials

Bases, amines, alkali metals, metals, oxidizers.

10.6 Hazardous decomposition products

When heated to decomposition, emits hydrogen chloride gas and will react with water or steam to produce heat and toxic, corrosive fumes. Thermal oxidative decomposition produces toxic chlorine fumes and explosive hydrogen gas.

SECTION 11: TOXICOLOGICAL INFORMATION**11.1** Information on toxicological effects

Acute toxicity (oral)

Product does not meet classification criteria.

Acute toxicity (Dermal)

Product does not meet classification criteria.

Acute toxicity (Respiratory)

Product does not meet classification criteria.

Skin corrosion/irritation:

Causes skin irritation.

Serious eye damage/irritation

Causes severe eye irritation

Respiratory or skin sensitisation

Not classified

Germ cell mutagenicity

Not classified

Carcinogenicity

Not classified.

Reproductive toxicity

Not classified.

STOT-SE

May cause respiratory irritation.

STOT RE

Not classified

Aspiration hazard

Not classified

11.2 Additional InformationEndocrine disrupting properties

This substance/mixture contains 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: None

SECTION 12: ECOLOGICAL INFORMATION**12.1** Toxicity

Ecology - general

Before neutralisation, the product may represent a danger to aquatic organisms.

Acute aquatic toxicity

Product does not meet classification criteria.

Chronic aquatic toxicity

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

Mobile.

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 contains 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: None

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	1789	1789	1789	
Proper Shipping Name	HYDROCHLORIC ACID	HYDROCHLORIC ACID	HYDROCHLORIC ACID	
Hazard Class	8	8	8	
Subsidiary hazard class	-	-	-	
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 not contain any 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: None

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:

Sk irr. Cat 2, H315	Skin irritation, Category 2, Causes skin irritation
Eye irr. Cat 2A, H319	Eye irritation, Category 2A, Causes severe eye irritation
Sk cor. Cat 1B, H314	Skin corrosion, Category 1B, Causes severe skin burns.
Eye Dam 1, H318	Eye Damage Category 1, Causes serious eye damage
Met.Cor. 1, H290	Metal corrosion Category 1, May cause metal corrosion.
STOT SE, 3, H335	Specific target organ toxicity, single exposure, May cause respiratory irritation.
Ac tox 4, H302	Acute toxicity, Category 4, Harmful if swallowed
Ac toc 4, H312	Acute toxicity, Category 4, Harmful in contact with skin
Ac toc 4, H 332	Acute toxicity, Category 4, Harmful if inhaled.
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 format.	31-07-2024