

Custom ICP-ICP/MS Standard

Revision: 05.02.2024

Product code: AC18.09090

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2. Hazard identification

Classification of the substance or mixture

Regulation (EC) No 1272/2008

Met. Corr. 1; H290
 Skin Irrit. 2; H315
 Eye Dam. 1; H318
 Skin Sens. 1; H317

Full text of hazard statements: see SECTION 16.

Label elements

Regulation (EC) No 1272/2008

Hazard components for labelling

nitric acid
 nickel dinitrate

Signal word: Danger

Pictograms:



Hazard statements

H290 May be corrosive to metals.
 H315 Causes skin irritation.
 H317 May cause an allergic skin reaction.
 H318 Causes serious eye damage.

Precautionary statements

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
 P280 Wear protective gloves/protective clothing and eye protection/face protection.
 P302+P352 IF ON SKIN: Wash with plenty of water.
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P310 Immediately call a POISON CENTER/doctor.
 P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
 P362+P364 Take off contaminated clothing and wash it before reuse.

Other hazards

No data available

3. Composition/information on ingredients

Mixtures

Chemical characterization

Mixtures in aqueous solution

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Relevant ingredients

CAS No	Chemical name	Quantity
	EC No	
	Index No	
	REACH No	
	Classification (Regulation (EC) No 1272/2008)	
7697-37-2	nitric acid	1 - < 5 %
	231-714-2	
	007-030-00-3	
	01-2119487297-23	
	Ox. Liq. 3, Met. Corr. 1, Acute Tox. 3, Skin Corr. 1A, Eye Dam. 1; H272 H290 H331 H314 H318 EUH071	
13138-45-9	nickel dinitrate	< 0.1 %
	236-068-5	
	028-012-00-1	
	01-2119492333-38	
	Ox. Sol. 2, Carc. 1A, Muta. 2, Repr. 1B, Acute Tox. 4, Acute Tox. 4, Skin Irrit. 2, Eye Dam. 1, Resp. Sens. 1, Skin Sens. 1, STOT RE 1, Aquatic Acute 1, Aquatic Chronic 1; H272 H350i H341 H360D H332 H302 H315 H318 H334 H317 H372 H400 H410	

Full text of H statements: see section 16.

Specific Conc. Limits, M-factors and ATE

CAS No	EC No	Chemical name	Quantity
		Specific Conc. Limits, M-factors and ATE	
7697-37-2	231-714-2	nitric acid	1 - < 5 %
		inhalation: ATE 2,65 mg/l (vapours) Ox. Liq. 3; H272: >= 65 - 100 Skin Corr. 1A; H314: >= 20 - 100 Skin Corr. 1B; H314: >= 5 - < 20	
13138-45-9	236-068-5	nickel dinitrate	< 0.1 %
		inhalation: ATE = 11 mg/l (vapours); inhalation: ATE = 1,5 mg/l (dusts or mists); oral: LD50 = 361,9 mg/kg Skin Irrit. 2; H315: >= 20 - 100 Skin Sens. 1; H317: >= 0,01 - 100 STOT RE 1; H372: >= 1 - 100 STOT RE 2; H373: >= 0,1 - < 1 Aquatic Acute 1; H400: M=1 Aquatic Chronic 1; H410: M=1	

Further Information

This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of = 0.1 % (w/w).

4. First-aid measures
Description of first aid measures
General information

No data available

After inhalation

Provide fresh air.

Call a doctor if you feel unwell.

After contact with skin

Wash immediately with: Water

Take off immediately all contaminated clothing and wash it before reuse.

Call a physician immediately.

After contact with eyes

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.

Remove contact lenses, if present and easy to do. Continue rinsing.

Protect uninjured eye.

After ingestion

Rinse mouth immediately and drink plenty of water.

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Do NOT induce vomiting. Do not allow a neutralisation agent to be drunk.
Call a physician immediately.

Most important symptoms and effects, whether acute or delayed

Irritant
Cough
Dyspnoea
Vomiting
Methaemoglobinaemia
Risk of serious damage to eyes.
Allergic reactions

Indication of immediate medical attention and special treatment needed

No data available

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Co-ordinate fire-fighting measures to the fire surroundings.

Unsuitable extinguishing media

no restriction

Specific hazards arising from the hazardous product

Non-combustible liquids
Hazardous combustion products
In case of fire may be liberated:
Nitrogen oxides (NOx)

Special protective equipment and precautions for fire-fighters

In case of fire: Wear self-contained breathing apparatus.
In case of fire and/or explosion do not breathe fumes.
Avoid contact with skin, eyes and clothes.

Additional information

Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.
Move undamaged containers from immediate hazard area if it can be done safely.
Use water spray jet to protect personnel and to cool endangered containers.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

General advice

Corrosive to metals.

For non-emergency personnel

Provide adequate ventilation.
Use personal protection equipment.
Avoid contact with skin, eyes and clothes.
Remove persons to safety.
Emergency procedures
Consult an expert
Do not breathe dust/fume/gas/mist/vapours/spray.

For emergency responders

Precautionary statements For emergency responders : Personal protection equipment: see section 8

Environmental precautions

Do not allow to enter into surface water or drains.

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Methods and material for containment and cleaning up

For containment

- Cover drains.
- Prevent spread over a wide area (e.g. by containment or oil barriers).
- Collect in closed and suitable containers for disposal.
- Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

For cleaning up

- Clean contaminated articles and floor according to the environmental legislation.

Other information

- Provide adequate ventilation.
- Do not breathe dust/fume/gas/mist/vapours/spray.
- Wear breathing apparatus if exposed to vapours/dusts/aerosols.

Reference to other sections

- Safe handling: see section 7
- Personal protection equipment: see section 8
- Disposal: see section 13

7. Handling and storage

Precautions for safe handling

Advice on safe handling

- Read label before use. Handle and open container with care.
- When using do not eat, drink, smoke, sniff. Use personal protection equipment.
- Provide adequate ventilation. Avoid contact with skin, eyes and clothes.
- Do not breathe vapour/aerosol.

Advice on protection against fire and explosion

- Usual measures for fire prevention.

Advice on general occupational hygiene

- Keep away from food, drink and animal feedingstuffs. Remove contaminated, saturated clothing immediately.
- Draw up and observe skin protection programme. Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat or drink. Avoid: aerosol or mist formation Do not breathe vapour/aerosol.

Further information on handling

- Draw up and observe skin protection programme.
- Wash hands and face before breaks and after work and take a shower if necessary.
- Take off immediately all contaminated clothing and wash it before reuse.

Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

- Corrosive to metals.
- Unsuitable container/equipment material: Metal
- The product develops hydrogen in an aqueous solution in contact with metals.

Hints on joint storage

- Take national regulations into account.

Further information on storage conditions

- Keep container tightly closed.

Specific end use(s)

- Laboratory chemicals

8. Exposure controls/Personal protection

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Control parameters
Exposure limits (ACGIH)

CAS No	Chemical name	ppm	mg/m ³	Category	Origin
7697-37-2	Nitric acid	2	5.2	TWA (8 h)	ACGIH-2025
		4	10	STEL (15 min)	ACGIH-2025

DNEL/DMEL values

CAS No	Chemical name	Exposure route	Effect	Value
13138-45-9	nickel dinitrate			
Consumer DNEL, acute		oral	systemic	0,012 mg/kg bw/day
Consumer DNEL, long-term		oral	systemic	0,02 mg/kg bw/day
Worker DNEL, acute		inhalation	systemic	104 mg/m ³
Worker DNEL, acute		inhalation	local	1,6 mg/m ³
Consumer DNEL, acute		inhalation	systemic	8,8 mg/m ³
Consumer DNEL, acute		inhalation	local	0,1 mg/m ³

PNEC values

CAS No	Chemical name	Value
13138-45-9	nickel dinitrate	
Environmental compartment		
Freshwater		0,0071 mg/l
Freshwater (intermittent releases)		0 mg/l
Marine water		0,0086 mg/l
Freshwater sediment		109 mg/kg
Marine sediment		109 mg/kg
Secondary poisoning		0,12 mg/kg
Micro-organisms in sewage treatment plants (STP)		0,33 mg/l
Soil		29,9 mg/kg

Exposure controls
Appropriate engineering controls

Technical measures and the application of suitable work processes have priority over personal protection equipment.

If handled uncovered, arrangements with local exhaust ventilation have to be used.

Individual protection measures, such as personal protective equipment
Eye/face protection

goggles

Wear eye/face protection.

Hand protection

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

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Skin protection

Wear suitable protective clothing. Take off immediately all contaminated clothing.

Wash hands before breaks and after work.

The choice of body protection depends on the concentration and quantity of hazardous substances. The chemical resistance of protective agents must be clarified with their suppliers.

Respiratory protection

Respiratory protection necessary at: aerosol or mist formation

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Thermal hazards

No data available

Environmental exposure controls

Do not allow to enter into surface water or drains.

9. Physical and chemical properties
Information on basic physical and chemical properties

Physical state:	Liquid	
Colour:	clear	
Odour:	like: Nitric acid	
Odour threshold:	No data available	
Melting point/freezing point:		No data available
Boiling point or initial boiling point and boiling range:		No data available
Flammability:		No data available
Lower explosive limits:		No data available
Upper explosive limits:		No data available
Flash point:		No data available
Auto-ignition temperature:		No data available
Decomposition temperature:		No data available
pH-Value (at 20 °C):		<3
Viscosity / kinematic:		No data available
Water solubility:		completely miscible
Solubility in other solvents		
No data available		
Dissolution rate:		No data available
Partition coefficient n-octanol/water:		No data available
Dispersion stability:		No data available
Vapour pressure:		No data available
Vapour pressure:		No data available
Density (at 22 °C):		1,02 g/cm ³
Relative density:		No data available
Bulk density:		No data available
Relative vapour density:		No data available
Particle characteristics:		No data available

Other information
Information with regard to physical hazard classes

Explosive properties

No data available

Sustained combustibility:

No data available

Self-ignition temperature

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Solid:	No data available
Gas:	No data available
Oxidizing properties	
Oxidizing	
Other safety characteristics	
Evaporation rate:	No data available
Solvent separation test:	No data available
Solvent content:	0
Solid content:	0
Sublimation point:	No data available
Softening point:	No data available
Pour point:	No data available
No data available:	
Viscosity / dynamic:	No data available
Flow time:	No data available

Further Information

Corrosive to metals.

10. Stability and reactivity

Reactivity

Corrosive to metals.

Oxidising agent

Chemical stability

The product is stable under storage at normal ambient temperatures.

Possibility of hazardous reactions

Alkali (lye)

The product develops hydrogen in an aqueous solution in contact with metals.

Amines, Ammonia, Alcohols, Alkali metals, Hydrogen peroxide

Copper, Combustible solids, Solvent, Alkaline earth metal, mercury (Hg).

Conditions to avoid

No data available

Incompatible materials

Cellulose

Metal

The product develops hydrogen in an aqueous solution in contact with metals.

Hazardous decomposition products

In case of fire may be liberated:

SECTION 5: Firefighting measures

Further information

No data available

11. Toxicological information

Information on toxicological effects

Toxicokinetics, metabolism and distribution

There are no data available on the mixture itself.

Acute toxicity

Based on available data, the classification criteria are not met.

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ATEmix calculated

ATE (oral) > 2000 mg/kg; ATE (dermal) > 2000 mg/kg; ATE (inhalation vapour) > 50 mg/l; ATE (inhalation dust/mist) > 5 mg/l

CAS No	Chemical name				
	Route of exposure	Dose	Species	Source	Method
7697-37-2	nitric acid				
	inhalation vapour	ATE 2,65 mg/l			
13138-45-9	nickel dinitrate				
	oral	LD50 361,9 mg/kg	Rat	Regul Toxicol and Pharmacol (doi.org/10.	OECD Guideline 425
	inhalation vapour	ATE 11 mg/l			
	inhalation dust/mist	ATE 1,5 mg/l			

Irritation and corrosivity

Skin corrosion/irritation: Causes skin irritation.
 Serious eye damage/eye irritation: Causes serious eye damage.
 Following ingestion Gastric perforation
 Irritating to respiratory system.
 Pulmonary oedema
 Mucous membrane irritation in the mouth, throat, esophagus and gastrointestinal tract.
 see also Section 4

Sensitizing effects

May cause an allergic skin reaction. (nickel dinitrate)

Carcinogenic/mutagenic/toxic effects for reproduction

Germ cell mutagenicity: Based on available data, the classification criteria are not met.
 Carcinogenicity: Based on available data, the classification criteria are not met.
 Reproductive toxicity: Based on available data, the classification criteria are not met.

STOT-single exposure

Based on available data, the classification criteria are not met.

STOT-repeated exposure

Based on available data, the classification criteria are not met.

Aspiration hazard

Based on available data, the classification criteria are not met.

Information on likely routes of exposure

There are no data available on the mixture itself.

Specific effects in experiment on an animal

There are no data available on the mixture itself.

Additional information on tests

There are no data available on the mixture itself.

Practical experience

There are no data available on the mixture itself.

Information on other hazards

Endocrine disrupting properties

There are no data available on the mixture itself.

Other information

There are no data available on the mixture itself.

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Further information

There are no data available on the mixture itself.

12. Ecological information
Ecotoxicity

Based on available data, the classification criteria are not met.

CAS No	Chemical name					
	Aquatic toxicity	Dose	[h] [d]	Species	Source	Method
7697-37-2	nitric acid					
	Acute fish toxicity	LC50 mg/l	1559	96 h	Topeka shiner	Environmental Toxicology and Chemistry, other: ASTM E729-26
	Fish toxicity	NOEC	268 mg/l	30 d	juvenile Topeka shiner and with juvenile Fathead m	Study report (2009) Growth tests estimated the test chemical
	Algae toxicity	NOEC	> 419 mg/l	10 d	several benthic diatoms; see results	Marine Biology 43:307-315 (1977) Ten cultures of benthic diatoms were iso
	Acute bacteria toxicity	EC50	> 1000 mg/l ()	3 h	Activated sludge	Study report (2008) OECD Guideline 209
13138-45-9	nickel dinitrate					
	Acute fish toxicity	LC50	15,3 mg/l	96 h	Oncorhynchus mykiss	Aquatic Toxicology 63 (2003) 65-82 (2003) other: not reported
	Acute algae toxicity	ErC50	0,237 mg/l	72 h	Ankistrodesmus falcatus	Publication (2009) OECD Guideline 201
	Acute crustacea toxicity	EC50	0,2663 mg/l	48 h	Ceriodaphnia dubia	Study report (2004) other: American society of testing and m
	Fish toxicity	NOEC	0,057 mg/l	32 d	Pimephales promelas	Water Resources Research Institute. Kent other: ASTM 1980, E-729
	Algae toxicity	NOEC	0,6 mg/l	14 d	Anabaena cylindrica	Environ. Pollut. (Series A). 25(4):241-2 other: not reported
	Crustacea toxicity	NOEC	0,04 mg/l	42 d	Daphnia magna	Wat. Res. 24(7):845-852 (1990) Chronic exposure to sublethal concentrat
	Acute bacteria toxicity	EC50	33 mg/l ()	0,5 h	Activated sludge	Journal of Hazardous Materials. B139:332 ISO 8192

Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

Bioaccumulative potential

There are no data available on the mixture itself.

BCF

CAS No	Chemical name	BCF	Species	Source
13138-45-9	nickel dinitrate	23	Spirodela polyrhiza	Ecotoxicology and en

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Mobility in soil

There are no data available on the mixture itself.

Results of PBT and vPvB assessment

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

Other adverse effects

Discharge into the environment must be avoided.

Harmful effect due to pH shift.

Forms corrosive mixtures with water even if diluted.

Further information

Do not allow to enter into surface water or drains.

13. Disposal considerations

Waste treatment methods

Disposal recommendations

Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.

Send to a physico-chemical treatment facility under observation of official regulations .

Do not empty into drains.

Contaminated packaging

Handle contaminated packages in the same way as the substance itself.

Waste codes/waste designations according to EWC/AVV

14. Transport information

Land transport (ADR/RID)

<u>UN number or ID number:</u>	UN 3264
<u>United Nations proper shipping name:</u>	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid)
<u>Transport hazard class(es):</u>	8
<u>Packing group:</u>	III
Hazard label:	8
Classification Code:	C1
Special Provisions:	274
Limited quantity:	5 L
Excepted quantity:	E1
Transport category:	3
Hazard No:	80
Tunnel restriction code:	E

Inland waterways transport (ADN)

<u>UN number or ID number:</u>	UN 3264
<u>United Nations proper shipping name:</u>	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid)
<u>Transport hazard class(es):</u>	8
<u>Packing group:</u>	III
Hazard label:	8
Classification Code:	C1
Special Provisions:	274
Limited quantity:	5 L

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Excepted quantity: E1

Marine transport (IMDG)

UN number or ID number: UN 3264
United Nations proper shipping name: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid)
Transport hazard class(es): 8
Packing group: III
 Hazard label: 8
 Special Provisions: 223 274
 Limited quantity: 5 L
 Excepted quantity: E1
 EmS: F-A, S-B
 Segregation group: 1 - acids

Air transport (ICAO-TI/IATA-DGR)

UN number or ID number: UN 3264
United Nations proper shipping name: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid)
Transport hazard class(es): 8
Packing group: III
 Hazard label: 8
 Special Provisions: A3 A803
 Limited quantity Passenger: 1 L
 Passenger LQ: Y841
 Excepted quantity: E1
 IATA-packing instructions - Passenger: 852
 IATA-max. quantity - Passenger: 5 L
 IATA-packing instructions - Cargo: 856
 IATA-max. quantity - Cargo: 60 L

Environmental hazards

ENVIRONMENTALLY HAZARDOUS: No

15. Regulatory information
Safety, health and environmental regulations/legislation specific for the substance or mixture
EU Regulatory information

Restrictions on use (REACH, annex XVII):

Entry 3, Entry 27, Entry 75

Marketing and use of explosives precursors:

Acquisition, introduction, possession or use of this product by the general public is restricted by Regulation (EU) 2019/1148. All suspicious transactions, and significant disappearances and thefts should be reported to the relevant national contact point.

National regulatory information

Employment restrictions: Observe employment restrictions for young people.
 Water hazard class (D): 1 - slightly hazardous to water

16. Other information

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Abbreviations and acronyms

Ox. Liq. 3: Oxidizing liquids
 Ox. Sol. 2: Oxidizing solids
 Met. Corr. 1: Corrosive to metals
 Acute Tox. 3: Acute toxicity
 Acute Tox. 4: Acute toxicity
 Skin Corr. 1A: Skin corrosion
 Skin Irrit. 2: Skin irritation
 Eye Dam. 1: Serious eye damage
 Resp. Sens. 1: Respiratory sensitization
 Skin Sens. 1: Skin sensitization
 Muta. 2: Germ cell mutagenicity
 Carc. 1A: Carcinogenicity
 Repr. 1B: Reproductive toxicity
 STOT RE 1: Specific target organ toxicity - repeated exposure
 Aquatic Acute 1: Acute aquatic hazard
 Aquatic Chronic 1: Chronic aquatic hazard

Classification for mixtures and used evaluation method according to regulation (EC) No 1272/2008

Classification	Classification procedure
Met. Corr. 1; H290	On basis of test data
Skin Irrit. 2; H315	Calculation method
Eye Dam. 1; H318	Calculation method
Skin Sens. 1; H317	Calculation method

Relevant H statements (number and full text)

H272 May intensify fire; oxidizer.
 H290 May be corrosive to metals.
 H302 Harmful if swallowed.
 H314 Causes severe skin burns and eye damage.
 H315 Causes skin irritation.
 H317 May cause an allergic skin reaction.
 H318 Causes serious eye damage.
 H331 Toxic if inhaled.
 H332 Harmful if inhaled.
 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
 H341 Suspected of causing genetic defects.
 H350i May cause cancer by inhalation.
 H360D May damage the unborn child.
 H372 Causes damage to organs through prolonged or repeated exposure.
 H400 Very toxic to aquatic life.
 H410 Very toxic to aquatic life with long lasting effects.
 EUH071 Corrosive to the respiratory tract.

Further Information

Provide appropriate information, instructions and training to users
 The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.
 The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights.
 The receiver of our product is singularly responsible for adhering to existing laws and regulations.

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(The data for the relevant ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)