

SELENIUM – HNO₃

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

1.1 Product Identifier

Product form Liquid
Chemical Name SELENIUM – HNO₃
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
STOT RE 2, H373

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. May cause damage to organs through prolonged or repeated exposure by ingestion.

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.

H373 - May cause damage to organs through prolonged or repeated exposure by ingestion.

Precautionary Statements:

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

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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.

P314 – Get medical advice/attention if you feel unwell.

P310 -Immediately call a POISON CENTER/doctor.

Reduced Labelling (< = 125 ml)



Signal Word: Danger

Hazard Statements:

Causes severe skin burns and eye damage.

May cause damage to organs through prolonged or repeated exposure by ingestion.

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

(EU) EUH071 Corrosive to the respiratory tract.

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
Selenium	(CAS No.) 7782-49-2 (EC No.) 231-957-4	0.01 10 000 µg/mL (as Se)	Ac tox 3 301; Ac tox 3 331; STOT RE 2 373; Chr Aq 4 413

Specific conc. Limits: Selenium
(≥1) STOT RE 2, H373

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.

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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
Unsuitable

Water spray. Dry powder. Foam. Carbon dioxide.
Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Fire hazard

Hazardous decomposition products in case of fire

Product not combustible.

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**

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 @ 20°C
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 @ 20°C	No data available
Density	1.03 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.

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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 (NO_x).

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity (oral)	Test data not available for the mixture.
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
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Selenium

LD50 (ORL) Rat	100 mg/kg
LC50 (INH)	0.51 mg/kg

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

May cause damage to organs through prolonged or repeated exposure by ingestion.

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	Before neutralisation, the product may present 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

640 µ/l (Se) *Leponis macrochirus* – 60 days. BCF 7.7

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.

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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	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S (Nitric Acid)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S (Nitric Acid)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S (Nitric Acid)	
Hazard Class	8	8	8	
Subsidiary hazard class	-	-	-	
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 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 severe 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.
STOT RE 2 373	Specific Target Organ Toxicity Repeat Exposure, Category 2. May cause damage to organs through prolonged or repeated exposure by ingestion.
Sk cor. Cat 1A, H314	Skin corrosion, Category 1A, Causes severe skin 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.
Ac tox 3 H331;	Acute toxicity, Category 3, Toxic if inhaled
Ac tox 3 301	Acute toxicity, Category 3, Toxic if swallowed
Chr Aq 4 413	Chronic aquatic toxicity, Category 4 May cause long lasting effects to aquatic life.
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