

Safety Data Sheet

24 Mix metal standard solution

Version : V2.0.0.1

Report No. : BWB2510-2016-MSDS-EP

Creation Date : 2025/12/17

Revision Date : -



*Prepared in accordance with EU REACH Regulation (REACH 1907/2006 with amendment 2020/878)

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

1.1 Product identifier

| | |
|---------------------------|--------------------------------|
| Product Name | 24 Mix metal standard solution |
| Cat No. | BWB2510-2016 |
| CAS No. | Not applicable |
| EC No. | Not applicable |
| Molecular Formula | Not applicable |
| REACH Registration Number | - |
| UFI | No information available |

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

| | |
|--------------------------|------------------------------|
| Relevant identified uses | Please consult manufacturer. |
| Uses advised against | Please consult manufacturer. |

1.3 Details of the supplier of the Safety Data Sheet

| | |
|------------------------|--|
| Name of the company | Weiyel Inc |
| Address of the company | Hedian Light Industrial Park, Chengguan Town, Shangcheng County, Xinyang City, Henan Province, China |
| Post code | 465350 |
| Telephone number | 010-58103678 |
| Fax number | 010-84840368 |
| E-mail address | info@weiyel.com |

1.4 Emergency telephone number

| | |
|----------------------------|--------------|
| Emergency telephone number | 010-58103678 |
| Opening hours | 24h |

2 Hazards identification

2.1 CLP classification according to Regulation (EC) No. 1272/2008 with amendment 2023/707

| | |
|---|------------|
| Skin corrosion/irritation | Category 1 |
| Serious eye damage/irritation | Category 1 |
| Acute Toxicity - Inhalation | Category 2 |
| Hazardous to the aquatic environment - long-term (chronic) hazard | Category 3 |

2.2 Label elements

| | |
|-------------------|---|
| Hazard pictograms |  |
| Signal word | Danger |

Hazard statements

| | |
|--------|---|
| H314 | Causes severe skin burns and eye damage |
| H318 | Causes serious eye damage |
| H330 | Fatal if inhaled |
| H412 | Harmful to aquatic life with long lasting effects |
| EUH071 | Corrosive to the respiratory tract |

Precautionary statements

◆ Prevention

| | |
|------|--|
| P260 | Do not breathe gas/mist/vapour/spray. |
| P264 | Wash hands and other parts of the body (if related) thoroughly after handling. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P273 | Avoid release to the environment. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P284 | [In case of inadequate ventilation] wear respiratory protection. |

◆ Response

| | |
|----------------|--|
| P310 | Immediately call a POISON CENTER/doctor. |
| P320 | Specific treatment is urgent (see related instructions on the label). |
| P321 | Specific treatment (see related instructions on the label). |
| P363 | Wash contaminated clothing before reuse. |
| P304+P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P301+P330+P331 | IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. |
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower]. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |

◆ Storage

| | |
|-----------|--|
| P405 | Store locked up. |
| P403+P233 | Store in a well-ventilated place. Keep container tightly closed. |

◆ Disposal

| | |
|------|---|
| P501 | Dispose of contents/container in accordance with local/regional/national/international regulations. |
|------|---|

2.3 Other hazards

◆ Results of PBT and vPvB assessment

| Component | Results of PBT and vPvB assessment [according to (EC) No 1907/2006] |
|-----------|---|
| Antimony | Not PBT/vPvB |

| | |
|--------------------|--|
| Aluminium | Not applicable |
| Arsenic | Not applicable |
| Barium | Not applicable |
| Beryllium | Not applicable |
| Cadmium | Not applicable |
| Chromium | Not applicable |
| Cobalt | Not applicable |
| Copper | Not applicable |
| Lead | Not applicable |
| Manganese | Not applicable |
| Molybdenum | Not applicable |
| Nickel | Not applicable |
| Selenium | Not applicable |
| Silver | Not applicable |
| Thallium | Insufficient information, temporarily unable to evaluate |
| Uranium | Insufficient information, temporarily unable to evaluate |
| Vanadium | Not applicable |
| Zinc | Not applicable |
| Bismuth | Not applicable |
| Strontium | Not applicable |
| Tin | Not applicable |
| Lithium | Not applicable |
| Thorium | Insufficient information, temporarily unable to evaluate |
| Nitric acid | Not PBT/vPvB |
| Water | Insufficient information, temporarily unable to evaluate |

◆ Results of endocrine disrupting properties assessment

| Component | Results of endocrine disrupting properties assessment [according to (EU) No 2017/2100 or (EU) No 2018/605] |
|------------------|---|
| Antimony | Insufficient information, temporarily unable to evaluate |
| Aluminium | Insufficient information, temporarily unable to evaluate |
| Arsenic | Insufficient information, temporarily unable to evaluate |
| Barium | Insufficient information, temporarily unable to evaluate |
| Beryllium | Insufficient information, temporarily unable to evaluate |
| Cadmium | Insufficient information, temporarily unable to evaluate |
| Chromium | Insufficient information, temporarily unable to evaluate |
| Cobalt | Insufficient information, temporarily unable to evaluate |
| Copper | Insufficient information, temporarily unable to evaluate |

| | |
|--------------------|--|
| Lead | Insufficient information, temporarily unable to evaluate |
| Manganese | Insufficient information, temporarily unable to evaluate |
| Molybdenum | Insufficient information, temporarily unable to evaluate |
| Nickel | Insufficient information, temporarily unable to evaluate |
| Selenium | Insufficient information, temporarily unable to evaluate |
| Silver | Insufficient information, temporarily unable to evaluate |
| Thallium | Insufficient information, temporarily unable to evaluate |
| Uranium | Insufficient information, temporarily unable to evaluate |
| Vanadium | Insufficient information, temporarily unable to evaluate |
| Zinc | Insufficient information, temporarily unable to evaluate |
| Bismuth | Insufficient information, temporarily unable to evaluate |
| Strontium | Insufficient information, temporarily unable to evaluate |
| Tin | Insufficient information, temporarily unable to evaluate |
| Lithium | Insufficient information, temporarily unable to evaluate |
| Thorium | Insufficient information, temporarily unable to evaluate |
| Nitric acid | Insufficient information, temporarily unable to evaluate |
| Water | Insufficient information, temporarily unable to evaluate |

◆ Other

Not applicable.

3 Composition/information on ingredients

3.1 Substance

Not applicable

3.2 Mixture

| Component | Weight % content(or range) | Classification according to Regulation (EC) No. 1272/2008 with amendment 2023/707 [CLP] | Specific Conc. Limits, M-factors |
|---|----------------------------|--|----------------------------------|
| Antimony CAS : 7440-36-0 EC : 231-146-5 Index No. : - | 0.01 | Not Classified | - |
| Aluminium CAS : 7429-90-5 EC : 231-072-3 Index No. : 013-001-00-6 | 0.01 | Pyrophoric solids, Category 1, H250; Substances and mixtures which, in contact with water, emit flammable gases, Category 2, H261 | - |
| Arsenic CAS : 7440-38-2 EC : 231-148-6 Index No. : 033-001-00-X | 0.01 | Acute Toxicity - Oral, Category 3, H301; Acute Toxicity - Inhalation, Category 3, H331; Hazardous to the aquatic environment - short-term (acute) hazard, Category 1, H400; Hazardous to the aquatic environment - long-term (chronic) hazard, Category 1, H410 | - |
| Barium CAS : 7440-39-3 EC : 231-149-1 Index No. : - | 0.01 | Flammable solids, Category 1, H228; Substances and mixtures which, in contact with water, emit flammable gases, Category 1, H260; Acute Toxicity - Oral, | - |

| | | | |
|---|------|--|-------------------------------------|
| | | Category 3, H301; Skin corrosion/irritation, Category 1, H314; Serious eye damage/irritation, Category 1, H318 | |
| Beryllium CAS : 7440-41-7 EC : 231-150-7 Index No. : 004-001-00-7 | 0.01 | Acute Toxicity - Oral, Category 3, H301; Skin Corrosion/Irritation, Category 2, H315; Sensitization - skin, Category 1, H317; Serious eye damage/irritation, Category 2, H319; Acute Toxicity - Inhalation, Category 2, H330; Specific target organ toxicity - single exposure; respiratory tract irritation, Category 3, H335; Carcinogenicity, Category 1B, H350; Specific target organ toxicity - repeated exposure, Category 1, H372 | - |
| Cadmium CAS : 7440-43-9 EC : 231-152-8 Index No. : 048-002-00-0 | 0.01 | Acute Toxicity - Inhalation, Category 2, H330; Germ cell mutagenicity, Category 2, H341; Carcinogenicity, Category 1B, H350; Reproductive toxicity, Category 2, H361; Specific target organ toxicity - repeated exposure, Category 1, H372; Hazardous to the aquatic environment - short-term (acute) hazard, Category 1, H400; Hazardous to the aquatic environment - long-term (chronic) hazard, Category 1, H410 | - |
| Chromium CAS : 7440-47-3 EC : 231-157-5 Index No. : - | 0.01 | Not Classified | - |
| Cobalt CAS : 7440-48-4 EC : 231-158-0 Index No. : 027-001-00-9 | 0.01 | Sensitization - skin, Category 1, H317; Sensitization - respiratory, Category 1, H334; Germ cell mutagenicity, Category 2, H341; Carcinogenicity, Category 1B, H350; Reproductive toxicity, Category 1B, H360; Hazardous to the aquatic environment - long-term (chronic) hazard, Category 4, H413 | - |
| Copper CAS : 7440-50-8 EC : 231-159-6 Index No. : 029-026-00-0 | 0.01 | Hazardous to the aquatic environment - short-term (acute) hazard, Category 1, H400; Hazardous to the aquatic environment - long-term (chronic) hazard, Category 1, H410 | M=10;M(Chronic)=1 |
| Lead CAS : 7439-92-1 EC : 231-100-4 Index No. : 082-013-00-1 | 0.01 | Reproductive toxicity, Category 1A, H360; Reproductive Toxicity - effects on or via lactation, Additional, H362; Hazardous to the aquatic environment - short-term (acute) hazard, Category 1, H400; Hazardous to the aquatic environment - long-term (chronic) hazard, Category 1, H410 | H360A:C ≥ 0.03%;M=10;M(Chronic)=100 |
| Manganese CAS : 7439-96-5 EC : 231-105-1 Index No. : - | 0.01 | Not Classified | - |
| Molybdenum CAS : 7439-98-7 EC : 231-107-2 Index No. : - | 0.01 | Not Classified | - |
| Nickel CAS : 7440-02-0 EC : 231-111-4 Index No. : 028-002-00-7 | 0.01 | Sensitization - skin, Category 1, H317; Carcinogenicity, Category 2, H351; Specific target organ toxicity - repeated exposure, Category 1, H372 | - |

| | | | |
|--|------|---|---|
| Selenium CAS : 7782-49-2 EC : 231-957-4 Index No. : 034-001-00-2 | 0.01 | Acute Toxicity - Oral, Category 3, H301; Acute Toxicity - Inhalation, Category 3, H331; Specific target organ toxicity - repeated exposure, Category 2, H373; Hazardous to the aquatic environment - long-term (chronic) hazard, Category 4, H413 | - |
| Silver CAS : 7440-22-4 EC : 231-131-3 Index No. : 047-004-00-9 | 0.01 | Reproductive toxicity, Category 2, H361; Specific target organ toxicity - repeated exposure, Category 2, H373 | - |
| Thallium CAS : 7440-28-0 EC : 231-138-1 Index No. : 081-001-00-3 | 0.01 | Acute Toxicity - Oral, Category 2, H300; Acute Toxicity - Inhalation, Category 2, H330; Specific target organ toxicity - repeated exposure, Category 2, H373; Hazardous to the aquatic environment - long-term (chronic) hazard, Category 4, H413 | - |
| Uranium CAS : 7440-61-1 EC : 231-170-6 Index No. : 092-001-00-8 | 0.01 | Acute Toxicity - Oral, Category 2, H300; Acute Toxicity - Inhalation, Category 2, H330; Specific target organ toxicity - repeated exposure, Category 2, H373; Hazardous to the aquatic environment - long-term (chronic) hazard, Category 4, H413 | - |
| Vanadium CAS : 7440-62-2 EC : 231-171-1 Index No. : - | 0.01 | Not Classified | - |
| Zinc CAS : 7440-66-6 EC : 231-175-3 Index No. : 030-001-00-1 | 0.01 | Pyrophoric solids, Category 1, H250; Substances and mixtures which, in contact with water, emit flammable gases, Category 1, H260; Hazardous to the aquatic environment - short-term (acute) hazard, Category 1, H400; Hazardous to the aquatic environment - long-term (chronic) hazard, Category 1, H410 | - |
| Bismuth CAS : 7440-69-9 EC : 231-177-4 Index No. : - | 0.01 | Not Classified | - |
| Strontium CAS : 7440-24-6 EC : 231-133-4 Index No. : - | 0.01 | Substances and mixtures which, in contact with water, emit flammable gases, Category 1, H260; Skin corrosion/irritation, Category 1A, H314; Serious eye damage/irritation, Category 1, H318; Reproductive toxicity, Category 1B, H360 | - |
| Tin CAS : 7440-31-5 EC : 231-141-8 Index No. : - | 0.01 | Not Classified | - |
| Lithium CAS : 7439-93-2 EC : 231-102-5 Index No. : 003-001-00-4 | 0.01 | Substances and mixtures which, in contact with water, emit flammable gases, Category 1, H260; Skin corrosion/irritation, Category 1B, H314; Reacts violently with water, EUH014 | - |
| Thorium CAS : 7440-29-1 EC : 231-139-7 Index No. : - | 0.01 | Acute Toxicity - Oral, Category 4, H302; Skin Corrosion/Irritation, Category 2, H315; Serious eye damage/irritation, Category 2, H319; Specific target organ toxicity - single exposure; respiratory tract irritation, Category 3, H335; Specific target | - |

| | | | |
|---|-------|--|-------------------------------------|
| | | organ toxicity - repeated exposure, Category 2, H373 | |
| Nitric acid CAS : 7697-37-2 EC : 231-714-2 Index No. : 007-004-00-1 | 9.18 | Oxidizing liquids, Category 2, H272; Skin corrosion/irritation, Category 1A, H314; Acute Toxicity - Inhalation, Category 1, H330; Corrosive to the respiratory tract, EUH071 | H272Y2:C ≥ 99% H272Y3:70% ≤ C < 99% |
| Water CAS : 7732-18-5 EC : 231-791-2 Index No. : - | 90.58 | Not Classified | - |

4 First-aid measures

4.1 Description of first aid measures

| | |
|-----------------------------------|---|
| General advice | Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance. |
| Eye contact | Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable. |
| Skin contact | Take off contaminated clothing and shoes immediately. Wash off with plenty of soap and water for at least 15 minutes and consult a physician if feel uncomfortable. |
| Ingestion | Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately. |
| Inhalation | Move victim into fresh air. If breathing is difficult, give oxygen. Do not use mouth to mouth resuscitation if victim ingested or inhaled the substance. If not breathing, give artificial respiration and consult a physician immediately. |
| Protecting of first-aiders | Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination. |

4.2 Most important symptoms/effects, acute and delayed

| | |
|---|--|
| 1 | Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. |
|---|--|

4.3 Indication of any immediate medical attention and special treatment needed

| | |
|---|--------------------------|
| 1 | Treat symptomatically. |
| 2 | Symptoms may be delayed. |

5 Fire-fighting measures

5.1 Extinguishing media

| | |
|---------------------------------------|--|
| Suitable extinguishing media | Small fire: dry chemical, CO ₂ or water spray; Large fire: dry chemical, CO ₂ , alcohol-resistant foam or water spray; Fire involving tanks, rail tank cars or highway tanks: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Do not get water inside containers. |
| Unsuitable extinguishing media | No information available. |

5.2 Specific hazards arising from the substance or mixture

| | |
|---|---|
| 1 | Fire may produce irritating, poisonous or corrosive gases. |
| 2 | Development of hazardous combustion gases or vapor possible in the event of fire. |
| 3 | May expansion or decompose explosively when heated or involved in fire. |

5.3 Advice for firefighters

| | |
|---|--|
| 1 | As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear. |
| 2 | Fight fire from a safe distance, with adequate cover. |
| 3 | Prevent fire extinguishing water from contaminating surface water or the ground water system. |

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

| | |
|---|---|
| 1 | Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. |
| 2 | Do not touch or walk through spilled material. |
| 3 | Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. |
| 4 | Use personal protective equipment, do not breathe gas/mist/vapour/spray. |
| 5 | Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges. |
| 6 | Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. |

6.2 Environmental precautions

| | |
|---|---|
| 1 | Prevent further leakage or spillage if safe to do so. |
| 2 | Discharge into the environment must be avoided. |

6.3 Methods and materials for containment and cleaning up

| | |
|---|---|
| 1 | Do not touch or cross spills. |
| 2 | It is recommended that emergency personnel wear a self-contained breathing apparatus with positive pressure and wear anti-corrosion clothing. |
| 3 | Transfer to a tank truck or special collector with a corrosion-resistant pump. |
| 4 | Do not touch broken containers and spills before putting on appropriate protective clothing. |
| 5 | Cut off the source of the leak as much as possible. |
| 6 | Keep leaks in a ventilated place. |
| 7 | Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding. |
| 8 | Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. |
| 9 | Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container. |

6.4 Reference to other sections

| | |
|---|--|
| 1 | Personal Protective Equipment advice is contained in Section 8 of the SDS. |
| 2 | Disposal considerations advice is contained in Section 13 of the SDS. |

7 Handling and storage

7.1 Precautions for safe handling

◆ Protective measures

| | |
|---|---|
| 1 | Handling is performed in a well ventilated place. |
| 2 | Wear suitable protective equipment. |
| 3 | Avoid contact with skin and eyes. |

◆ Measures to prevent fire

| | |
|---|---|
| 1 | Keep away from heat/sparks/open flames/ hot surfaces. |
|---|---|

◆ Measures to prevent aerosol and dust generation

| | |
|--|---|
| 1 | Not applicable. |
| ◆ Advice on general occupational hygiene | |
| 1 | Wash hands and face after using the substances. |
| 2 | Replace the contaminated clothing immediately. |

7.2 Conditions for safe storage, including any incompatibilities

| | |
|---|--|
| 1 | Keep containers tightly closed. |
| 2 | Keep containers in a dry, cool and well-ventilated place. |
| 3 | Keep away from heat/sparks/open flames/hot surfaces. |
| 4 | Store away from incompatible materials and foodstuff containers. |

7.3 Specific end use(s)

| | |
|---|--|
| 1 | In addition to use mentioned in the Section 1.2, unforeseen other specific end uses. |
|---|--|

8 Exposure controls/personal protection

8.1 Control parameters

◆ Occupational exposure limit values

| Component | Country/Region | Limit value - Eight hours | | Limit value - Short term | |
|-----------|---|---------------------------|---|--------------------------|---------------------|
| | | ppm | mg/m ³ | ppm | mg/m ³ |
| Antimony | Japan - JSOH(2024–2025) | - | 0.1 | - | - |
| | Permissible exposure standards for workers in the workplace | - | 0.5 | - | 1.5 |
| | France | - | 0.5 | - | - |
| | United Kingdom | - | 0.5 | - | - |
| | Austria | - | 0.5 | - | 1.5 |
| | Belgium | - | 0.5 | - | - |
| Aluminium | Japan - JSOH(2024–2025) | - | 0.5(respirable dust) | - | - |
| | Japan - JSOH(2024–2025) | - | 2(total dust) | - | - |
| | Permissible exposure standards for workers in the workplace | - | 5(respirable dust) | - | 10(respirable dust) |
| | France | - | 10(inhalable aerosol) | - | - |
| | Germany (DFG) | - | 4 | - | - |
| | United Kingdom | - | 10(inhalable fraction);4(respirable fraction) | - | - |
| Arsenic | Japan - | - | 0.003(individ | - | - |

| | | | | | |
|------------------|---|---|--|---|------------------------|
| | JSOH(2024–2025) | | ual excess lifetime risk of cancer 10^{-3}) | | |
| | Permissible exposure standards for workers in the workplace | - | 0.01(as As) | - | 0.03(as As) |
| | Germany (AGS) | - | 0.0083 | - | 0.066 |
| | United Kingdom | - | 0.1 | - | - |
| | Austria | - | 0.1(inhalable aerosol) | - | 0.4(inhalable aerosol) |
| | Belgium | - | 0.01 | - | - |
| Barium | Permissible exposure standards for workers in the workplace | - | 0.5 | - | 1.5 |
| | European Union | - | 0.5 | - | - |
| | France | - | 0.5 | - | - |
| | Germany (AGS) | - | 0.5(inhalable aerosol) | - | 0.5(inhalable aerosol) |
| | Germany (DFG) | - | 0.5 | - | 4 |
| | Italy | - | 0.5 | - | - |
| Beryllium | Japan - JSOH(2024–2025) | - | 0.002 | - | - |
| | Permissible exposure standards for workers in the workplace | - | 0.002(as Be) | - | 0.006(as Be) |
| | European Union | - | 0.0002 | - | - |
| | France | - | 0.0006 | - | - |
| | Germany (AGS) | - | 0.00006 | - | 0.00006 |
| | Italy | - | 0.0002 | - | - |
| Cadmium | Japan - JSOH(2024–2025) | - | 0.05 | - | - |
| | Permissible exposure standards for workers in the workplace | - | 0.05(as Cd) | - | 0.15(as Cd) |
| | European Union | - | 0.001 | - | - |
| | France | - | 0.05 | - | - |
| | Germany (AGS) | - | 0.002 | - | 0.016 |
| | Italy | - | 0.001 | - | - |
| Chromium | Japan - JSOH(2024–2025) | - | 0.5 | - | - |

| | | | | | |
|------------------|---|---|--------------------------------|---|---------------------|
| | Permissible exposure standards for workers in the workplace | - | 1 | - | 2 |
| | European Union | - | 2 | - | - |
| | France | - | 2 | - | - |
| | Germany (AGS) | - | 2 | - | 2 |
| | Italy | - | 0.5 | - | - |
| Cobalt | Japan - JSOH(2024-2025) | - | 0.05 | - | - |
| | Permissible exposure standards for workers in the workplace | - | 0.05(dust and fume) | - | 0.15(dust and fume) |
| | Germany (AGS) | - | 0.005 | - | 0.04 |
| | United Kingdom | - | 0.1 | - | - |
| | Austria | - | 0.1 | - | 0.4 |
| | Belgium | - | 0.02 | - | - |
| Copper | Permissible exposure standards for workers in the workplace | - | 1(dust and mist) | - | 2(dust and mist) |
| | Permissible exposure standards for workers in the workplace | - | 0.2(fume) | - | 0.6(fume) |
| | France | - | 0.2(fume, respirable fraction) | - | - |
| | Germany (DFG) | - | 0.01 | - | 0.02 |
| | United Kingdom | - | 1(dusts and mists) | - | 2 |
| | Austria | - | 1(inhalable aerosol) | - | - |
| Lead | Japan - JSOH(2024-2025) | - | 0.03(as Pb) | - | - |
| | Permissible exposure standards for workers in the workplace | - | 0.05 | - | 0.15 |
| | European Union | - | 0.15 | - | - |
| | France | - | 0.1(inhalable aerosol) | - | - |
| | Germany (AGS) | - | 0.15 | - | - |
| | Germany (DFG) | - | 0.004 | - | 0.032 |
| Manganese | Japan - JSOH(2024-2025) | - | 0.02(respirable particles, as | - | - |

| | | | | | |
|-------------------|---|---|-------------------------------------|---|----------------------------|
| | 5) | | Mn) | | |
| | Japan - JSOH(2024-2025) | - | 0.1(total particulate, as Mn) | - | - |
| | Permissible exposure standards for workers in the workplace | - | 1(fume) | - | 2(fume) |
| | European Union | - | 0.2 | - | - |
| | France | - | 0.2 | - | - |
| | Germany (AGS) | - | 0.02 | - | 0.16 |
| Molybdenum | France | - | 5 | - | 10 |
| | Austria | - | 15(inhalable aerosol) | - | 30(inhalable aerosol) |
| | Denmark | - | 10 | - | 20 |
| | Finland | - | 0.5 | - | - |
| | Hungary | - | 10 | - | - |
| | Ireland | - | 10 | - | - |
| Nickel | Japan - JSOH(2024-2025) | - | 1 | - | - |
| | Permissible exposure standards for workers in the workplace | - | 1 | - | 2 |
| | France | - | 1 | - | - |
| | Germany (AGS) | - | 0.006 | - | 0.048 |
| | United Kingdom | - | - | - | 3 |
| | Austria | - | 0.5 | - | 2 |
| | | | | | |
| Selenium | Japan - JSOH(2024-2025) | - | 0.1 | - | - |
| | Permissible exposure standards for workers in the workplace | - | 0.2(as Se) | - | 0.6(as Se) |
| | Germany (AGS) | - | 0.05(inhalable aerosol) | - | 0.05(inhalable aerosol) |
| | Germany (DFG) | - | 0.02 | - | 0.16 |
| | United Kingdom | - | 0.1 | - | - |
| | Austria | - | 0.1(inhalable aerosol) | - | 0.3(inhalable aerosol) |
| | | | | | |
| Silver | Japan - JSOH(2024-2025) | - | 0.01 | - | - |
| | European Union | - | 0.1 | - | - |
| | France | - | 0.1 | - | - |

| | | | | | |
|-----------------|---|---|-------------------------|-----|-------------------------|
| | Germany (AGS) | - | 0.1(inhalable aerosol) | - | 0.8(inhalable aerosol) |
| | Germany (DFG) | - | 0.1 | - | 0.8 |
| | Italy | - | 0.1 | - | - |
| Thallium | France | - | 0.1 | - | - |
| | United Kingdom | - | 0.1 | - | - |
| | Austria | - | 0.1(inhalable aerosol) | - | 1(inhalable aerosol) |
| | Belgium | - | 0.02 | - | - |
| | Denmark | - | 0.1 | - | 0.2 |
| | Finland | - | 0.1 | - | - |
| | Uranium | Permissible exposure standards for workers in the workplace | - | 0.2 | - |
| Germany (DFG) | | - | 0.2 | - | 0.4 |
| Austria | | - | 0.25(inhalable aerosol) | - | 1(inhalable aerosol) |
| Belgium | | - | 0.2 | - | 0.6 |
| Denmark | | - | 0.2 | - | 0.4 |
| Finland | | - | 0.2 | - | - |
| Vanadium | Germany (DFG) | - | 0.005 | - | 0.01 |
| | Austria | - | 0.5(inhalable aerosol) | - | 1(inhalable aerosol) |
| | Latvia | - | 1 | - | - |
| | New Zealand | - | 0.05 | - | - |
| | Norway | - | 0.2 | - | 0.05 |
| | Romania | - | 0.05 | - | 0.1 |
| Zinc | Germany (DFG) | - | 2 | - | 4 |
| | Switzerland | - | 0.1(respirable aerosol) | - | 0.4(respirable aerosol) |
| Tin | Permissible exposure standards for workers in the workplace | - | 2 | - | 4 |
| | Italy | - | 2 | - | - |
| | United Kingdom | - | 2 | - | 4 |
| | Austria | - | 2(inhalable aerosol) | - | 4(inhalable aerosol) |
| | Belgium | - | 2 | - | - |
| | Denmark | - | 0.1 | - | 0.2 |
| Lithium | Germany (AGS) | - | 0.2 | - | 0.2 |
| | Germany (DFG) | - | 0.2 | - | 0.2 |
| | Sweden | - | - | - | 0.02 |

| | | | | | |
|--------------------|---|---|------|---|------|
| | Switzerland | - | 0.2 | - | 0.2 |
| Thorium | Romania | - | 0.02 | - | 0.05 |
| Nitric acid | Japan - JSOH(2024–2025) | 2 | 5.2 | - | - |
| | Permissible exposure standards for workers in the workplace | 2 | 5.2 | 4 | 10.4 |
| | European Union | - | - | 1 | 2.6 |
| | France | - | - | 1 | 2.6 |
| | Germany (AGS) | - | - | 1 | 2.6 |
| | Italy | - | - | 1 | 2.6 |

◆ Biological limit values

| Component | Standard | Biological monitoring index | Biological limits value | Sampling time | Remark |
|-----------------|------------|--|-------------------------|----------------------------------|--------|
| Arsenic | USA -ACGIH | Inorganic arsenic, plus methylated metabolites, as As(Creatinine in urine) | 15µg/g | End of work week | |
| | | Inorganic arsenic, plus methylated metabolites, as As(Creatinine in urine) | 15µg/g | End of shift | |
| Cadmium | SCOEL(EU) | Cd | 2 µg/g creatinine | Not strictly regulated | |
| | | Cadmium(Creatinine in urine) | 5µg/g | Not critical | |
| | | Cadmium(Blood) | 5µg/L | Not critical | |
| Chromium | USA -ACGIH | Total chromium(Urine) | 0.7µg/L | End of shift at end of work week | |
| Cobalt | USA -ACGIH | Cobalt(Urine) | 15µg/L | End of shift at end of work week | |
| Lead | SCOEL(EU) | Not strictly regulated | 0.3mg/L | Not strictly regulated | |
| | | Lead(Blood) | 200µg/L | Not critical | |
| Nickel | USA -ACGIH | Nickel(Urine) | 5µg/L | End of shift at end of work week | |
| Uranium | USA -ACGIH | Uranium(Urine) | 200µg/L | End of shift | |

◆ Monitoring methods

| | |
|---|---|
| 1 | EN 14042 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents. |
| 2 | GBZ/T 300 and GBZ/T 160 series standard Determination of toxic substances in workplace air. |

◆ Derived No effect level (DNEL)

| Component | Route of exposure | DNEL for Workers | | | |
|-------------------|-------------------|-----------------------|--------------------------|-------------------------|----------------------------|
| | | Acute effects (local) | Acute effects (systemic) | Chronic effects (local) | Chronic effects (systemic) |
| Antimony | Inhalation | No data available | No data available | 0.263 mg/m ³ | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Aluminium | Inhalation | No data available | No data available | 3.72 mg/m ³ | 3.72 mg/m ³ |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Arsenic | Inhalation | No data available | No data available | No data available | 0.004 mg/m ³ |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Barium | Inhalation | No data available | No data available | No data available | 5.8 mg/m ³ |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Beryllium | Inhalation | No data available | No data available | No data available | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Cadmium | Inhalation | No data available | No data available | 0.004 mg/m ³ | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Chromium | Inhalation | No data available | No data available | 0.5 mg/m ³ | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Cobalt | Inhalation | No data available | No data available | 0.04 mg/m ³ | 0.0541 mg/m ³ |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Copper | Inhalation | No data available | No data available | No data available | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Lead | Inhalation | No data available | No data available | No data available | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Manganese | Inhalation | No data available | No data available | No data available | 0.0101 mg/m ³ |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Molybdenum | Inhalation | No data available | No data available | No data available | 11.17 mg/m ³ |

| | | | | | |
|------------------|------------|-------------------|-------------------|-------------------------|-------------------------|
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Nickel | Inhalation | No data available | No data available | No data available | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Selenium | Inhalation | No data available | No data available | No data available | 0.05 mg/m ³ |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Silver | Inhalation | No data available | No data available | 0.008 mg/m ³ | 0.008 mg/m ³ |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Thallium | Inhalation | No data available | No data available | No data available | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Uranium | Inhalation | No data available | No data available | No data available | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Vanadium | Inhalation | No data available | No data available | No data available | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Zinc | Inhalation | No data available | No data available | No data available | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Bismuth | Inhalation | No data available | No data available | No data available | 13.1 mg/m ³ |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Strontium | Inhalation | No data available | No data available | No data available | 1.16 mg/m ³ |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Tin | Inhalation | No data available | No data available | No data available | 71 mg/m ³ |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Lithium | Inhalation | No data available | No data available | No data available | 4.2 mg/m ³ |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Thorium | Inhalation | No data available | No data available | No data available | No data available |
| | Oral | No data available | No data available | No data available | No data available |

| | | | | | |
|--------------------|------------|-------------------|-------------------|-------------------|-------------------|
| | Dermal | No data available | No data available | No data available | No data available |
| Nitric acid | Inhalation | No data available | No data available | No data available | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |
| Water | Inhalation | No data available | No data available | No data available | No data available |
| | Oral | No data available | No data available | No data available | No data available |
| | Dermal | No data available | No data available | No data available | No data available |

◆ Predicted No Effect Concentration (PNEC)

| Component | A | B | C | D | E | F | G | H |
|-------------------|-------------------|-------------------|-------------------|------------------------------|------------------------------|----------------------|---------------------------|----------------------------------|
| Antimony | 113 µg/L | 11.3 µg/L | 2.55 mg/L | 11.2 mg/kg sediment dw | 2.24 mg/kg sediment dw | No hazard identified | 37 mg/kg soil dw | No potential for bioaccumulation |
| Aluminium | No data available | No data available | 20 mg/L | No data available | No data available | No hazard identified | No data available | No data available |
| Arsenic | 5.6 µg/L | 4.7 µg/L | 61 µg/L | 70.5 mg/kg sediment dw | 35.7 mg/kg sediment dw | No hazard identified | 2.9 mg/kg soil dw | 1 mg/kg food |
| Barium | 114.7 µg/L | No data available | 62.2 mg/L | 598.9 mg/kg sediment dw | No hazard identified | No hazard identified | 207.7 mg/kg soil dw | No potential for bioaccumulation |
| Cadmium | 190 ng/L | 1.14 µg/L | 20 µg/L | 1.8 mg/kg sediment dw | 640 µg/kg sediment dw | No hazard identified | 900 µg/kg soil dw | 160 µg/kg food |
| Chromium | 6.5 µg/L | No data available | No data available | 205.7 mg/kg sediment dw | No data available | No hazard identified | 21.1 mg/kg soil dw | No potential for bioaccumulation |
| Cobalt | 1.06 µg/L | 2.36 µg/L | 370 µg/L | 53.8 mg/kg sediment dw | 69.8 mg/kg sediment dw | No hazard identified | 10.9 mg/kg soil dw | No potential for bioaccumulation |
| Copper | 6.3 µg/L | 5.2 µg/L | 230 µg/L | 87 mg/kg sediment dw | 676 mg/kg sediment dw | No hazard identified | 65 mg/kg soil dw | No potential for bioaccumulation |
| Lead | 2.4 µg/L | 3.3 µg/L | 100 µg/L | 186 mg/kg sediment dw | 168 mg/kg sediment dw | No hazard identified | 212 mg/kg soil dw | 10.9 mg/kg food |
| Manganese | 22 - 34 µg/L | 2.2 - 3.4 µg/L | 100 mg/L | 108 - 3300 µg/kg sediment dw | 10.8 - 340 µg/kg sediment dw | No hazard identified | 8.74 - 3400 µg/kg soil dw | No potential for bioaccumulation |
| Molybdenum | 11.9 mg/L | 2.28 mg/L | 21.7 mg/L | 21200 mg/kg | 2370 mg/kg | No hazard | 9.9 mg/kg | No potential |

| | | | | sediment dw | sediment dw | identified | soil dw | for bioaccumulation |
|--------------------|----------------------|----------------------|----------------------|------------------------------|------------------------------|----------------------|--------------------------|----------------------------------|
| Selenium | 2.67 µg/L | 2 µg/L | 1.5 mg/L | 8.2 mg/kg sediment dw | 6.2 mg/kg sediment dw | No hazard identified | 44 - 100 µg/kg soil dw | 1 mg/kg food |
| Silver | 40 ng/L | 860 ng/L | 25 µg/L | 438.13 mg/kg sediment dw | 438.13 mg/kg sediment dw | No hazard identified | 1.41 mg/kg soil dw | No potential for bioaccumulation |
| Vanadium | 17.8 µg/L | 2.5 µg/L | 450 µg/L | 563 mg/kg sediment dw | 79 mg/kg sediment dw | No hazard identified | 7.2 mg/kg soil dw | 167 µg/kg food |
| Zinc | 14.4 µg/L | 7.2 µg/L | 100 µg/L | 146.9 mg/kg sediment dw | 162.2 mg/kg sediment dw | No hazard identified | 83.1 mg/kg soil dw | No potential for bioaccumulation |
| Bismuth | No data available | No data available | 17.5 mg/L | No data available | No data available | No data available | No data available | No data available |
| Strontium | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No potential for bioaccumulation |
| Tin | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No potential for bioaccumulation |
| Lithium | 1.65 mg/L | 165 µg/L | 22.94 mg/L | 6.6 - 44.2 mg/kg sediment dw | 660 - 4420 µg/kg sediment dw | No hazard identified | 260 - 6290 µg/kg soil dw | No potential for bioaccumulation |
| Nitric acid | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No hazard identified | No potential for bioaccumulation |

Note 1:

A: Freshwater; B: Seawater; C: Sewage treatment plant; D: Sediment (freshwater); E: Sediment (seawater); F: Air; G: Soil; H: Secondary poisoning(Hazard for Predators).

Note 2:

The PNEC values of the remaining components not shown in the product are not available yet.

8.2 Exposure controls

8.2.1 Engineering controls

| | |
|---|--|
| 1 | Ensure adequate ventilation, especially in confined areas. |
| 2 | Ensure that eyewash stations and safety showers are close to the workstation location. |
| 3 | Use explosion-proof electrical/ventilating/lighting/equipment. |
| 4 | Set up emergency exit and necessary risk-elimination area. |

8.2.2 Personal protection equipment

| | |
|--------------------------|--|
| General requirement |  |
| Eye protection | Must wear appropriate anti-corrosion goggles. |
| Hand protection | Must wear acid and alkali resistant chemical protective gloves. |
| Respiratory protection | Must wear appropriate personal dust proof gas mask. |
| Skin and body protection | Must wear acid and alkali resistant chemical protective clothing. |

8.2.3 Environmental exposure controls

| | |
|---------------------------------|--------------------------|
| Environmental exposure controls | No information available |
|---------------------------------|--------------------------|

9 Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | |
|---|---|
| Physical state | Light blue liquid |
| Colour | Light blue liquid |
| Odor | No information available |
| Odor threshold | No information available |
| pH | ≤2 (Nitric acid) |
| Melting point/freezing point(°C) | -41.6 (Nitric acid) |
| Initial boiling point and boiling range(°C) | 121 (Nitric acid) |
| Flash point(Closed cup,°C) | No information available |
| Evaporation rate | No information available |
| Flammability | No information available |
| Upper/lower explosive limits[%(v/v)] | Upper limit : No information available ; Lower limit : No information available |
| Vapor pressure | 6.4kPa (20°C ,Nitric acid) |
| Vapor density(Air = 1) | 2.2 (Nitric acid) |
| Relative density(Water=1) | 1.4 (Nitric acid) |
| Solubility | 500000mg/L (20 °C,Nitric acid) |
| n-octanol/water partition coefficient | -0.21 (Nitric acid) |
| Auto-ignition temperature(°C) | No information available |
| Decomposition temperature(°C) | No information available |
| Kinematic viscosity | No information available |
| Explosive properties | No information available |
| Oxidizing properties | No information available |
| Particle characteristics | Not applicable |

9.2 Other information

9.2.1 Information with regard to physical hazard classes

| | |
|--|--------------------------|
| Information with regard to physical hazard classes | No information available |
|--|--------------------------|

9.2.2 Other safety characteristics

| | |
|------------------------------|--------------------------|
| Other safety characteristics | No information available |
|------------------------------|--------------------------|

10 Stability and reactivity

Stability and reactivity

| | |
|---|--|
| 10.1 Reactivity | Contact with incompatible substances can cause decomposition or other chemical reactions. |
| 10.2 Chemical stability | Stable under proper operation and storage conditions. |
| 10.3 Possibility of hazardous reactions | Reacts severely with halogens, interhalogens or other strong oxidants, or causes a fire. Ultrafine powder will self-ignite in the air at room temperature. Mixtures with metallic acetylene, when heated, cause a fire or incandescence. May burn continuously in carbon dioxide. May be oxidized quickly when exposed to air. In contact with active metals (alkali metals, Na, Ca etc.) causes a reaction and release hydrogen. |
| 10.4 Conditions to avoid | Incompatible materials, heat, flame and spark. |
| 10.5 Incompatible materials | Halogen, interhalogen, strong oxidant, water and acids. Oxidants, halogen, interhalogen and mercury. Metal acetylide, halogen, interhalogen, halogen oxides, nitric acid, nitrous oxide, nitrates, nitrites, halogen oxyacid salts, chromates, permanganates, inorganic peroxides, metal oxides and peroxyformic acid. Water, carbon dioxide, oxidants, halogen, interhalogen and mercury. Water, carbon dioxide, halocarbon, halogen, interhalogen, metal halide, non-metal oxides, acids, mercury and hydrazine. Alkali, sodium, calcium, and other active metal, halogen, metal oxide, nonmetal oxide, acyl halide and metal phosphide. |
| 10.6 Hazardous decomposition products | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |

11 Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008 with amendment 2023/707

| 24 Mix metal standard solution | |
|--------------------------------|--|
| Skin corrosion/irritation | Causes severe skin burns and eye damage(Category 1) |
| Serious eye damage/irritation | Causes serious eye damage(Category 1) |
| Skin sensitization | Based on available data, the classification criteria are not met |
| Respiratory sensitization | 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 |
| Germ cell mutagenicity | Based on available data, the classification criteria are not met |

Acute toxicity

| Component | LD ₅₀ (oral) | LD ₅₀ (dermal) | LC ₅₀ (inhalation,4h) |
|-----------|-------------------------|---------------------------|----------------------------------|
| Antimony | 7000mg/kg(Rat) | No information available | No information available |
| Bismuth | 5000mg/kg(Rat) | No information available | No information available |
| Selenium | 6700mg/kg(Rat) | No information available | 5.67mg/L(Rat) |
| Cobalt | 6171mg/kg(Rat) | No information available | No information available |
| Arsenic | 763mg/kg(Rat) | No information available | No information available |

| | | | |
|------------------|----------------|--------------------------|--------------------------|
| Manganese | 9000mg/kg(Rat) | No information available | No information available |
| Cadmium | 2330mg/kg(Rat) | No information available | No information available |

| Carcinogenicity

| Component | List of carcinogens by the IARC Monographs | Report on Carcinogens by NTP |
|--------------------|---|-------------------------------------|
| Antimony | Not Listed | Not Listed |
| Aluminium | Not Listed | Not Listed |
| Arsenic | Category 1 | Category K |
| Barium | Not Listed | Not Listed |
| Beryllium | Category 1 | Category K |
| Cadmium | Category 1 | Category K |
| Chromium | Category 3 | Not Listed |
| Cobalt | Category 2A | Category R |
| Copper | Not Listed | Not Listed |
| Lead | Category 2B | Category R |
| Manganese | Not Listed | Not Listed |
| Molybdenum | Not Listed | Not Listed |
| Nickel | Category 2B | Category R |
| Selenium | Category 3 | Not Listed |
| Silver | Not Listed | Not Listed |
| Thallium | Not Listed | Not Listed |
| Uranium | Not Listed | Not Listed |
| Vanadium | Not Listed | Not Listed |
| Zinc | Not Listed | Not Listed |
| Bismuth | Not Listed | Not Listed |
| Strontium | Not Listed | Not Listed |
| Tin | Not Listed | Not Listed |
| Lithium | Not Listed | Not Listed |
| Thorium | Category 1 | Not Listed |
| Nitric acid | Not Listed | Not Listed |
| Water | Not Listed | Not Listed |

| 11.2 Information on other hazards

| 11.2.1 Endocrine disrupting properties

| Component | Endocrine disrupting properties |
|------------------|--|
| Antimony | No information available |
| Aluminium | No information available |
| Arsenic | No information available |

| | |
|--------------------|--------------------------|
| Barium | No information available |
| Beryllium | No information available |
| Cadmium | No information available |
| Chromium | No information available |
| Cobalt | No information available |
| Copper | No information available |
| Lead | No information available |
| Manganese | No information available |
| Molybdenum | No information available |
| Nickel | No information available |
| Selenium | No information available |
| Silver | No information available |
| Thallium | No information available |
| Uranium | No information available |
| Vanadium | No information available |
| Zinc | No information available |
| Bismuth | No information available |
| Strontium | No information available |
| Tin | No information available |
| Lithium | No information available |
| Thorium | No information available |
| Nitric acid | No information available |
| Water | No information available |

11.2.2 Other Information

| | |
|-------------------|------------------|
| Other Information | See Section 11.1 |
|-------------------|------------------|

12 Ecological information

12.1 Toxicity

Acute aquatic toxicity

| Component | Fish | Crustaceans | Algae or other aquatic plants |
|-----------------|---|---|---|
| Lead | LC ₅₀ : 2.8mg/L (96h)(Fish) | No information available | No information available |
| Bismuth | LC ₅₀ : 100mg/L (96h)(Fish) | EC ₅₀ : > 100mg/L (48h)(Crustaceans) | No information available |
| Selenium | LC ₅₀ : 2.06mg/L (96h)(Fish) | No information available | ErC ₅₀ : 96mg/L (96h)(Algae) |
| Arsenic | LC ₅₀ : 12.6mg/L (96h)(Fish) | No information available | ErC ₅₀ : 25.2mg/L (72h)(Algae) |
| Zinc | LC ₅₀ : 2.01mg/L (96h)(Fish) | EC ₅₀ : 1.33mg/L (48h)(Crustaceans) | No information available |

| | | | |
|-------------------|--|---|---|
| Tin | LC ₅₀ : > 0.0124mg/L (96h)(Fish) | No information available | No information available |
| Silver | LC ₅₀ : 0.0012mg/L (96h)(Fish) | EC ₅₀ : 0.0092mg/L (48h)(Crustaceans) | ErC ₅₀ : 0.00198mg/L (96h)(Algae) |
| Thallium | LC ₅₀ : 21mg/L (96h)(Fish) | No information available | ErC ₅₀ : 0.13mg/L (96h)(Algae) |
| Molybdenum | LC ₅₀ : 609.1mg/L (96h)(Fish) | No information available | No information available |
| Vanadium | LC ₅₀ : 0.693mg/L (96h)(Fish) | No information available | No information available |
| Chromium | LC ₅₀ : 40.5mg/L (96h)(Fish) | EC ₅₀ : 0.07mg/L (48h)(Crustaceans) | No information available |
| Strontium | LC ₅₀ : > 40.3mg/L (96h)(Fish) | No information available | ErC ₅₀ : > 43.3mg/L (72h)(Algae) |
| Copper | LC ₅₀ : 0.665mg/L (96h)(Fish) | EC ₅₀ : 0.02mg/L (48h)(Crustaceans) | ErC ₅₀ : 7.9mg/L (96h)(Algae) |
| Cobalt | LC ₅₀ : 1.5mg/L (96h)(Fish) | No information available | No information available |
| Nickel | LC ₅₀ : 40mg/L (96h)(Fish) | EC ₅₀ : 1mg/L (48h)(Crustaceans) | No information available |
| Manganese | LC ₅₀ : 1800mg/L (96h)(Fish) | EC ₅₀ : 40mg/L (48h)(Crustaceans) | No information available |
| Aluminium | LC ₅₀ : 1.55mg/L (96h)(Fish) | No information available | No information available |
| Cadmium | LC ₅₀ : 7.8mg/L (96h)(Fish) | EC ₅₀ : 0.58mg/L (48h)(Crustaceans) | No information available |
| Lithium | LC ₅₀ : 18mg/L (96h)(Fish) | No information available | No information available |

Chronic aquatic toxicity

| Component | Fish | Crustaceans | Algae or other aquatic plants |
|------------------|------------------------|--------------------------|-------------------------------|
| Selenium | NOEC : 0.025mg/L(Fish) | No information available | No information available |
| Strontium | NOEC : ≥41.4mg/L(Fish) | No information available | No information available |

12.2 Persistence and degradability

| Component | Persistence (water/soil) | Persistence (air) |
|---------------|--------------------------|-------------------|
| Nickel | Low | Low |

12.3 Bioaccumulative potential

| Component | Bioaccumulative potential | Comments |
|---------------|---------------------------|---------------|
| Nickel | Low | Log Kow=-1.38 |

12.4 Mobility in soil

| Component | log Koc | Remark |
|---------------|---------|--------|
| Nickel | 1.155 | |

12.5 Results of PBT and vPvB assessment

| Component | Results of PBT and vPvB assessment [according to (EC) No 1907/2006] |
|-------------|---|
| Antimony | Not PBT/vPvB |
| Aluminium | Not applicable |
| Arsenic | Not applicable |
| Barium | Not applicable |
| Beryllium | Not applicable |
| Cadmium | Not applicable |
| Chromium | Not applicable |
| Cobalt | Not applicable |
| Copper | Not applicable |
| Lead | Not applicable |
| Manganese | Not applicable |
| Molybdenum | Not applicable |
| Nickel | Not applicable |
| Selenium | Not applicable |
| Silver | Not applicable |
| Thallium | Insufficient information, temporarily unable to evaluate |
| Uranium | Insufficient information, temporarily unable to evaluate |
| Vanadium | Not applicable |
| Zinc | Not applicable |
| Bismuth | Not applicable |
| Strontium | Not applicable |
| Tin | Not applicable |
| Lithium | Not applicable |
| Thorium | Insufficient information, temporarily unable to evaluate |
| Nitric acid | Not PBT/vPvB |
| Water | Insufficient information, temporarily unable to evaluate |

12.6 Endocrine disrupting properties

| Component | Endocrine disrupting properties |
|-----------|---------------------------------|
| Antimony | No information available |
| Aluminium | No information available |
| Arsenic | No information available |
| Barium | No information available |
| Beryllium | No information available |
| Cadmium | No information available |
| Chromium | No information available |
| Cobalt | No information available |

| | |
|--------------------|--------------------------|
| Copper | No information available |
| Lead | No information available |
| Manganese | No information available |
| Molybdenum | No information available |
| Nickel | No information available |
| Selenium | No information available |
| Silver | No information available |
| Thallium | No information available |
| Uranium | No information available |
| Vanadium | No information available |
| Zinc | No information available |
| Bismuth | No information available |
| Strontium | No information available |
| Tin | No information available |
| Lithium | No information available |
| Thorium | No information available |
| Nitric acid | No information available |
| Water | No information available |

12.7 Other adverse effects

| | |
|--|--------------------------|
| | No information available |
|--|--------------------------|

13 Disposal considerations

13.1 Waste treatment methods

| | |
|---------------------------------|--|
| Waste chemicals | Before disposal should refer to the relevant national and local laws and regulation. Recommend the use of incineration disposal. |
| Contaminated packaging | Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible. |
| Disposal recommendations | Refer to section waste chemicals and contaminated packaging. |

14 Transport information

Label and Mark

| | |
|---------------------------|---|
| Transporting Label |  |
|---------------------------|---|

IMDG-CODE

| | |
|-------------------------------------|---|
| 14.1 UN number | 3264 |
| 14.2 UN proper shipping name | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. |
| 14.3 Transport hazard class | 8 |
| 14.4 Packing group | III |

| | |
|---|----|
| 14.5 Environmental hazards (Yes or no) | No |
|---|----|

IATA-DGR

| | |
|---|---|
| 14.1 UN number | 3264 |
| 14.2 UN proper shipping name | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. |
| 14.3 Transport hazard class | 8 |
| 14.4 Packing group | III |
| 14.5 Environmental hazards (Yes or no) | No |

UN-ADR

| | |
|---|---|
| 14.1 UN number | 3264 |
| 14.2 UN proper shipping name | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. |
| 14.3 Transport hazard class | 8 |
| 14.4 Packing group | III |
| 14.5 Environmental hazards (Yes or no) | No |

Special precautions for user

| | |
|--|---|
| | Transport vehicles should be equipped with the appropriate variety and quantity of fire equipment and emergency equipment leakage during transport. Before transport, should be preceded by checking whether container integrity, sealing. The transport unit must be placarded and marked in accordance with relevant transporting requirements. |
|--|---|

Maritime transport in bulk according to IMO instruments

| | |
|--|---------------|
| ◆ Transport in bulk according to Annex II of MARPOL and the IBC code | Not Available |
| ◆ Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code | Not Available |
| ◆ Transport in bulk in accordance with the IGC Code | Not Available |

15 Regulatory information

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

International chemical inventory

| Component | A | B | C | D | E | F | G | H | I | J | K | L | M |
|-----------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Aluminium | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Arsenic | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Barium | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Beryllium | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Cadmium | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Chromium | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |

| | | | | | | | | | | | | | | |
|--------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cobalt | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ | √ |
| Copper | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Lead | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ | √ |
| Manganese | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Molybdenum | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Nickel | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Selenium | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ | √ |
| Silver | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ | √ |
| Thallium | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ |
| Uranium | × | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Vanadium | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Zinc | √ | √ | √ | √ | √ | √ | √ | √ | √ | × | √ | √ | √ | √ |
| Bismuth | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Strontium | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Tin | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Lithium | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Thorium | × | √ | √ | √ | √ | √ | × | √ | × | × | √ | √ | √ | √ |
| Nitric acid | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Water | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |

- [A] China Inventory of Existing Chemical Substances(IECSC)
 [B] European Inventory of Existing Commercial Chemical Substances(EC inventory)
 [C] United States Toxic Substances Control Act Inventory(TSCA)
 [D] Canadian Domestic Substances List(DSL)
 [E] New Zealand Inventory of Chemicals(NZIoC)
 [F] Philippines Inventory of Chemicals and Chemical Substances(PICCS)
 [G] Korea Existing Chemicals Inventory(KECL)
 [H] Australian. Inventory of Industrial Chemical (AIICS)
 [I] Japan Inventory of Existing & New Chemical Substances(ENCS)
 [J] Thailand Existing Chemicals Inventory(TECI)
 [K] Mexico National Inventory of Chemical Substances (INSQ)
 [L] Russia Inventory of Existing Substances (DRAFT)
 [M] Inventory of Existing Chemical Substances in Taiwan, China (TCSI)

List of Chemical Substances under International Conventions

| Component | A | B | C |
|------------------|---|---|---|
| Antimony | × | × | × |
| Aluminium | × | × | × |
| Arsenic | × | × | × |
| Barium | × | × | × |
| Beryllium | × | × | × |
| Cadmium | × | × | × |
| Chromium | × | × | × |

| | | | |
|--------------------|---|---|---|
| Cobalt | x | x | x |
| Copper | x | x | x |
| Lead | x | x | x |
| Manganese | x | x | x |
| Molybdenum | x | x | x |
| Nickel | x | x | x |
| Selenium | x | x | x |
| Silver | x | x | x |
| Thallium | x | x | x |
| Uranium | x | x | x |
| Vanadium | x | x | x |
| Zinc | x | x | x |
| Bismuth | x | x | x |
| Strontium | x | x | x |
| Tin | x | x | x |
| Lithium | x | x | x |
| Thorium | x | x | x |
| Nitric acid | x | x | x |
| Water | x | x | x |

[A] The Montreal Protocol on Substances that Deplete the Ozone Layer

[B] Stockholm Convention on Persistent Organic Pollutants (POPs)

[C] Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade

European chemical inventory

| Component | A | B | C | D | E | F | G | H | I |
|-------------------|---|---|---|---|---|---|---|---|---|
| Antimony | x | x | x | √ | √ | √ | x | x | x |
| Aluminium | x | x | x | √ | √ | x | x | x | x |
| Arsenic | x | x | √ | √ | √ | x | x | x | x |
| Barium | x | x | x | √ | √ | x | x | x | x |
| Beryllium | x | x | √ | √ | √ | √ | x | x | x |
| Cadmium | √ | x | √ | √ | √ | x | √ | x | x |
| Chromium | x | x | x | √ | √ | x | x | x | x |
| Cobalt | x | x | √ | √ | √ | x | x | x | x |
| Copper | x | x | x | √ | √ | x | x | x | x |
| Lead | √ | x | √ | √ | √ | x | √ | x | x |
| Manganese | x | x | x | √ | √ | x | x | x | x |
| Molybdenum | x | x | x | √ | √ | x | x | x | x |
| Nickel | x | x | √ | √ | √ | x | √ | x | x |

| | | | | | | | | | |
|--------------------|---|---|---|---|---|---|---|---|---|
| Selenium | x | x | x | √ | √ | x | x | x | x |
| Silver | x | x | x | √ | √ | √ | x | x | x |
| Thallium | x | x | x | √ | x | x | x | x | x |
| Uranium | x | x | x | √ | x | x | x | x | x |
| Vanadium | x | x | x | √ | √ | x | x | x | x |
| Zinc | x | x | x | √ | √ | x | x | x | x |
| Bismuth | x | x | x | √ | √ | x | x | x | x |
| Strontium | x | x | x | √ | √ | x | x | x | x |
| Tin | x | x | x | √ | √ | x | x | x | x |
| Lithium | x | x | x | √ | √ | x | x | x | x |
| Thorium | x | x | x | √ | x | x | x | x | x |
| Nitric acid | x | x | x | √ | √ | x | x | x | x |
| Water | x | x | x | √ | x | x | x | x | x |

[A] Candidate list of Substances of Very High Concern for authorization under EU REACH regulation

[B] Substances requiring authorisation under EU REACH regulation

[C] Substances restricted under EU REACH

[D] Pre-registered substances under EU REACH

[E] Registered substances under EU REACH

[F] Substance Evaluation – CoRAP under EU REACH

[G] List of priority substances under EU water policy (Directive 2455/2001/EC)

[H] Substances subject to POPs Regulation

[I] Substances proposed as POPs

Note:

“√” Indicates that the substance included in the regulations.

“x” No data or not included in the regulations.

German water hazard class(WGK)

| Component | WGK | Remark |
|-------------------|-------|--------|
| Aluminium | nwg | |
| Arsenic | WGK 3 | |
| Barium | WGK 1 | |
| Cadmium | WGK 3 | |
| Chromium | nwg | |
| Cobalt | WGK 1 | |
| Copper | WGK 2 | |
| Manganese | WGK 2 | |
| Molybdenum | nwg | |
| Nickel | WGK 1 | |
| Selenium | WGK 2 | |
| Silver | WGK 3 | |
| Vanadium | WGK 3 | |
| Zinc | nwg | |

| | | |
|--------------------|-------|--|
| Bismuth | nwg | |
| Strontium | WGK 1 | |
| Tin | nwg | |
| Lithium | WGK 1 | |
| Nitric acid | WGK 1 | |

- 【WGK 1】 slightly hazardous to water
 【WGK 2】 obviously hazardous to water
 【WGK 3】 highly hazardous to water
 【nwg】 non-hazardous to water
 【awg】 hazardous to water in general

German technical instructions on air quality control(TA LUFT)

| Component | TA LUFT | Remark |
|------------------|---|--------|
| Antimony | Chapter 5.2.2 Inorganic dusts. Class III. Also with the presence of several substances of the same class, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 5 g/hr or Mass conc.: 1 mg/m ³ . Specified as Sb. | |
| Aluminium | Chapter 5.2.1 Overall Dust, including fine dust. The emissions of dust in the exhaust gas are not allowed to exceed the following values: Mass flow: 0.20 kg/hr or Mass conc.: 20 mg/m ³ The mass per unit volume of 0.15 g/m ³ in exhaust gas is not allowed to be exceeded also on observance or lower deviation of a mass flow of 0.20 kg/h. For emission sources that exceed the mass flow rate of 0.40 kg/h, the mass concentration in waste gas the mass concentration must not exceed 10 mg/m ³ . | |
| Arsenic | Chapter 5.2.7.1.1 Carcinogenic substances. Class I. As minimum requirement, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 0,15 g/hr or Mass conc.: 0,05 mg/m ³ . Specified as As. | |
| Barium | Chapter 5.2.1 Overall Dust, including fine dust. The emissions of dust in the exhaust gas are not allowed to exceed the following values: Mass flow: 0,20 kg/hr or Mass conc.: 20 mg/m ³ The mass per unit volume of 0,15 g/m ³ in exhaust gas is not allowed to be exceeded also on observance or lower deviation of a mass flow of 0,20 kg/h. For emission sources that exceed the mass flow rate of 0.40 kg/h, the mass concentration in waste gas the mass concentration | |

| | | |
|-------------------|---|--|
| | must not exceed 10 mg/m ³ . | |
| Beryllium | Chapter 5.2.7.1.1 Carcinogenic substances. Class I. As minimum requirement, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 0,15 g/hr or Mass conc.: 0,05 mg/m ³ | |
| Cadmium | Chapter 5.2.7.1.1 Carcinogenic substances. Class I. As minimum requirement, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 0.15 g/hr or Mass conc.: 0.05 mg/m ³ . Specified as Cd. | |
| Chromium | Chapter 5.2.2 Inorganic dusts. Class III. Also with the presence of several substances of the same class, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 5 g/hr or Mass conc.: 1 mg/m ³ . Specified as Cr. | |
| Cobalt | Chapter 5.2.2 Inorganic dusts. Class II. Also with the presence of several substances of the same class, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 2,5 g/hr or Mass conc.: 0,5 mg/m ³ . Specified as Co. | |
| Copper | Chapter 5.2.2 Inorganic dusts. Class III. Also with the presence of several substances of the same class, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 5 g/hr or Mass conc.: 1 mg/m ³ . Specified as Cu. | |
| Lead | Chapter 5.2.2 Inorganic dusts. Class II. Also with the presence of several substances of the same class, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 2,5 g/hr or Mass conc.: 0,5 mg/m ³ . Specified as Pb. | |
| Manganese | Chapter 5.2.2 Inorganic dusts. Class III. Also with the presence of several substances of the same class, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 5 g/hr or Mass conc.: 1 mg/m ³ . Specified as Mn. | |
| Molybdenum | Chapter 5.2.1 Overall Dust, including fine dust. The emissions of dust in the exhaust gas are not allowed to exceed the following values: Mass flow: 0,20 kg/hr or Mass conc.: 20 mg/m ³ The mass per unit volume of 0,15 g/m ³ in exhaust | |

| | | |
|-----------------|---|--|
| | gas is not allowed to be exceeded also on observance or lower deviation of a mass flow of 0,20 kg/h. For emission sources that exceed the mass flow rate of 0.40 kg/h, the mass concentration in waste gas the mass concentration must not exceed 10 mg/m ³ . | |
| Nickel | Chapter 5.2.2 Inorganic dusts. Class II. Also with the presence of several substances of the same class, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 2,5 g/hr or Mass conc.: 0,5 mg/m ³ . Specified as Ni. | |
| Selenium | Chapter 5.2.2 Inorganic dusts. Class II. Also with the presence of several substances of the same class, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 2,5 g/hr or Mass conc.: 0,5 mg/m ³ . Specified as Se. | |
| Silver | Chapter 5.2.1 Overall Dust, including fine dust. The emissions of dust in the exhaust gas are not allowed to exceed the following values: Mass flow: 0,20 kg/hr or Mass conc.: 20 mg/m ³ The mass per unit volume of 0,15 g/m ³ in exhaust gas is not allowed to be exceeded also on observance or lower deviation of a mass flow of 0,20 kg/h. For emission sources that exceed the mass flow rate of 0.40 kg/h, the mass concentration in waste gas the mass concentration must not exceed 10 mg/m ³ . | |
| Thallium | Chapter 5.2.2 Inorganic dusts. Class I. Also with the presence of several substances of the same class, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 0,05 g/hr or Mass conc.: 0,01 mg/m ³ . Specified as Tl. | |
| Uranium | Chapter 5.2.1 Overall Dust, including fine dust. The emissions of dust in the exhaust gas are not allowed to exceed the following values: Mass flow: 0,20 kg/hr or Mass conc.: 20 mg/m ³ The mass per unit volume of 0,15 g/m ³ in exhaust gas is not allowed to be exceeded also on observance or lower deviation of a mass flow of 0,20 kg/h. For emission sources that exceed the mass flow rate of 0.40 kg/h, the mass concentration in waste gas the mass concentration must not exceed 10 mg/m ³ . | |

| | | |
|------------------|---|--|
| Vanadium | Chapter 5.2.2 Inorganic dusts. Class III. Also with the presence of several substances of the same class, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 5 g/hr or Mass conc.: 1 mg/m ³ . Specified as V. | |
| Zinc | Chapter 5.2.1 Overall Dust, including fine dust. The emissions of dust in the exhaust gas are not allowed to exceed the following values: Mass flow: 0.20 kg/hr or Mass conc.: 20 mg/m ³ The mass per unit volume of 0.15 g/m ³ in exhaust gas is not allowed to be exceeded also on observance or lower deviation of a mass flow of 0.20 kg/h. For emission sources that exceed the mass flow rate of 0.40 kg/h, the mass concentration in waste gas the mass concentration must not exceed 10 mg/m ³ . | |
| Bismuth | Chapter 5.2.1 Overall Dust, including fine dust. The emissions of dust in the exhaust gas are not allowed to exceed the following values: Mass flow: 0,20 kg/hr or Mass conc.: 20 mg/m ³ The mass per unit volume of 0,15 g/m ³ in exhaust gas is not allowed to be exceeded also on observance or lower deviation of a mass flow of 0,20 kg/h. For emission sources that exceed the mass flow rate of 0.40 kg/h, the mass concentration in waste gas the mass concentration must not exceed 10 mg/m ³ . | |
| Strontium | Chapter 5.2.1 Overall Dust, including fine dust. The emissions of dust in the exhaust gas are not allowed to exceed the following values: Mass flow: 0,20 kg/hr or Mass conc.: 20 mg/m ³ The mass per unit volume of 0,15 g/m ³ in exhaust gas is not allowed to be exceeded also on observance or lower deviation of a mass flow of 0,20 kg/h. For emission sources that exceed the mass flow rate of 0.40 kg/h, the mass concentration in waste gas the mass concentration must not exceed 10 mg/m ³ . | |
| Tin | Chapter 5.2.2 Inorganic dusts. Class III. Also with the presence of several substances of the same class, the following values are in all not allowed to be exceeded in the exhaust gas: Mass flow: 5 g/hr or Mass conc.: 1 mg/m ³ . Specified as Sn. | |
| Lithium | Chapter 5.2.1 Overall Dust, including fine dust. The emissions of dust in | |

| | | |
|--|--|--|
| | <p>the exhaust gas are not allowed to exceed the following values: Mass flow: 0,20 kg/hr or Mass conc.: 20 mg/m³ The mass per unit volume of 0,15 g/m³ in exhaust gas is not allowed to be exceeded also on observance or lower deviation of a mass flow of 0,20 kg/h. For emission sources that exceed the mass flow rate of 0.40 kg/h, the mass concentration in waste gas the mass concentration must not exceed 10 mg/m³.</p> | |
|--|--|--|

German technical rules for hazardous substances (TRGS)

| Component | TRGS | Remark |
|------------------|--|------------|
| Antimony | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 401 TRGS 500 TRGS 509 TRGS 510 TRGS 800 | |
| Aluminium | TRGS 500 TRGS 509 TRGS 510 TRGS 800 | |
| Arsenic | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 401 TRGS 410 TRGS 500 TRGS 509 TRGS 510 TRGS 800 | |
| Barium | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 401 TRGS 500 TRGS 509 TRGS 510 TRGS 800 TRGS 720 TRGS 721 TRGS 722 TRGS 723 TRGS 724 | |
| Beryllium | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 402 TRGS 401 TRGS 410 TRGS 500 TRGS 509 TRGS 510 TRGS 800 TRGS 720 TRGS 721 TRGS 722 TRGS 723 TRGS 724 TRGS 560 | |
| Cadmium | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 402 TRGS 401 TRGS 410 TRGS 500 TRGS 509 TRGS 510 TRGS 800 TRGS 720 TRGS 721 TRGS 722 TRGS 723 TRGS 724 TRGS 560 | pyrophoric |
| Chromium | TRGS 402 TRGS 500 TRGS 509 TRGS 510 TRGS 800 TRGS 720 TRGS 721 TRGS 722 TRGS 723 TRGS 724 | |
| Cobalt | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 401 TRGS 406 TRGS 410 TRGS 500 TRGS 509 TRGS 510 TRGS 800 TRGS 720 TRGS 721 TRGS 722 TRGS 723 TRGS 724 TRGS 560 | |
| Copper | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 500 TRGS 509 TRGS 510 TRGS 800 TRGS 720 TRGS 721 TRGS 722 TRGS 723 TRGS 724 | |
| Lead | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 402 TRGS 401 TRGS 500 TRGS 509 TRGS | |

| | | |
|--------------------|--|--|
| | 510 TRGS 560 TRGS 505 | |
| Manganese | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 402 TRGS 500 TRGS 509 TRGS 510 TRGS 800 TRGS 720 TRGS 721 TRGS 722 TRGS 723 TRGS 724 | |
| Molybdenum | TRGS 500 TRGS 509 TRGS 510 | |
| Nickel | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 402 TRGS 401 TRGS 500 TRGS 509 TRGS 510 TRGS 800 TRGS 720 TRGS 721 TRGS 722 TRGS 723 TRGS 724 | |
| Selenium | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 402 TRGS 401 TRGS 500 TRGS 509 TRGS 510 TRGS 720 TRGS 721 TRGS 722 TRGS 723 TRGS 724 | |
| Silver | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 402 TRGS 500 TRGS 509 TRGS 510 TRGS 800 | |
| Thallium | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 500 TRGS 509 TRGS 510 | |
| Uranium | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 401 TRGS 500 | |
| Vanadium | TRGS 500 TRGS 509 TRGS 510 TRGS 800 | |
| Zinc | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 500 TRGS 509 TRGS 510 TRGS 800 TRGS 720 TRGS 721 TRGS 722 TRGS 723 TRGS 724 | |
| Bismuth | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 500 TRGS 509 TRGS 510 TRGS 800 TRGS 720 TRGS 721 TRGS 722 TRGS 723 TRGS 724 | |
| Strontium | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 401 TRGS 500 TRGS 509 TRGS 510 TRGS 800 TRGS 720 TRGS 721 TRGS 722 TRGS 723 TRGS 724 | |
| Tin | TRGS 500 TRGS 509 TRGS 510 TRGS 800 | |
| Lithium | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 401 TRGS 500 TRGS 509 TRGS 510 TRGS 800 TRGS 720 TRGS 721 TRGS 722 TRGS 723 TRGS 724 | |
| Nitric acid | TRGS 201 TRGS 400 TRGS 555 TRGS 600 TRGS 401 TRGS 500 TRGS 509 TRGS 510 TRGS 800 | |
| Water | TRGS 500 TRGS 509 TRGS 510 | |

15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture

by the supplier.

16 Other information

Information on revision

| | |
|---------------------|------------|
| Creation Date | 2025/12/17 |
| Revision Date | - |
| Reason for revision | - |

Reference

- [1] IPCS: The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>.
- [2] IARC, website: <http://www.iarc.fr/>.
- [3] OECD: The Global Portal to Information on Chemical Substances, website: <https://www.echemportal.org/echemportal/>.
- [4] CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>.
- [5] NLM: ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>.
- [6] EPA: Integrated Risk Information System, website: <http://cfpub.epa.gov/iris/>.
- [7] U.S. Department of Transportation: ERG, website: <http://www.phmsa.dot.gov/hazmat/library/erg>.
- [8] Germany GESTIS-database on hazard substance, website: <http://gestis-en.itrust.de/>.

Abbreviations and acronyms

| | | | |
|------------------|--------------------------------------|-----------|---|
| CAS | Chemical Abstracts Service | UN | The United Nations |
| PC-STEL | Short term exposure limit | OECD | Organization for Economic Co-operation and Development |
| PC-TWA | Time Weighted Average | IMDG-CODE | International Maritime Dangerous Goods CODE |
| MAC | Maximum Allowable Concentration | IARC | International Agency for Research on Cancer |
| DNEL | Derived No Effect Level | ICAO | International Civil Aviation Organization |
| PNEC | Predicted No Effect Concentration | IATA | International Air Transportation Association |
| NOEC | No Observed Effect Concentration | ACGIH | American Conference of Governmental Industrial Hygienists |
| LC ₅₀ | Lethal Concentration 50% | NFPA | National Fire Protection Association |
| LD ₅₀ | Lethal Dose 50% | NTP | National Toxicology Program |
| EC ₅₀ | Effective Concentration 50% | PBT | Persistent, Bioaccumulative, Toxic |
| EC _x | Effective Concentration X% | vPvB | very Persistent, very Bioaccumulative |
| P _{OW} | Partition coefficient Octanol: Water | CMR | Carcinogens, mutagens or substances toxic to reproduction |
| BCF | Bioconcentration factor | RPE | Respiratory Protective Equipment |
| ED | Endocrine disruptor | | |

Disclaimer

This Safety Data Sheet (SDS) was prepared according to REACH Regulation. The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.