SAFETY DATA SHEET

According to the REACH Regulation (EC) 1907/2006 GHS Rev 9

CERIUM – HNO_3

Date of issue: 2024/09/30
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SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

1.1 Product Identifier

Product form	Liquid
Chemical Name	CERIUM – HNO_3
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 Corr. 1B, H314
Eye Dam 1, H318
AcAq 2, H401
ChrAq 2, H411

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

Adverse physicochemical, human health and environmental effects:
May be corrosive to metals. Causes severe skin burns and eye damage. Toxic to aquatic life with long lasting effects.

Supplementary Information: EUH071 Corrosive to the respiratory tract.

2.2 Label Elements

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

Signal word: DANGER
Hazardous ingredients: Nitric Acid

Hazard Statements:
H290 – May be corrosive to metals.
H314 – Causes severe skin burns and eye damage.
H401 – Toxic to aquatic life.
H411 - Toxic to aquatic life with long lasting effects.

Precautionary Statements:
P261 - Do not breathe mist, vapour, fume, or spray.

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.
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.
P273 – Avoid release to the environment.
P501 – Dispose of contents and container to registered waste disposal site.

Reduced Labelling (< = 125 ml)

Signal Word: Danger
Hazard Statements:
Causes severe skin burns and eye damage.
Toxic to aquatic life with long lasting effects.
Do not breathe mist.
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]
Nitric acid	(CAS-No.) 7697-37-2 (EC-No.) 231-714-2 (EC Index-No.) 007-004-00-1	5	Ox. Liq. 3, H272; Met cor 1 290; Skin Corr. 1A, H314; Eye dam 1 318; Ac tox 3 H331; EU071
Cerium nitrate hexahydrate	(CAS No.) 10294-41-4 (EC No.) 233-297-2	0.01-10 000 µg/mℓ as Ce	Eye dam 1A H318; AcAq 1 H400; Chr Aq 1 H410
			Specific concentration limits: Nitric Acid (5 =< 20) Skin Corr. 1B, H314 ;(C >= 20) Skin Corr. 1A, H314 (65 =< 99) Ox. Liq. 3, H272 (C >= 99) Ox. Liq. 2, H272

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

First aid measures general — 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. If symptoms persist obtain medical attention.

First aid measures after skin contact — Rinse skin with water/shower. Call a doctor/physician immediately.

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. 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.
Symptoms/effects after eye contact — Causes serious damage to eyes. Risk of blindness.
Symptoms/effects after ingestion/inhalation — Cough, shortness of breath, difficulty breathing, gastric perforation.

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 Avoid release of fire water to the environment.

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

Nitric Acid (CAS: 7697-37-2)		
United Kingdom	WEL STEL (Gas and mist)	1 ppm / 2.6 mg/m^3
South Africa; HCA Regulations	TWA (8 Hour) STEL (15 min)	4 ppm 8 ppm

8.2 Exposure controls

Appropriate engineering controls Ensure adequate ventilation. Provide eyewash 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	Slight
Odour threshold	No data available
pH	<2 @ 20ºC
Relative evaporation rate (butylacetate = 1)	No data available
Melting point/Freezing Point	No data available
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 density	No data available
Relative vapour density @ 20ºC	No data available
Density	1.03 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 corrosive to metals.

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
Reacts violently with strong bases, organic materials, metals, hydrogen sulphide, carbides, alcohols, organic solvents, cyanides, sulphides.

10.4 Conditions to avoid
UV radiation/sunlight. Keep away from heat.

10.5 Incompatible materials
Strong bases, various metals, combustible materials.

10.6 Hazardous decomposition products
No hazardous decomposition if stored and handled correctly. Thermal decomposition releases corrosive gases/vapours (NOx).

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Test data not available for the mixture.	
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.

Nitric acid ≥ 65 %	
LC50 inhalation (vapour)	2.65 mg/ℓ

Skin corrosion/irritation:	Causes severe skin burns and eye damage.
Serious eye damage/irritation	Serious 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 Acute Toxicity: Toxic to aquatic life. Category 2.

Acute toxicity Estimate calculated for mixture. Based on maximum concentration.

Cerium – HNO_3	
LC50 (Fish) 96hr	10 mg/ℓ
LC50 (Invertebrates) 48hr	230 mg/ℓ
EC50 (Algae) 72hr	15.3 mg/ℓ

Ce $(HNO_3)_2.6H_2O$	
LC50 (Fish) 96hr	0.3 mg/ℓ
LC50 (Invertebrates) 48hr	6.9 mg/ℓ
EC50 (Algae) 72hr	0.46 mg/ℓ

12.2 Persistence and degradability
Toxic to aquatic life with long lasting effects. Category 2.

12.3 **Bioaccumulative potential**
No data available.

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	3264	3264	3264	
Proper Shipping Name	CORRROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S (Nitric Acid)	CORRROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S (Nitric Acid)	CORRROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S (Nitric Acid)	
Hazard Class	8	8	8	
Subsidiary hazard class	-	-	-	
Packing Group	III	III	III	
Marine pollutant	yes	Yes	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 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 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
Met.Cor. Cat 1A, H290	Metal corrosion Category 1A, May cause metal corrosion.
AcAq tox 2, H401	Acute Aquatic toxicity , Category 2, Toxic to aquatic life.
Chr Aq tox 2, H411	Chronic Aquatic toxicity, Category 2, Toxic to aquatic life with long lasting effects.
Sk cor. Cat 1A, H314	Skin corrosion, Category 1A, Causes seveverskin burns and eye damage.
Ox liq. Cat 3, H272	Oxidizing liquid, category 3, May intensify fire-oxidiser.
Ox liq. Cat 2, H272	Oxidizing liquid, category 2, May intensify fire-oxidiser.
Sk irr Cat 2, H315	Skin irritatnt Category 2, Causes skin irritation
Eye irr Cat 2, H319	Eye irritant Category 2, Causes severe eye irritation
STOT SE Cat 3, H335	Specific target organ toxicity, Category 3, May cause respiratory irritation.
AcAq tox 1, H400	Acute Aquatic toxicity , Category 1, Very toxic to aquatic life.
Chr Aq tox 1, H410	Chronic Aquatic toxicity, Category 1, Very toxic to aquatic life with long lasting effects.
WEL STEL	Workplace Exposure Limit; Short term Exposure Limit
TWA	Time weighted average.

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Revision history	Changes	Date
Revision 2.0	Document updated to GHS Standard	30-09-2024