Safety Data Sheet

20-element standard material in Lyophilized human urine

Version：V2.0.0.1
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***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	20-element standard material in Lyophilized human urine
Cat No.	BWZ7891-2016
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

According to Regulation (EC) No 1272/2008 and its amendments. Not classified as a dangerous substance.

2.2 Label elements

Hazard pictograms	Not applicable
Signal word	Not applicable

Hazard statements

Hazard statements	Not applicable

Precautionary statements

◆ Prevention

Prevention	Not applicable

◆ Response

Response	Not applicable

◆ Storage

Storage	Not applicable

◆ Disposal

Disposal	Not applicable

2.3 Other hazards

◆ Results of PBT and vPvB assessment

Component	Results of PBT and vPvB assessment [according to (EC) No 1907/2006]
Aluminium	Not applicable
Arsenic	Not applicable
Barium	Not applicable
Calcium	Not applicable
Cadmium	Not applicable
Cobalt	Not applicable
Chromium	Not applicable
Copper	Not applicable
Iron	Not applicable
Mercury	Insufficient information, temporarily unable to evaluate
Lithium	Not applicable
Magnesium	Not PBT/vPvB
Manganese	Not applicable
Molybdenum	Not applicable
Nickel	Not applicable
Lead	Not applicable
Selenium	Not applicable
Tin	Not applicable
Thallium	Insufficient information, temporarily unable to evaluate
Zinc	Not applicable

◆ Results of endocrine disrupting properties assessment

Component	Results of endocrine disrupting properties assessment [according to (EU) No 2017/2100 or (EU) No 2018/605]

Aluminium	Insufficient information, temporarily unable to evaluate
Arsenic	Insufficient information, temporarily unable to evaluate
Barium	Insufficient information, temporarily unable to evaluate
Calcium	Insufficient information, temporarily unable to evaluate
Cadmium	Insufficient information, temporarily unable to evaluate
Cobalt	Insufficient information, temporarily unable to evaluate
Chromium	Insufficient information, temporarily unable to evaluate
Copper	Insufficient information, temporarily unable to evaluate
Iron	Insufficient information, temporarily unable to evaluate
Mercury	Insufficient information, temporarily unable to evaluate
Lithium	Insufficient information, temporarily unable to evaluate
Magnesium	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
Lead	Insufficient information, temporarily unable to evaluate
Selenium	Insufficient information, temporarily unable to evaluate
Tin	Insufficient information, temporarily unable to evaluate
Thallium	Insufficient information, temporarily unable to evaluate
Zinc	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
Aluminium CAS : 7429-90-5 EC : 231-072-3 Index No. : 013-001-00-6	0.00001	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	0.00001	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. : -	0.000005	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	
Calcium CAS : 7440-70-2 EC : 231-179-5 Index No. : 020-001-00-X	0.0000005	Substances and mixtures which, in contact with water, emit flammable gases, Category 2, H261	-
Cadmium CAS : 7440-43-9 EC : 231-152-8 Index No. : 048-002-00-0	0.000002	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	-
Cobalt CAS : 7440-48-4 EC : 231-158-0 Index No. : 027-001-00-9	0.000002	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	-
Chromium CAS : 7440-47-3 EC : 231-157-5 Index No. : -	0.000003	Not Classified	-
Copper CAS : 7440-50-8 EC : 231-159-6 Index No. : 029-026-00-0	0.000005	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
Iron CAS : 7439-89-6 EC : 231-096-4 Index No. : -	0.00003	Not Classified	-
Mercury CAS : 7439-97-6 EC : 231-106-7 Index No. : 080-001-00-0	0.0000005	Acute Toxicity - Inhalation, Category 2, H330; Reproductive toxicity, Category 1B, H360; 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	-
Lithium CAS : 7439-93-2 EC : 231-102-5 Index No. : 003-001-00-4	0.000002	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	-
Magnesium CAS : 7439-95-4 EC : 231-104-6 Index No. : 012-001-00-3	0.001	Pyrophoric solids, Category 1, H250; Substances and mixtures which, in contact with water, emit flammable gases, Category 1, H260	-
Manganese CAS : 7439-96-5 EC : 231-105-1 Index No. : -	0.000003	Not Classified	-

Molybdenum CAS : 7439-98-7 EC : 231-107-2 Index No. : -	0.000007	Not Classified	-
Nickel CAS : 7440-02-0 EC : 231-111-4 Index No. : 028-002-00-7	0.000002	Sensitization - skin, Category 1, H317; Carcinogenicity, Category 2, H351; Specific target organ toxicity - repeated exposure, Category 1, H372	-
Lead CAS : 7439-92-1 EC : 231-100-4 Index No. : 082-013-00-1	0.0000005	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
Selenium CAS : 7782-49-2 EC : 231-957-4 Index No. : 034-001-00-2	0.00001	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	-
Tin CAS : 7440-31-5 EC : 231-141-8 Index No. : -	0.000005	Not Classified	-
Thallium CAS : 7440-28-0 EC : 231-138-1 Index No. : 081-001-00-3	0.000003	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	-
Zinc CAS : 7440-66-6 EC : 231-175-3 Index No. : 030-001-00-1	0.00006	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	-
human urine CAS : - EC : - Index No. : -	99.9988395	No information available	-

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	Use extinguishing media suitable for surrounding area.
Unsuitable extinguishing media	There is no restriction on the type of extinguisher which may be used.

5.2 Specific hazards arising from the substance or mixture

1	Development of hazardous combustion gases or vapor possible in the event of fire.
2	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	Use personal protective equipment,do not breathe gas/mist/vapour/spray.
2	Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
3	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	Cut off the source of the leak as much as possible.
2	Keep leaks in a ventilated place.
3	Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding.
4	Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.
5	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/m³	ppm	mg/m³
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 - JSOH(2024–2025)	-	0.003(individual 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	-	-
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	-	-
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	-	-
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	-	-
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)	-	-
Mercury	Japan - JSOH(2024–2025)	-	0.025(vapor)	-	-
	Permissible exposure standards for workers in the workplace	-	0.05	-	0.15
	European Union	-	0.02	-	-
	France	-	0.02	-	-
	Germany (AGS)	-	0.02	-	0.16
	Germany (DFG)	-	0.02	-	0.16
Lithium	Germany (AGS)	-	0.2	-	0.2
	Germany (DFG)	-	0.2	-	0.2
	Sweden	-	-	-	0.02
	Switzerland	-	0.2	-	0.2
Manganese	Japan - JSOH(2024–2025)	-	0.02(respirable particles, as 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
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
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)
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
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	-	-
Zinc	Germany (DFG)	-	2	-	4
	Switzerland	-	0.1(respirable aerosol)	-	0.4(respirable aerosol)

◆ 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	
Cobalt	USA -ACGIH	Cobalt(Urine)	15µg/L	End of shift at end of work week	
Chromium	USA -ACGIH	Total chromium(Urine)	0.7µg/L	End of shift at end of work week	

Mercury	SCOEL(EU)	Hg/blood	10 µg/L	Not strictly regulated	
		Hg/urine	30 µg/g creatinine	Not strictly regulated	
		Mercury(Creatinine in urine)	20µg/g	Prior to shift	
Nickel	USA -ACGIH	Nickel(Urine)	5µg/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	

◆ 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)
Aluminium	Inhalation	No data available	No data available	3.72 mg/m3	3.72 mg/m3
	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/m3
	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/m3
	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
Calcium	Inhalation	No data available	No data available	1 mg/m3	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/m3	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/m3	0.0541 mg/m3
	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/m3	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
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
Iron	Inhalation	No data available	No data available	3 mg/m3	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
Mercury	Inhalation	No data available	No data available	No data available	0.02 mg/m3
	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/m3
	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
Magnesium	Inhalation	No data available	No data available	10 mg/m3	10 mg/m3
	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/m3
	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/m3
	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
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
Selenium	Inhalation	No data available	No data available	No data available	0.05 mg/m3
	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/m3
	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
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

human urine	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
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
Calcium	No data available	No data available	No data available	No data available	No data available	No hazard identified	No data available	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
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
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
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
Iron	No data available	No data available	No data available	No data available	No data available	No hazard identified	No data available	No data available
Mercury	57.4 ng/L	67.2 ng/L	2.25 µg/L	9.3 mg/kg sediment dw	9.3 mg/kg sediment dw	No data available	22 µg/kg soil dw	No data available
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

Magnesium	410 - 2000 µg/L	410 - 26500 µg/L	10.8 mg/L	87.8 - 268 mg/kg sediment dw	8.78 - 268 mg/kg sediment dw	10 mg/m³	28.7 - 268 mg/kg soil dw	212 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 sediment dw	2370 mg/kg sediment dw	No hazard identified	9.9 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
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
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
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

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	No special requirements, please see the description below.
Eye protection	In general situation, eye protection is not needed. In the production process, when contacting with vapour or dust, tightly fitting safety goggles.
Hand protection	In general situation, hand protection is not needed.
Respiratory protection	In general situation, respiratory protection is not needed. If exposure limits are exceeded or if irritation or other symptoms are experienced, wear dust proof mask or gas defence mask.
Skin and body protection	In general situation, skin and body protection are not needed.

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	Colorless or very pale yellow transparent liquid
Colour	Colorless or very pale yellow transparent liquid
Odor	No information available
Odor threshold	No information available
pH	No information available
Melting point/freezing point(°C)	No information available
Initial boiling point and boiling range(°C)	>35
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	No information available
Vapor density(Air = 1)	No information available
Relative density(Water=1)	No information available
Solubility	No information available
n-octanol/water partition coefficient	No information available
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	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. Reacts severely with halogens, interhalogens or other strong oxidants, or causes a fire. May be oxidized quickly when exposed to air.
10.4 Conditions to avoid	Incompatible materials, heat, flame and spark.
10.5 Incompatible materials	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. Halogen, interhalogen, strong oxidant, water and acids. Water, carbon dioxide, halocarbon, halogen, interhalogen, metal halide, non-metal oxides, acids, mercury and hydrazine.
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

20-element standard material in Lyophilized human urine	
Skin corrosion/irritation	Based on available data, the classification criteria are not met
Serious eye damage/irritation	Based on available data, the classification criteria are not met
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)
Selenium	6700mg/kg(Rat)	No information available	5.67mg/L(Rat)
Arsenic	763mg/kg(Rat)	No information available	No information available
Cobalt	6171mg/kg(Rat)	No information available	No information available
Cadmium	2330mg/kg(Rat)	No information available	No information available
Manganese	9000mg/kg(Rat)	No information available	No information available
Iron	30000mg/kg(Rat)	No information available	No information available

Carcinogenicity

Component	List of carcinogens by the IARC Monographs	Report on Carcinogens by NTP
Aluminium	Not Listed	Not Listed
Arsenic	Category 1	Category K
Barium	Not Listed	Not Listed

Calcium	Not Listed	Not Listed
Cadmium	Category 1	Category K
Cobalt	Category 2A	Category R
Chromium	Category 3	Not Listed
Copper	Not Listed	Not Listed
Iron	Not Listed	Not Listed
Mercury	Category 3	Not Listed
Lithium	Not Listed	Not Listed
Magnesium	Not Listed	Not Listed
Manganese	Not Listed	Not Listed
Molybdenum	Not Listed	Not Listed
Nickel	Category 2B	Category R
Lead	Category 2B	Category R
Selenium	Category 3	Not Listed
Tin	Not Listed	Not Listed
Thallium	Not Listed	Not Listed
Zinc	Not Listed	Not Listed
human urine	Not Listed	Not Listed

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties

Component	Endocrine disrupting properties
Aluminium	No information available
Arsenic	No information available
Barium	No information available
Calcium	No information available
Cadmium	No information available
Cobalt	No information available
Chromium	No information available
Copper	No information available
Iron	No information available
Mercury	No information available
Lithium	No information available
Magnesium	No information available
Manganese	No information available
Molybdenum	No information available
Nickel	No information available
Lead	No information available

Selenium	No information available
Tin	No information available
Thallium	No information available
Zinc	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
Selenium	LC_{50} : 2.06mg/L (96h)(Fish)	No information available	ErC_{50} : 96mg/L (96h)(Algae)
Nickel	LC_{50} : 40mg/L (96h)(Fish)	EC_{50} : 1mg/L (48h)(Crustaceans)	No information available
Lead	LC_{50} : 2.8mg/L (96h)(Fish)	No information available	No information available
Molybdenum	LC_{50} : 609.1mg/L (96h)(Fish)	No information available	No information available
Aluminium	LC_{50} : 1.55mg/L (96h)(Fish)	No information available	No information available
Lithium	LC_{50} : 18mg/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
Thallium	LC_{50} : 21mg/L (96h)(Fish)	No information available	ErC_{50} : 0.13mg/L (96h)(Algae)
Mercury	LC_{50} : 0.16mg/L (96h)(Fish)	No information available	No information available
Iron	LC_{50} : 1.29mg/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
Copper	LC_{50} : 0.665mg/L (96h)(Fish)	EC_{50} : 0.02mg/L (48h)(Crustaceans)	ErC_{50} : 7.9mg/L (96h)(Algae)
Arsenic	LC_{50} : 12.6mg/L (96h)(Fish)	No information available	ErC_{50} : 25.2mg/L (72h)(Algae)
Cobalt	LC_{50} : 1.5mg/L (96h)(Fish)	No information available	No information available
Magnesium	LC_{50} :541mg/L (96h)(Fish)	No information available	No information available
Tin	LC_{50} : > 0.0124mg/L (96h)(Fish)	No information available	No information available
Calcium	No information available	EC_{50} : 49.1mg/L (48h)(Crustaceans)	No information available
Zinc	LC_{50} : 2.01mg/L (96h)(Fish)	EC_{50} : 1.33mg/L (48h)(Crustaceans)	No information available
Manganese	LC_{50} : 1800mg/L (96h)(Fish)	EC_{50} : 40mg/L (48h)(Crustaceans)	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

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
Magnesium	1.12	20 ℃
Nickel	1.155	

12.5 Results of PBT and vPvB assessment

Component	Results of PBT and vPvB assessment [according to (EC) No 1907/2006]
Aluminium	Not applicable
Arsenic	Not applicable
Barium	Not applicable
Calcium	Not applicable
Cadmium	Not applicable
Cobalt	Not applicable
Chromium	Not applicable
Copper	Not applicable
Iron	Not applicable
Mercury	Insufficient information, temporarily unable to evaluate
Lithium	Not applicable
Magnesium	Not PBT/vPvB
Manganese	Not applicable
Molybdenum	Not applicable
Nickel	Not applicable
Lead	Not applicable
Selenium	Not applicable
Tin	Not applicable
Thallium	Insufficient information, temporarily unable to evaluate

Zinc	Not applicable

12.6 Endocrine disrupting properties

Component	Endocrine disrupting properties
Aluminium	No information available
Arsenic	No information available
Barium	No information available
Calcium	No information available
Cadmium	No information available
Cobalt	No information available
Chromium	No information available
Copper	No information available
Iron	No information available
Mercury	No information available
Lithium	No information available
Magnesium	No information available
Manganese	No information available
Molybdenum	No information available
Nickel	No information available
Lead	No information available
Selenium	No information available
Tin	No information available
Thallium	No information available
Zinc	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	Not applicable

IMDG-CODE

IMDG-CODE	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

IATA-DGR

IATA-DGR	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

UN-ADR

UN-ADR	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

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
Aluminium	√	√	√	√	√	√	√	√	×	√	√	√	√
Arsenic	√	√	√	√	√	√	√	√	×	√	√	√	√
Barium	√	√	√	√	√	√	√	√	×	√	√	√	√
Calcium	√	√	√	√	√	√	√	√	×	√	√	√	√
Cadmium	√	√	√	√	√	√	√	√	×	√	√	√	√
Cobalt	√	√	√	√	√	√	√	√	×	√	√	√	√
Chromium	√	√	√	√	√	√	√	√	×	√	√	√	√
Copper	√	√	√	√	√	√	√	√	×	√	√	√	√
Iron	√	√	√	√	√	√	√	√	×	√	√	√	√
Mercury	√	√	√	√	√	√	√	√	×	√	√	√	√
Lithium	√	√	√	√	√	√	√	√	×	√	√	√	√
Magnesium	√	√	√	√	√	√	√	√	×	√	√	√	√
Manganese	√	√	√	√	√	√	√	√	×	√	√	√	√
Molybdenum	√	√	√	√	√	√	√	√	×	√	√	√	√
Nickel	√	√	√	√	√	√	√	√	×	√	√	√	√

Lead	√	√	√	√	√	√	√	√	×	√	√	√	√
Selenium	√	√	√	√	√	√	√	√	×	√	√	√	√
Tin	√	√	√	√	√	√	√	√	×	√	√	√	√
Thallium	√	√	√	√	√	√	√	√	×	×	√	√	√
Zinc	√	√	√	√	√	√	√	√	×	√	√	√	√
human urine	×	×	×	×	×	×	×	×	×	×	×	×	×

【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
Aluminium	×	×	×
Arsenic	×	×	×
Barium	×	×	×
Calcium	×	×	×
Cadmium	×	×	×
Cobalt	×	×	×
Chromium	×	×	×
Copper	×	×	×
Iron	×	×	×
Mercury	×	×	√
Lithium	×	×	×
Magnesium	×	×	×
Manganese	×	×	×
Molybdenum	×	×	×
Nickel	×	×	×
Lead	×	×	×
Selenium	×	×	×
Tin	×	×	×
Thallium	×	×	×
Zinc	×	×	×

human urine	×	×	×

【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
Aluminium	×	×	×	√	√	×	×	×	×
Arsenic	×	×	√	√	√	×	×	×	×
Barium	×	×	×	√	√	×	×	×	×
Calcium	×	×	×	√	√	×	×	×	×
Cadmium	√	×	√	√	√	×	√	×	×
Cobalt	×	×	√	√	√	×	×	×	×
Chromium	×	×	×	√	√	×	×	×	×
Copper	×	×	×	√	√	×	×	×	×
Iron	×	×	×	√	√	×	×	×	×
Mercury	×	×	√	√	√	×	√	×	×
Lithium	×	×	×	√	√	×	×	×	×
Magnesium	×	×	×	√	√	×	×	×	×
Manganese	×	×	×	√	√	×	×	×	×
Molybdenum	×	×	×	√	√	×	×	×	×
Nickel	×	×	√	√	√	×	√	×	×
Lead	√	×	√	√	√	×	√	×	×
Selenium	×	×	×	√	√	×	×	×	×
Tin	×	×	×	√	√	×	×	×	×
Thallium	×	×	×	√	×	×	×	×	×
Zinc	×	×	×	√	√	×	×	×	×
human urine	×	×	×	×	×	×	×	×	×

[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.
"×" No data or not included in the regulations.

German water hazard class(WGK)

Component	WGK	Remark

Aluminium	nwg	
Arsenic	WGK 3	
Barium	WGK 1	
Calcium	WGK 1	
Cadmium	WGK 3	
Cobalt	WGK 1	
Chromium	nwg	
Copper	WGK 2	
Iron	nwg	
Mercury	WGK 3	
Lithium	WGK 1	
Magnesium	nwg	
Manganese	WGK 2	
Molybdenum	nwg	
Nickel	WGK 1	
Selenium	WGK 2	
Tin	nwg	
Zinc	nwg	

【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
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/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.	
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/m³. 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/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.	
Calcium	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/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.	
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/m³. Specified as Cd.	
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/m³. Specified as Co.	
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/m³. Specified as Cr.	
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/m³. Specified as Cu.	

Iron	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/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.	
Mercury	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/m³. Specified as Hg.	
Lithium	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/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.	
Magnesium	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/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.	
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/m³. 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/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.	
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/m³. Specified as Ni.	
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/m³. Specified as Pb.	
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/m³. Specified as Se.	
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/m³. Specified as Sn.	
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/m³. Specified as Tl.	
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/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.	

German technical rules for hazardous substances(TRGS)

Component	TRGS	Remark
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	
Calcium	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	
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
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	
Chromium	TRGS 402|TRGS 500|TRGS 509|TRGS 510|TRGS 800|TRGS 720|TRGS 721|TRGS 722|TRGS 723|TRGS 724	
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	
Iron	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	
Mercury	TRGS 201|TRGS 400|TRGS 555|TRGS 600|TRGS 402|TRGS 401|TRGS 500|TRGS 509|TRGS 510	
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	
Magnesium	TRGS 500|TRGS 509|TRGS 510|TRGS 800	
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	
Lead	TRGS 201|TRGS 400|TRGS 555|TRGS 600|TRGS 402|TRGS 401|TRGS 500|TRGS 509|TRGS 510|TRGS 560|TRGS 505	
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	
Tin	TRGS 500|TRGS 509|TRGS 510|TRGS 800	
Thallium	TRGS 201|TRGS 400|TRGS 555|TRGS 600|TRGS 500|TRGS 509|TRGS 510	
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	

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	2026/01/17
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.