

THALLIUM – HNO₃

Date of issue: 2024/10/31
Revision No.: 2.0

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

1.1 Product Identifier

Product form	Liquid
Chemical Name	THALLIUM – 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
Glenfernness
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. 1B, H315
Eye Irr 2, H319
Ac tox 4, H302
Ac tox 4, H332
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 skin irritation. Causes severe eye irritation. Harmful if swallowed. Harmful if inhaled. May cause damage to organs (multiple) through repeated or prolonged exposure (inhalation, ingestion).

2.2 Label Elements

Labelling (Regulation (EC) No 1272/2008

Hazard Pictograms:



Signal word: DANGER

Hazard Statements:

H290 – May be corrosive to metals
H315 – Causes skin irritation.
H319 – Causes severe eye irritation.
H302 – Harmful if swallowed
H332 – Harmful if inhaled
H373 – May cause damage to organs (multiple) through repeated or prolonged exposure (inhalation, ingestion).

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Precautionary Statements:

P261 – Avoid breathing mist.
P264 – Wash thoroughly after handling.
P270 – Do not eat, drink or smoke when using this product.
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P302+P352 - IF ON SKIN: Wash with plenty of water/shower.
P332+P313 – If skin irritation persists, obtain medical attention.
P362 – Take off contaminated clothing and wash before re-use.
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.
P337+P313 – If eye irritation persists obtain medical attention.
P301+P330+P331 – IF SWALLOWED: Rinse mouth. Do not induce vomiting
P304+P340 – IF INHALED: Remove to fresh air and keep in a position comfortable for breathing.
P312 – Call a doctor/physician if you feel unwell
P501 – Dispose of contents/container to registered waste site.

Hazard determining components: Nitric acid. Thallium.

Reduced Labelling (< = 125 ml)



Signal Word: DANGER

Hazard Statements:

May be corrosive to metals.
Causes severe eye irritation.
Causes skin irritation.
Harmful if swallowed
Harmful if inhaled.
May cause damage to organs through repeated or prolonged exposure.

Wear protective gloves/ protective clothing/ eye protection/ face protection.

IF ON SKIN: Wash with water/shower. If skin irritation persists, obtain medical attention.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF SWALLOWED: Rinse mouth. Do not induce vomiting.

IF INHALED: Remove to fresh air and keep in a position comfortable for breathing.

Obtain medical attention if you feel unwell.

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	Sk cor 1A, 314; Eye dam 1, 318; Ox liq 3, 272; Ac tox 3, 331; Met cor 1, 290, EUH071 Cor to resp tract
Thallium	(CAS No.) 7440-28-0 (EC No.) 231-138-1	0.01 – 10 000 µg/mL as TI	Actox 2 330; Ac tox 2 300; Actox 4 312; STOT RE, 373; Ac Aq 4 413

Specific concentration limits: HNO₃
(1-<5%) Sk irr 2 315; Eye irrit 319.
(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	<u>Description of First Aid Measures</u>	
	First aid measures general	Take off immediately all contaminated clothing.
	First aid measures after inhalation	Remove person to fresh air and keep comfortable for breathing. Obtain medical attention if feeling unwell.
	First aid measures after skin contact	Rinse skin with water/shower. If irritation persists obtain medical attention.
	First aid measures after eye contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation persists, obtain medical attention.
	First aid measures after ingestion	Rinse mouth. Do not induce vomiting. Obtain medical attention if you feel unwell.
4.2	<u>Most important symptoms and effects, both acute and delayed</u>	
	Symptoms/effects after skin contact	Causes skin irritation.
	Symptoms/effects after eye contact.	Causes severe eye irritation.
	Symptoms/effects after ingestion/inhalation	Harmful if swallowed. May cause gastric irritation/discomfort.
4.3	<u>Indication of any immediate medical attention and special treatment needed:</u>	
	Effects may be delayed. Treat symptomatically.	

SECTION 5: FIRE FIGHTING MEASURES

5.1	<u>Extinguishing media</u>	
	Suitable extinguishing media	Water spray. Dry powder. Foam. Carbon dioxide.
	Unsuitable	Do not use water jet.
5.2	<u>Special hazards arising from the substance or mixture</u>	
	Fire hazard	Product not combustible.
	Hazardous decomposition products in case of fire	Toxic fumes may be released. Nitrogen oxides.
5.3	<u>Advice for firefighters</u>	
	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	<u>Further Information</u>	No further information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1	<u>Personal precautions, protective equipment, and emergency procedures</u>	
6.1.1	For non-emergency personnel	
	Emergency procedures	Use personal protective equipment as required. Avoid contact with skin, eyes and clothes.
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	<u>Environmental precautions</u>	Avoid release to the environment
6.3	<u>Methods and materials for containment and cleaning up</u>	
	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	<u>Reference to other sections</u>	For further information refer to section 5, 8, 13.

SECTION 7: HANDLING AND STORAGE

7.1	<u>Precautions for safe handling</u>	
	Precautions for safe handling	Wear recommended personal protective equipment. See section 8. Avoid contact with eyes and skin. Avoid breathing mist.
	Hygiene measures:	Handle in accordance with good industrial hygiene and safety practice. Immediately change contaminated clothing. Wash hands before

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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 (Restricted Level)	TWA (8 Hour) STEL (15 min)	4 ppm 8 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	2.5 - 3 @ 20°C
Relative evaporation rate (butylacetate = 1)	No data available
Melting point/Freezing Point	No data available
Initial Boiling point	~100°C
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	~1.01 g/cm ³ @ 20°C
Solubility (water)	Miscible

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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. May be corrosive to metals.

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

Acute toxicity (oral)	Harmful if swallowed.
Acute toxicity (Dermal)	Product does not meet classification criteria.
Acute toxicity (Respiratory)	Harmful if inhaled.

Nitric acid ≥ 65 %

LC50 inhalation (vapour)	2.65 mg/l
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Thallium CAS No.: 231-138-1

		THALLIUM –HNO₃ (ATE calculated)
LD50 Oral	5.1 mg/kg bw	510 mg/kg bw
LD50 Dermal	2000 mg/kg bw	> 5000 mg/kg bw
LC50 Inhalation (dust/mist)	0.05 mg/l	4.65 mg/l

Skin corrosion/irritation:	Causes skin irritation
Eye cor/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	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.

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	Chronic aquatic toxicity	Mixture/product does not meet classification criteria.
12.2	<u>Persistence and degradability</u>	Not applicable for inorganic compounds.
12.3	<u>Bioaccumulative potential</u>	Not applicable for inorganic compounds.
12.4	<u>Mobility</u>	No data available.
12.5	<u>Results of PBT and vPvB assessment</u>	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	<u>Endocrine disrupting properties</u>	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	<u>Other adverse effects</u>	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 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:

Met cor 1, 290	Metal corrosion, Category 1, May cause metal corrosion.
Sk irr 2 315	Skin irritant, Category 2, Causes skin irritation.
Eye irr 2 319	Eye irritation, Category 2, Causes severe eye irritation.
Actox 4, 302	Acute toxicity, Category 4, Harmful if swallowed
Ac tox 4, 312	Acute toxicity, Category 4, Harmful if inhaled.
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
Sk cor. Cat 1A, H314	Skin corrosion, Category 1A, Causes severe skin burns and eye damage.
Ac tox 3 331;	Acute toxicity, Category 2, Fatal if inhaled.
Actox 1 330	Acute toxicity, Category 1 Fatal if inhaled
Ac tox 1 300	Acute toxicity, Category 1 Fatal if swallowed
Actox 4 312	Acute toxicity, Category 4 Harmful in contact with skin
Ac tox 2 330	Acute toxicity, Category 2, Fatal if inhaled.
Ac tox 2 300	Acute toxicity, Category 2, Fatal if swallowed
STOT RE 2, 373	Specific target organ toxicity, Category 2, May cause damage to organs through prolonged or repeated exposure.
Ox liq 3, 272	Oxidizing liquid, Category 3, May intensify fire.
Chr Aq 4 413	Chronic aquatic toxicity, Category 4 May be harmful to aquatic life with long lasting effects.
WEL STEL	Workplace Exposure Limit, Short term exposure limit
TWA	Time weighted average.
ATE	Acute toxicity estimate.

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Revision history	Changes	Date
Revision 2.0	Document updated to GHS Standard	31-10-2024