

Safety data sheet Safety data sheet

acc. to Regulation (EC) No. 1907/2006 (REACH)



Multi-Element ICP - Standard Solution CR-02 ROTI®Star 15 elements in 5 % HNO₃ - mg/l

article number: **1K39**
Version: **2.0 en**
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Version: (1)

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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Identification of the substance **Multi-Element ICP - Standard Solution CR-02 ROTI®Star 15 elements in 5 % HNO₃ - mg/l**

Article number 1K39

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: Laboratory chemical
Laboratory and analytical use

Uses advised against: Do not use for squirting or spraying. Do not use for products which come into direct contact with the skin. Do not use for products which come into contact with foodstuffs. Do not use for private purposes (household).

1.3 Details of the supplier of the safety data sheet

Carl Roth GmbH + Co KG
Schoemperlenstr. 3-5
D-76185 Karlsruhe
Germany

Telephone:+49 (0) 721 - 56 06 0
Telefax: +49 (0) 721 - 56 06 149
e-mail: sicherheit@carlroth.de
Website: www.carlroth.de

Competent person responsible for the safety data sheet: :Department Health, Safety and Environment

e-mail (competent person): **sicherheit@carlroth.de**

1.4 Emergency telephone number

| Name | Street | Postal code/city | Telephone | Website |
|---|-----------|----------------------|--------------|---------|
| National Poisons Information Service City Hospital | Dudley Rd | B187QH Birmingham | 844 892 0111 | |

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification acc. to GHS

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| Section | Hazard class | Cat-egory | Hazard class and category | Hazard statement |
|---------|--|-----------|---------------------------|------------------|
| 2.16 | Substance or mixture corrosive to metals | 1 | Met. Corr. 1 | H290 |
| 3.2 | Skin corrosion/irritation | 1 | Skin Corr. 1 | H314 |
| 3.3 | Serious eye damage/eye irritation | 1 | Eye Dam. 1 | H318 |
| 3.4S | Skin sensitisation | 1 | Skin Sens. 1 | H317 |

Supplemental hazard information

| Code | Supplemental hazard information |
|--------|------------------------------------|
| EUH071 | corrosive to the respiratory tract |

For full text of abbreviations: see SECTION 16

The most important adverse physicochemical, human health and environmental effects

Skin corrosion produces an irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis.

2.2 Label elements

Labelling

Signal word

Danger

Pictograms

GHS05, GHS07



Hazard statements

H290 May be corrosive to metals
H314 Causes severe skin burns and eye damage
H317 May cause an allergic skin reaction

Precautionary statements

Precautionary statements - prevention

P280 Wear protective gloves/protective clothing/eye protection/face protection

Supplemental hazard information

EUH071 Corrosive to the respiratory tract.

Hazardous ingredients for labelling:

Nitric acid ...% [C ≤ 70 %]

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2.3 Other hazards

Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

SECTION 3: Composition/information on ingredients

3.1 Substances

not relevant (mixture)

3.2 Mixtures

Description of the mixture

| Name of substance | Identifier | Wt% | Classification acc. to GHS | Pictograms | Notes |
|-----------------------------|--|----------|--|------------|--|
| Nitric acid ...% [C ≤ 70 %] | CAS No 7697-37-2 EC No 231-714-2 Index No 007-030-00-3 | 5 - < 10 | Ox. Liq. 3 / H272 Met. Corr. 1 / H290 Acute Tox. 3 / H331 Skin Corr. 1A / H314 Eye Dam. 1 / H318 EUH071 | | B(a) GHS-HC IOELV |
| Lead(II) nitrate | CAS No 10099-74-8 EC No 233-245-9 Index No 082-001-00-6 | 0,04 | Acute Tox. 4 / H302 Acute Tox. 4 / H332 Repr. 1A / H360Df STOT RE 1 / H372 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410 | | 1(a) A(a) GHS-HC IARC: 2A IOELV |
| Silver nitrate | CAS No 7761-88-8 EC No 231-853-9 Index No 047-001-00-2 | 0,038 | Ox. Sol. 2 / H272 Met. Corr. 1 / H290 Skin Corr. 1B / H314 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410 | | GHS-HC |
| Cadmium | CAS No 7440-43-9 EC No 231-152-8 Index No 048-002-00-0 | 0,02 | Acute Tox. 2 / H330 Muta. 2 / H341 Carc. 1B / H350 Repr. 2 / H361fd STOT RE 1 / H372 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410 | | GHS-HC IARC: 1 IOELV RoC "Known" |

Notes

- 1(a): The concentration stated is the percentage by weight of the metallic element calculated with reference to the total weight of the mixture
- A(a): The name of substance is a general description. It is required that the correct name is stated on the label
- B(a): The classification refers to an aqueous solution
- GHS-HC: Harmonised classification (the classification of the substance corresponds to the entry in the list according to 1272/2008/EC, Annex VI)
- IARC: 1: IARC group 1: carcinogenic to humans (International Agency for Research on Cancer)
- IARC: 2A: IARC group 2A: probably carcinogenic to humans (International Agency for Research on Cancer)
- 2A:
- IOELV: Substance with a community indicative occupational exposure limit value
- RoC NTP-RoC: Known To Be A Human Carcinogen
- "Known"
- :

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| Name of sub-stance | Identifier | Specific Conc. Limits | M-Factors | ATE | Exposure route |
|-----------------------------|--------------------------------------|--|--|--------------------------|-----------------------------------|
| Nitric acid ...% [C ≤ 70 %] | CAS No 7697-37-2 EC No 231-714-2 | Ox. Liq. 3; H272: C ≥ 65 % Skin Corr. 1A; H314: C ≥ 20 % Skin Corr. 1B; H314: 5 % ≤ C < 20 % | - | 2,65 mg/l/4h | inhalation: va- pour |
| Lead(II) nitrate | CAS No 10099-74-8 EC No 233-245-9 | Repr. 1A; H360D: C ≥ 0,3 % Repr. 2; H361f: C ≥ 2,5 % STOT RE 2; H373: C ≥ 0,5 % | M-factor (acute) = 10 | 500 mg/kg 1,5 mg/l/4h | oral inhalation: dust/ mist |
| Silver nitrate | CAS No 7761-88-8 EC No 231-853-9 | - | M-factor (acute) = 100 M-factor (chronic) = 100 | - | |
| Cadmium | CAS No 7440-43-9 EC No 231-152-8 | - | M-factor (acute) = 10 | 0,05 mg/l/4h | inhalation: dust/ mist |

For full text of abbreviations: see SECTION 16

SECTION 4: First aid measures

4.1 Description of first aid measures



General notes

Take off immediately all contaminated clothing. Self-protection of the first aider.

Following inhalation

Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

Following skin contact

After contact with skin, wash immediately with plenty of water. Immediate medical treatment required because corrosive injuries that are not treated are hard to cure. In case of skin reactions, consult a physician.

Following eye contact

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes hold-
ing eyelids apart and consult an ophthalmologist. Protect uninjured eye.

Following ingestion

Rinse mouth immediately and drink plenty of water. Call a physician immediately. If swallowed
danger of perforation of the esophagus and the stomach (strong corrosive effects).

4.2 Most important symptoms and effects, both acute and delayed

Corrosion, Risk of blindness, Gastric perforation, Risk of serious damage to eyes, Allergic reactions

4.3 Indication of any immediate medical attention and special treatment needed

none

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SECTION 5: Firefighting measures

5.1 Extinguishing media



Suitable extinguishing media

co-ordinate firefighting measures to the fire surroundings
water spray, alcohol resistant foam, dry extinguishing powder, BC-powder, carbon dioxide (CO₂)

Unsuitable extinguishing media

water jet

5.2 Special hazards arising from the substance or mixture

Non-combustible.

Hazardous combustion products

In case of fire may be liberated: Nitrogen oxides (NO_x)

5.3 Advice for firefighters

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.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures



For non-emergency personnel

Use personal protective equipment as required. Avoid contact with skin, eyes and clothes. Do not breathe vapour/spray.

6.2 Environmental precautions

Keep away from drains, surface and ground water. The product is an acid. Before discharge into sewage plants the product normally needs to be neutralised.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains.

Advice on how to clean up a spill

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

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SECTION 7: Handling and storage

7.1 Precautions for safe handling

Use extractor hood (laboratory). Handle and open container with care. Clear contaminated areas thoroughly.

Advice on general occupational hygiene

Wash hands before breaks and after work. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed.

Incompatible substances or mixtures

Observe hints for combined storage.

Consideration of other advice:

Specific designs for storage rooms or vessels

Recommended storage temperature: 15 – 25 °C

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)

| Country | Name of agent | CAS No | Identifier | TWA [ppm] | TWA [mg/m ³] | STEL [ppm] | STEL [mg/m ³] | Ceiling-C [ppm] | Ceiling-C [mg/m ³] | Notation | Source |
|---------|------------------|------------|------------|-----------|--------------------------|------------|---------------------------|-----------------|--------------------------------|-------------|-------------|
| EU | lead compounds | | IOELV | | 0,15 | | | | | | 2022/431/EU |
| EU | cadmium | 7440-43-9 | IOELV | | 0,001 | | | | | i, Cd-limit | 2019/983/EU |
| EU | nitric acid | 7697-37-2 | IOELV | | | 1 | 2,6 | | | | 2006/15/EC |
| EU | arsenic acid | 7778-39-4 | IOELV | | 0,01 | | | | | i, As-limit | 2019/983/EU |
| GB | lead compounds | | OEL-NIR | | 0,15 | | | | | Pb | CLWR-NIR |
| GB | lead compounds | | OEL | | 0,15 | | | | | Pb | CLWR |
| GB | titanium dioxide | 13463-67-7 | WEL | | 10 | | | | | i | EH40/2005 |
| GB | titanium dioxide | 13463-67-7 | WEL | | 4 | | | | | r | EH40/2005 |
| GB | nickel | 7440-02-0 | WEL | | 0,1 | | | | | | EH40/2005 |
| GB | cadmium | 7440-43-9 | WEL | | 0,025 | | | | | | EH40/2005 |

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| Country | Name of agent | CAS No | Identifier | TWA [ppm] | TWA [mg/m ³] | STEL [ppm] | STEL [mg/m ³] | Ceiling-C [ppm] | Ceiling-C [mg/m ³] | Notation | Source |
|---------|-------------------|-----------|------------|-----------|--------------------------|------------|---------------------------|-----------------|--------------------------------|----------|-----------|
| GB | nitric acid | 7697-37-2 | WEL | | | 1 | 2,6 | | | | EH40/2005 |
| GB | arsenic compounds | 7778-39-4 | WEL | | 0,1 | | | | | As | EH40/2005 |

Notation

| | |
|-----------|--|
| As | Calculated as As (arsenic) |
| As-limit | For the copper smelting sector, the limit value shall apply from 11 July 2023 |
| Cd-limit | Limit value 0,004 mg/m ³ until 11 July 2027 |
| Ceiling-C | Ceiling value is a limit value above which exposure should not occur |
| i | Inhalable fraction |
| Pb | Calculated as Pb (lead) |
| r | Respirable fraction |
| STEL | Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified) |
| TWA | Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified) |

Biological limit values

| Country | Name of agent | CAS No | Parameter | Notation | Identifier | Value | Material | Source |
|---------|----------------|--------|-----------|----------------------------------|------------|----------|-------------|----------|
| GB | lead compounds | | lead | Pb-bio-2, Pb-med-2, wmn<45y | AL_NIR | 250 µg/l | whole blood | CLWR-NIR |
| GB | lead compounds | | lead | Pb-bio-2, Pb-med-2, wmn<45y | AL | 250 µg/l | whole blood | CLWR |
| GB | lead compounds | | lead | Pb-bio-2, Pb-med-3, wmn>45y, men | AL_NIR | 400 µg/l | whole blood | CLWR-NIR |
| GB | lead compounds | | lead | Pb-bio-2, Pb-med-3, wmn>45y, men | AL | 400 µg/l | whole blood | CLWR |
| GB | lead compounds | | lead | Pb-bio-2, Pb-med-4, young | AL_NIR | 500 µg/l | whole blood | CLWR-NIR |

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| Country | Name of agent | CAS No | Parameter | Notation | Identifier | Value | Material | Source |
|---------|----------------|--------|-----------|---------------------------|------------|----------|-------------|--------|
| GB | lead compounds | | lead | Pb-bio-2, Pb-med-4, young | AL | 500 µg/l | whole blood | CLWR |

Notation

| | |
|--------------|---|
| Pb-bio-2 | Biological monitoring: (a) in respect of an employee other than a young person or a woman of reproductive capacity, at least every 6 months, but where the results of the measurements for individuals or for groups of workers have shown on the previous two consecutive occasions on which monitoring was carried out a lead in air exposure greater than 0.075 mg/m ³ but less than 0.100 mg/m ³ and where the blood-lead concentration of any individual employee is less than 30 µg/dl, the frequency of monitoring may be reduced to once a year; or (b) in respect of any young person or a woman of reproductive capacity, at such intervals as the relevant doctor shall specify, being not greater than 3 months |
| Pb-med-2 | Medical surveillance: in respect of a woman of reproductive capacity, 20 g/dl (blood-lead concentration) or 20 g Pb/g creatinine (urinary lead concentration) |
| Pb-med-3 | Medical surveillance: in respect of any other employee, 35 µg/dl (blood-lead concentration) or 40 µg Pb/g creatinine (urinary lead concentration) suspension level: in respect of a woman of reproductive capacity, 60 µg/dl (blood-lead concentration) or 110 µg Pb/g creatinine (urinary lead concentration) |
| Pb-med-4 | Medical surveillance: in respect of any other employee, 35 µg/dl (blood-lead concentration) or 40 µg Pb/g creatinine (urinary lead concentration) suspension level: in respect of a young person, 50 µg/dl (blood-lead concentration) or 110 µg Pb/g creatinine (urinary lead concentration) |
| wmn<45y | Women of reproductive capacity (women < 45 years) |
| wmn>45y, men | Women of non-reproductive capacity, men (women > 45 years) |
| young | Adolescents (young person < 18 years) |

| Relevant DNELs of components of the mixture | | | | | | |
|---|-----------|----------|-------------------------|------------------------------------|-------------------|----------------------------|
| Name of substance | CAS No | Endpoint | Threshold level | Protection goal, route of exposure | Used in | Exposure time |
| Silver nitrate | 7761-88-8 | DNEL | 0,016 mg/m ³ | human, inhalatory | worker (industry) | chronic - systemic effects |
| Cadmium | 7440-43-9 | DNEL | 4 µg/m ³ | human, inhalatory | worker (industry) | chronic - local effects |

| Relevant PNECs of components of the mixture | | | | | | |
|---|-----------|----------|-----------------|-----------------------|------------------------------|------------------------------|
| Name of substance | CAS No | Endpoint | Threshold level | Organism | Environmental compartment | Exposure time |
| Silver nitrate | 7761-88-8 | PNEC | 0,04 µg/l | aquatic organisms | freshwater | short-term (single instance) |
| Silver nitrate | 7761-88-8 | PNEC | 0,86 µg/l | aquatic organisms | marine water | short-term (single instance) |
| Silver nitrate | 7761-88-8 | PNEC | 0,025 mg/l | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |
| Silver nitrate | 7761-88-8 | PNEC | 438,1 mg/kg | aquatic organisms | freshwater sediment | short-term (single instance) |
| Silver nitrate | 7761-88-8 | PNEC | 438,1 mg/kg | aquatic organisms | marine sediment | short-term (single instance) |
| Silver nitrate | 7761-88-8 | PNEC | 1,41 mg/kg | terrestrial organisms | soil | short-term (single instance) |
| Cadmium | 7440-43-9 | PNEC | 0,19 µg/l | aquatic organisms | freshwater | short-term (single instance) |

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| Relevant PNECs of components of the mixture | | | | | | |
|---|-----------|-----------|-----------------|-----------------------|------------------------------|------------------------------|
| Name of substance | CAS No | End-point | Threshold level | Organism | Environmental compartment | Exposure time |
| Cadmium | 7440-43-9 | PNEC | 1,14 µg/l | aquatic organisms | marine water | short-term (single instance) |
| Cadmium | 7440-43-9 | PNEC | 20 µg/l | aquatic organisms | sewage treatment plant (STP) | short-term (single instance) |
| Cadmium | 7440-43-9 | PNEC | 1,8 mg/kg | aquatic organisms | freshwater sediment | short-term (single instance) |
| Cadmium | 7440-43-9 | PNEC | 0,64 mg/kg | aquatic organisms | marine sediment | short-term (single instance) |
| Cadmium | 7440-43-9 | PNEC | 0,9 mg/kg | terrestrial organisms | soil | short-term (single instance) |

8.2 Exposure controls

Individual protection measures (personal protective equipment)

Eye/face protection



Use safety goggle with side protection. Wear face protection.

Skin protection



• hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. 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. The times are approximate values from measurements at 22 ° C and permanent contact. Increased temperatures due to heated substances, body heat etc. and a reduction of the effective layer thickness by stretching can lead to a considerable reduction of the breakthrough time. If in doubt, contact manufacturer. At an approx. 1.5 times larger / smaller layer thickness, the respective breakthrough time is doubled / halved. The data apply only to the pure substance. When transferred to substance mixtures, they may only be considered as a guide.

• type of material

NBR (Nitrile rubber)

• material thickness

>0,11 mm

• breakthrough times of the glove material

>480 minutes (permeation: level 6)

• other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

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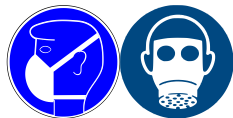
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Respiratory protection



Respiratory protection necessary at: Aerosol or mist formation. Type: B-P2 (combined filters for acidic gases and particles, colour code: Grey/White).

Environmental exposure controls

Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | |
|--|---|
| Physical state | liquid |
| Colour | colourless - light yellow |
| Odour | stinging |
| Melting point/freezing point | 0 °C |
| Boiling point or initial boiling point and boiling range | 100 °C (unknown) |
| Flammability | non-combustible |
| Lower and upper explosion limit | not determined |
| Flash point | not determined |
| Auto-ignition temperature | not determined |
| Decomposition temperature | not relevant |
| pH (value) | <2 (in aqueous solution: 50,6 g/l, 20 °C) |
| Kinematic viscosity | not determined |
| <u>Solubility(ies)</u> | |
| Water solubility | miscible in any proportion |
| <u>Partition coefficient</u> | |
| Partition coefficient n-octanol/water (log value): | not relevant (inorganic) |
| Vapour pressure | not determined |
| <u>Density and/or relative density</u> | |
| Density | ~ 1 g/cm ³ at 20 °C |
| Relative vapour density | information on this property is not available |
| Particle characteristics | not relevant (liquid) |

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Other safety parameters

Oxidising properties none

9.2 Other information

Information with regard to physical hazard classes:

Corrosive to metals category 1: corrosive to metals

Other safety characteristics:

Miscibility completely miscible with water

SECTION 10: Stability and reactivity

10.1 Reactivity

Substance or mixture corrosive to metals.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

Violent reaction with: Ammonia (NH₃), Bases, Metals, Reducing agents, Strong alkali, Organic solvents

10.4 Conditions to avoid

Keep away from heat.

10.5 Incompatible materials

different metals (due to the release of hydrogen in an acid/alkaline medium)

10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Test data are not available for the complete mixture.

Classification procedure

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

Classification acc. to GHS

Acute toxicity

Shall not be classified as acutely toxic.

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| Acute toxicity estimate (ATE) of components of the mixture | | | |
|--|------------|-----------------------|--------------|
| Name of substance | CAS No | Exposure route | ATE |
| Nitric acid ...% [C ≤ 70 %] | 7697-37-2 | inhalation: vapour | 2,65 mg/l/4h |
| Lead(II) nitrate | 10099-74-8 | oral | 500 mg/kg |
| Lead(II) nitrate | 10099-74-8 | inhalation: dust/mist | 1,5 mg/l/4h |
| Cadmium | 7440-43-9 | inhalation: dust/mist | 0,05 mg/l/4h |

| Acute toxicity of components of the mixture | | | | | |
|---|------------|--------------------|----------|---------------|---------|
| Name of substance | CAS No | Exposure route | Endpoint | Value | Species |
| Nitric acid ...% [C ≤ 70 %] | 7697-37-2 | inhalation: vapour | LC50 | >2,65 mg/l/4h | rat |
| Lead(II) nitrate | 10099-74-8 | oral | LD50 | >2.000 mg/kg | rat |
| Lead(II) nitrate | 10099-74-8 | dermal | LD50 | >2.000 mg/kg | rat |
| Silver nitrate | 7761-88-8 | oral | LD50 | >2.000 mg/kg | rat |
| Silver nitrate | 7761-88-8 | dermal | LD50 | >2.000 mg/kg | rat |
| Cadmium | 7440-43-9 | oral | LD50 | 2.330 mg/kg | rat |

Skin corrosion/irritation

Causes severe skin burns and eye damage.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitisation

May cause an allergic skin reaction.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

Symptoms related to the physical, chemical and toxicological characteristics

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- **If swallowed**

If swallowed danger of perforation of the esophagus and the stomach (strong corrosive effects)

- **If in eyes**

causes burns, Causes serious eye damage, risk of blindness

- **If inhaled**

corrosive to the respiratory tract, cough, Dyspnoea

- **If on skin**

causes severe burns, causes poorly healing wounds, May produce an allergic reaction, pruritis, localised redness

- **Other information**

none

11.2 Endocrine disrupting properties

None of the ingredients are listed.

11.3 Information on other hazards

There is no additional information.

SECTION 12: Ecological information

12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

| Aquatic toxicity (acute) of components of the mixture | | | | | |
|---|------------|----------|------------|-----------------------|---------------|
| Name of substance | CAS No | Endpoint | Value | Species | Exposure time |
| Lead(II) nitrate | 10099-74-8 | LC50 | 107 µg/l | fish | 96 h |
| Lead(II) nitrate | 10099-74-8 | ErC50 | 35,9 µg/l | algae | 48 h |
| Silver nitrate | 7761-88-8 | LC50 | 1,2 µg/l | fish | 96 h |
| Cadmium | 7440-43-9 | LC50 | 58,16 µg/l | aquatic invertebrates | 48 h |
| Cadmium | 7440-43-9 | EC50 | 1.900 µg/l | aquatic invertebrates | 24 h |
| Cadmium | 7440-43-9 | ErC50 | 120 µg/l | algae | 72 h |

| Aquatic toxicity (chronic) of components of the mixture | | | | | |
|---|-----------|----------|------------|-----------------------|---------------|
| Name of substance | CAS No | Endpoint | Value | Species | Exposure time |
| Silver nitrate | 7761-88-8 | EC50 | 0,8 µg/l | aquatic invertebrates | 7 d |
| Cadmium | 7440-43-9 | LC50 | 1.500 µg/l | fish | 4 d |
| Cadmium | 7440-43-9 | EC50 | 8,1 µg/l | fish | 100 d |

Biodegradation

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

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12.2 Process of degradability

Data are not available.

12.3 Bioaccumulative potential

Data are not available.

Bioaccumulative potential of components of the mixture

| Name of substance | CAS No | BCF | Log KOW | BOD5/COD |
|-------------------|-----------|-----|---------|----------|
| Silver nitrate | 7761-88-8 | 70 | | |

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

Data are not available.

12.6 Endocrine disrupting properties

None of the ingredients are listed.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods



This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used.

13.2 Relevant provisions relating to waste

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

Properties of waste which render it hazardous

HP 6 acute toxicity

HP 8 corrosive

13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions.

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SECTION 14: Transport information

14.1 UN number or ID number

| | |
|-----------|---------|
| ADRRID | UN 2031 |
| IMDG-Code | UN 2031 |
| ICAO-TI | UN 2031 |

14.2 UN proper shipping name

| | |
|-----------|-------------|
| ADRRID | NITRIC ACID |
| IMDG-Code | NITRIC ACID |
| ICAO-TI | Nitric acid |

14.3 Transport hazard class(es)

| | |
|-----------|---|
| ADRRID | 8 |
| IMDG-Code | 8 |
| ICAO-TI | 8 |

14.4 Packing group

| | |
|-----------|----|
| ADRRID | II |
| IMDG-Code | II |
| ICAO-TI | II |

14.5 Environmental hazards

non-environmentally hazardous acc. to the dangerous goods regulations

14.6 Special precautions for user


Provisions for dangerous goods (ADR) should be complied within the premises.

14.7 Maritime transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

14.8 Information for each of the UN Model Regulations

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN) - Additional information

| | |
|---|---------------------------------|
| Proper shipping name | NITRIC ACID |
| Particulars in the transport document | UN2031, NITRIC ACID, 8, II, (E) |
| Classification code | C1 |
| Danger label(s) | 8 |
|  | |
| Excepted quantities (EQ) | E2 |
| Limited quantities (LQ) | 1 L |
| Transport category (TC) | 2 |
| Tunnel restriction code (TRC) | E |

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Hazard identification No 80

Emergency Action Code 2R

Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) Additional information

Classification code C1

Danger label(s) 8



Excepted quantities (EQ) E2

Limited quantities (LQ) 1 L

Transport category (TC) 2

Hazard identification No 80

International Maritime Dangerous Goods Code (IMDG) - Additional information

Proper shipping name NITRIC ACID

Particulars in the shipper's declaration UN2031, NITRIC ACID, 8, II

Marine pollutant -

Danger label(s) 8



Excepted quantities (EQ) E2

Limited quantities (LQ) 1 L

EmS F-A, S-B

Stowage category D

Segregation group 1 - Acids

International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Proper shipping name Nitric acid

Particulars in the shipper's declaration UN2031, Nitric acid, 8, II

Danger label(s) 8



Excepted quantities (EQ) E2

Limited quantities (LQ) 0,5 L

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SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Relevant provisions of the European Union (EU)

Seveso Directive

| 2012/18/EU (Seveso III) | | | |
|-------------------------|---------------------------------------|---|-------|
| No | Dangerous substance/hazard categories | Qualifying quantity (tonnes) for the application of lower and upper-tier requirements | Notes |
| | not assigned | | |

Deco-Paint Directive

| | |
|-------------|--------------|
| VOC content | 0 % 0 g/l |
|-------------|--------------|

Industrial Emissions Directive (IED)

| | |
|-------------|-------|
| VOC content | 0 % |
| VOC content | 0 g/l |

Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

| Hazardous substances in electrical and electronic equipment (RoHS) | |
|--|---|
| Name acc. to inventory | Maximum concentration values tolerated by weight in homogeneous materials |
| cadmium | 0,01 % Cd |

Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

| Pollutant release and transfer registers (PRTR) | | | |
|---|-----------|---------|---|
| Name of substance | CAS No | Remarks | Threshold for releases to air (kg/year) |
| Cadmium | 7440-43-9 | (8) | 10 |

Legend

(8) All metals shall be reported as the total mass of the element in all chemical forms present in the release

Water Framework Directive (WFD)

| List of pollutants (WFD) | | | | |
|--------------------------|------------------------|-----------|-----------|---------|
| Name of substance | Name acc. to inventory | CAS No | Listed in | Remarks |
| Lead(II) nitrate | lead compounds | | b) | |
| Lead(II) nitrate | lead compounds | 7439-92-1 | c) | |

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| List of pollutants (WFD) | | | | |
|--------------------------|---|-----------|-----------|---------|
| Name of substance | Name acc. to inventory | CAS No | Listed in | Remarks |
| Lead(II) nitrate | Substances which contribute to eutrophication (in particular, nitrates and phosphates) | | a) | |
| Lead(II) nitrate | Substances and preparations, or the breakdown products of such, which have been proved to possess carcinogenic or mutagenic properties or properties which may affect steroidogenic, thyroid, reproduction or other endocrine-related functions in or via the aquatic environment | | a) | |
| Lead(II) nitrate | Metals and their compounds | | a) | |
| Cadmium | cadmium | 7440-43-9 | b) | HAZ |
| Cadmium | cadmium compounds | | b) | HAZ |
| Cadmium | Cadmium and its compounds (depending on water hardness classes) | 7440-43-9 | c) | |
| Cadmium | Substances and preparations, or the breakdown products of such, which have been proved to possess carcinogenic or mutagenic properties or properties which may affect steroidogenic, thyroid, reproduction or other endocrine-related functions in or via the aquatic environment | | a) | |
| Cadmium | Metals and their compounds | | a) | |
| Silver nitrate | Substances which contribute to eutrophication (in particular, nitrates and phosphates) | | a) | |
| Silver nitrate | Metals and their compounds | | a) | |

Legend

- A) Indicative list of the main pollutants
- B) List of priority substances in the field of water policy
- C) Environmental Quality Standards for Priority Substances and certain other pollutants
- HAZ Identified as priority hazardous substance

Regulation on the marketing and use of explosives precursors

| Explosives precursors which are subject to restrictions | | | | | | |
|---|-----------|-----|----------------------|--------------|----------------|---|
| Name of substance | CAS No | Wt% | Type of registration | Re- marks | Limit value | Upper limit value for the purpose of licens- ing un- der Art- icle 5(3) |
| Nitric acid ...% [C ≤ 70 %] | 7697-37-2 | 5 | Annex I | | 3 % w/w | 10 % w/w |

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Legend

annex I Substances which shall not be made available to members of the general public on their own, or in mixtures or substances including them, except if the concentration is equal to or lower than the limit values set out below

Additional statements

If the product is passed on to third parties, in accordance with Article 7 "Notification of the supply chain" of Regulation EU 2019/1148, the information obligation is subject to the entire supply chain and all other provisions mentioned in Article 7 on restricted and regulated raw materials.

Regulation on drug precursors

none of the ingredients are listed

Regulation on substances that deplete the ozone layer (ODS)

none of the ingredients are listed

Regulation concerning the export and import of hazardous chemicals (PIC)

chemicals subject to the international prior informed consent (PIC) procedure (the 'PIC procedure').

| Name of substance | Name acc. to inventory | CAS No | Wt% | Category / subcategory | Use limitation |
|-------------------|------------------------|-----------|------|------------------------|----------------|
| Lead(II) nitrate | lead compounds | | 0,04 | i(2) | sr |
| Cadmium | cadmium | 7440-43-9 | 0,02 | i(1) i(2) | sr sr |

Legend

i(1) Sub-category: i(1) - industrial chemical for professional use

i(2) Sub-category: i(2) - industrial chemical for public use

sr Use limitation: severe restriction (for the sub-category or sub-categories concerned) according to Union legislation

Regulation on persistent organic pollutants (POP)

none of the ingredients are listed

National regulations(GB)

List of substances subject to authorisation (GB REACH, Annex 14) / SVHC - candidate list

none of the ingredients are listed

Restrictions according to GB REACH, Annex 17

| Dangerous substances with restrictions (GB REACH, Annex 17) | | | |
|---|--|--------|----|
| Name of substance | Name acc. to inventory | CAS No | No |
| Multi-Element | this product meets the criteria for classification in accordance with Regulation No 1272/2008/EC | | 3 |

Other information

Directive 94/33/EC on the protection of young people at work. Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

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National inventories

| Country | Inventory | Status |
|---------|------------|--------------------------------|
| AU | AIIC | all ingredients are listed |
| CA | DSL | all ingredients are listed |
| CN | IECSC | all ingredients are listed |
| EU | ECSI | all ingredients are listed |
| EU | REACH Reg. | all ingredients are listed |
| JP | CSCL-ENCS | not all ingredients are listed |
| JP | ISHA-ENCS | not all ingredients are listed |
| KR | KECI | all ingredients are listed |
| MX | INSQ | all ingredients are listed |
| NZ | NZIoC | all ingredients are listed |
| PH | PICCS | all ingredients are listed |
| TR | CICR | not all ingredients are listed |
| TW | TCSI | all ingredients are listed |
| US | TSCA | all ingredients are listed |

Legend

| | |
|------------|---|
| AIIC | Australian Inventory of Industrial Chemicals |
| CICR | Chemical Inventory and Control Regulation |
| CSCL-ENCS | List of Existing and New Chemical Substances (CSCL-ENCS) |
| DSL | Domestic Substances List (DSL) |
| ECSI | EC Substance Inventory (EINECS, ELINCS, NLP) |
| IECSC | Inventory of Existing Chemical Substances Produced or Imported in China |
| INSQ | National Inventory of Chemical Substances |
| ISHA-ENCS | Inventory of Existing and New Chemical Substances (ISHA-ENCS) |
| KECI | Korea Existing Chemicals Inventory |
| NZIoC | New Zealand Inventory of Chemicals |
| PICCS | Philippine Inventory of Chemicals and Chemical Substances (PICCS) |
| REACH Reg. | REACH registered substances |
| TCSI | Taiwan Chemical Substance Inventory |
| TSCA | Toxic Substance Control Act |

15.2 Chemical Safety Assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information

Indication of changes (revised safety data sheet)

Alignment to regulation:

Restructuring: section 9, section 14

| Section | Former entry (text/value) | Actual entry (text/value) | Safety-relevant |
|---------|-------------------------------------|--|-----------------|
| 2.2 | | Precautionary statements - prevention: change in the listing (table) | yes |
| 2.2 | Precautionary statements - response | | yes |
| 2.2 | | Precautionary statements - response: change in the listing (table) | yes |

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| Section | Former entry (text/value) | Actual entry (text/value) | Safety-relevant |
|---------|---|---|-----------------|
| 2.2 | Hazardous ingredients for labelling: Nickel dinitrate, Nitric acid ...% | Hazardous ingredients for labelling: Nitric acid ...% [C ≤ 70 %] | yes |
| 2.2 | Labelling of packages where the contents do not exceed 125 ml: Signal word: Danger | | yes |
| 2.2 | | Labelling of packages where the contents do not exceed 125 ml: change in the listing (table) | yes |
| 2.2 | | Labelling of packages where the contents do not exceed 125 ml: change in the listing (table) | yes |
| 2.2 | | Labelling of packages where the contents do not exceed 125 ml: change in the listing (table) | yes |
| 2.2 | | Labelling of packages where the contents do not exceed 125 ml: change in the listing (table) | yes |
| 2.2 | contains: Nickel dinitrate, Nitric acid ...% | | yes |

Abbreviations and acronyms

| Abbr. | Descriptions of used abbreviations |
|-----------------|--|
| 2006/15/EC | Commission Directive establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC |
| 2019/983/EU | Directive of the European Parliament and of the Council amending Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work |
| 2022/431/EU | Directive (EU) 2022/431 of the European Parliament and of the Council of 9 March 2022 amending Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work |
| Acute Tox. | Acute toxicity |
| ADN | Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways) |
| ADR | Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road) |
| Aquatic Acute | Hazardous to the aquatic environment - acute hazard |
| Aquatic Chronic | Hazardous to the aquatic environment - chronic hazard |
| ATE | Acute Toxicity Estimate |
| BCF | Bioconcentration factor |
| BOD | Biochemical Oxygen Demand |
| Carc. | Carcinogenicity |
| CAS | Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances) |
| Ceiling-C | Ceiling value |
| CLWR | Control of Lead at Work Regulations |

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| Abbr. | Descriptions of used abbreviations |
|------------|--|
| CLWR-NIR | Control of Lead at Work Regulations (Northern Ireland) |
| COD | Chemical oxygen demand |
| DGR | Dangerous Goods Regulations (see IATA/DGR) |
| DNEL | Derived No-Effect Level |
| EC50 | Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval |
| EC No | The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union) |
| EH40/2005 | EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/) |
| EINECS | European Inventory of Existing Commercial Chemical Substances |
| ELINCS | European List of Notified Chemical Substances |
| EmS | Emergency Schedule |
| ErC50 | ≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control |
| Eye Dam. | Seriously damaging to the eye |
| Eye Irrit. | Irritant to the eye |
| GB REACH | The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/758 (as amended) |
| GHS | "Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations |
| IARC | International Agency for Research on Cancer |
| IATA | International Air Transport Association |
| IATA/DGR | Dangerous Goods Regulations (DGR) for the air transport (IATA) |
| ICAO | International Civil Aviation Organization |
| ICAO-TI | Technical instructions for the safe transport of dangerous goods by air |
| IMDG | International Maritime Dangerous Goods Code |
| IMDG-Code | International Maritime Dangerous Goods Code |
| index No | The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008 |
| IOELV | Indicative occupational exposure limit value |
| LC50 | Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval |
| LD50 | Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval |
| log KOW | n-Octanol/water |
| Met. Corr. | Substance or mixture corrosive to metals |
| M-factor | Means a multiplying factor. It is applied to the concentration of a substance classified as hazardous to the aquatic environment acute category 1 or chronic category 1, and is used to derive by the summation method the classification of a mixture in which the substance is present |
| Muta. | Germ cell mutagenicity |

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| Abbr. | Descriptions of used abbreviations |
|-------------|---|
| NLP | No-Longer Polymer |
| NTP-RoC | National Toxicology Program: Report on Carcinogens |
| OEL | Workplace exposure limit |
| Ox. Liq. | Oxidising liquid |
| Ox. Sol. | Oxidising solid |
| PBT | Persistent, Bioaccumulative and Toxic |
| PNEC | Predicted No-Effect Concentration |
| ppm | Parts per million |
| REACH | Registration, Evaluation, Authorisation and Restriction of Chemicals |
| Repr. | Reproductive toxicity |
| RID | Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail) |
| Skin Corr. | Corrosive to skin |
| Skin Irrit. | Irritant to skin |
| STEL | Short-term exposure limit |
| STOT RE | Specific target organ toxicity - repeated exposure |
| TWA | Time-weighted average |
| VOC | Volatile Organic Compounds |
| vPvB | Very Persistent and very Bioaccumulative |
| WEL | Workplace exposure limit |

Key literature references and sources for data

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). Regulations concerning the International Carriage of Dangerous Goods by Rail (RID). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

Classification procedure

Physical and chemical properties. The classification is based on tested mixture. Health hazards. Environmental hazards. The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

List of relevant phrases (code and full text as stated in section 2 and 3)

| Code | Text |
|------|--|
| H272 | May intensify fire; oxidiser. |
| H290 | May be corrosive to metals. |
| H302 | Harmful if swallowed. |
| H314 | Causes severe skin burns and eye damage. |
| H317 | May cause an allergic skin reaction. |
| H318 | Causes serious eye damage. |

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| Code | Text |
|--------|--|
| H330 | Fatal if inhaled. |
| H331 | Toxic if inhaled. |
| H332 | Harmful if inhaled. |
| H341 | Suspected of causing genetic defects. |
| H350 | May cause cancer. |
| H360Df | May damage the unborn child. Suspected of damaging fertility. |
| H361fd | Suspected of damaging fertility. Suspected of damaging 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. |

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.