SAFETY DATA SHEET

This safety data sheet complies with the requirements of:
Regulation (EC) No. 1907/2006 and Regulation (EC) No. 1272/2008

Issuing Date 28-Jul-2016 **Revision Date** 28-Jul-2016 **Revision Number** 1
ENG

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Code(s) LK2-03430101

Product Name Metallo-Organic Mix 21, 100 g 100 µg/g in Mineral Oil Ag, Al, B, Ba, Ca, Cd, Cr, Cu, Fe, Mg, Mn, Mo, Na, Ni, P, Pb, Si, Sn, Ti, V, Zn

CAS No. Not applicable

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

Recommended Use Laboratory chemicals
Production of chemical substance

Uses advised against Not for human consumption

1.3. Details of the supplier of the safety data sheet

Manufacturer
LabKings B.V
Utrechtseweg 5, 1213TK Hilversum, The Netherlands
+31 84 875 63 44
www.labkings.com

1.4. Emergency telephone number

Emergency Telephone Chemtrec, Inside the USA: 1-800-424-9300
Chemtrec, Outside the USA: 001-703-527-3887

Europe	**112**

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

Chronic aquatic toxicity	Category 3 - (H412)

2.2. Label elements

Regulation (EC) No 1272/2008
Hazard statements
H412 - Harmful to aquatic life with long lasting effects

2.3. Other hazards

No information available

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

The exact concentration of each component can be found on the Certificate of Analysis

Chemical name	CAS No.	Molecular weight (g/mol)	Weight-%
mineral oil, white, heavy	8042-47-5		99.79
Zinc	7440-66-6	65.40	0.01
Vanadium	7440-62-2	50.94	0.01
Titanium Metal	7440-32-6	47.86	0.01
Tin Metal	7440-31-5	118.71	0.01
Sodium	7440-23-5	22.98	0.01
Silver Metal	7440-22-4	107.86	0.01
Silicon	7440-21-3	28.08	0.01
Phosphorus	7723-14-0	33.99	0.01
Nickel Metal	7440-02-0	58.69	0.01
Molybdenum Metal	7439-98-7	95.95	0.01
Manganese Metal	7439-96-5	54.93	0.01
Magnesium Metal	7439-95-4	24.30	0.01
Lead Metal	7439-92-1	207.2	0.01
Iron Metal	7439-89-6	55.84	0.01
Copper Metal	7440-50-8	63.54	0.01
Chromium Metal	7440-47-3	51.99	0.01
Calcium Carbonate	7440-70-2	40.07	0.01
Cadmium Metal	7440-43-9	112.41	0.01
Boric Acid	10043-35-3	61.83	0.01
Barium	7440-39-3	137.32	0.01
Aluminum Metal	7429-90-5	26.98	0.01

3.2 Mixtures

Chemical name	CAS No.	Classification according to Regulation (EC) No. 1272/2008 [CLP]
mineral oil, white, heavy	8042-47-5	No data available
Zinc	7440-66-6	Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410) Pyr. Sol. 1 (H250) Water-react. 1 (H260)
Vanadium	7440-62-2	No data available
Titanium Metal	7440-32-6	No data available
Tin Metal	7440-31-5	No data available
Sodium	7440-23-5	Skin Corr. 1B (H314) (EUH014) Water-react. 1 (H260)
Silver Metal	7440-22-4	No data available
Silicon	7440-21-3	No data available
Phosphorus	7723-14-0	Aquatic Chronic 3 (H412) Flam. Sol. 1 (H228)
Nickel Metal	7440-02-0	Skin Sens. 1 (H317) Carc. 2 (H351) STOT RE 1 (H372)
Molybdenum Metal	7439-98-7	No data available
Manganese Metal	7439-96-5	No data available
Magnesium Metal	7439-95-4	Pyr. Sol. 1 (H250) Water-react. 1 (H260)
Lead Metal	7439-92-1	Acute Tox. 4 (H302) Acute Tox. 4 (H332) Repr. 1A (H360Df) STOT RE 2 (H373)

		Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)
Iron Metal	7439-89-6	No data available
Copper Metal	7440-50-8	No data available
Chromium Metal	7440-47-3	No data available
Calcium Carbonate	7440-70-2	Water-react. 2 (H261)
Cadmium Metal	7440-43-9	Acute Tox. 2 (H330) Muta. 2 (H341) Carc. 1B (H350) Repr. 2 (H361fd) STOT RE 1 (H372) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)
Boric Acid	10043-35-3	Repr. 1B (H360FD)
Barium	7440-39-3	No data available
Aluminum Metal	7429-90-5	Flam. Sol. 1 (H228) Water-react. 2 (H261)

Full text of H- and EUH-phrases: see section 16

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance.

Inhalation Remove to fresh air. Get medical attention immediately if symptoms occur.

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin contact Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.

Ingestion Do not induce vomiting. Rinse mouth thoroughly with water. Get medical attention if symptoms occur.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms No information available.

4.3. Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

Section 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media Dry chemical, CO2, alcohol-resistant foam or water spray. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media No information available.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	No information available.

5.3. Advice for firefighters

Special protective equipment for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Use personal protective equipment as required. Ensure adequate ventilation. Handle within a fume cupboard or implement suitable equivalent methods to minimize exposure.
For emergency responders	Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions	See Section 12 for additional Ecological Information.

6.3. Methods and material for containment and cleaning up

Methods for containment	Prevent further leakage or spillage if safe to do so.
Methods for cleaning up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Place in appropriate chemical waste container.
Prevention of secondary hazards	Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections	See section 8 for more information. See section 13 for more information.

Section 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling	Ensure adequate ventilation. Use personal protection equipment. Handle in accordance with good industrial hygiene and safety practice.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions	Keep containers tightly closed in a dry, cool and well-ventilated place. For more information, see product label and/or certificate of analysis.

7.3. Specific end use(s)

Risk Management Methods (RMM)	The information required is contained in this Material Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure Limits .

Chemical name	European Union	United Kingdom	France	Spain	Germany
mineral oil, white, heavy 8042-47-5	-	-	-	-	TWA: 5 mg/m³
Vanadium 7440-62-2	-	-	-	-	TWA: 0.005 mg/m³ TWA: 0.03 mg/m³
Tin Metal 7440-31-5	TWA 2 mg/m³ as Sn;existing scientific data on health effects appear to be particularly limited	TWA: 2 mg/m³	-	TWA: 2 mg/m³	-
Silver Metal 7440-22-4	TWA 0.1 mg/m³	TWA: 0.1 mg/m³ STEL: 0.3 mg/m³	TWA: 0.1 mg/m³	TWA: 0.1 mg/m³	TWA: 0.1 mg/m³ TWA: 0.01 mg/m³
Silicon 7440-21-3	-	TWA: 10 mg/m³ TWA: 4 mg/m³ STEL: 30 ppm STEL: 12 mg/m³	TWA: 10 mg/m³	-	-
Phosphorus 7723-14-0	-	-	-	-	TWA: 0.01 mg/m³
Nickel Metal 7440-02-0	-	TWA: 0.5 mg/m³ STEL: 1.5 mg/m³ Sk*	TWA: 1 mg/m³	TWA: 1 mg/m³	TWA: 0.006 mg/m³
Molybdenum Metal 7439-98-7	-	TWA: 10 mg/m³	-	TWA: 10 mg/m³ TWA: 3 mg/m³	-
Manganese Metal 7439-96-5	-	TWA: 0.5 mg/m³ STEL: 1.5 mg/m³	TWA: 1 mg/m³	TWA: 0.2 mg/m³	TWA: 0.2 mg/m³ TWA: 0.02 mg/m³
Lead Metal 7439-92-1	TWA: 0.15 mg/m³	TWA: 0.15 mg/m³ STEL: 0.45 mg/m³	TWA: 0.1 mg/m³	TWA: 0.15 mg/m³	-
Copper Metal 7440-50-8	-	TWA: 1 mg/m³ TWA: 0.2 mg/m³ STEL: 0.6 mg/m³ STEL: 2 mg/m³	TWA: 0.2 mg/m³ TWA: 1 mg/m³ STEL: 2 mg/m³	TWA: 0.2 mg/m³ TWA: 1 mg/m³	-
Chromium Metal 7440-47-3	TWA: 2 mg/m³	TWA: 0.5 mg/m³ STEL: 1.5 mg/m³	TWA: 2 mg/m³	TWA: 2 mg/m³	TWA: 2 mg/m³
Cadmium Metal 7440-43-9	-	TWA: 0.025 mg/m³ STEL: 0.075 mg/m³	TWA: 0.05 mg/m³	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³	-
Boric Acid 10043-35-3	-	-	-	TWA: 2 mg/m³ STEL: 6 mg/m³	TWA: 0.5 mg/m³
Barium 7440-39-3	-	-	-	TWA: 0.5 mg/m³	-
Aluminum Metal 7429-90-5	-	TWA: 10 mg/m³ TWA: 4 mg/m³ STEL: 30 mg/m³ STEL: 12 mg/m³	TWA: 10 mg/m³ TWA: 5 mg/m³	TWA: 10 mg/m³ TWA: 5 mg/m³	-

Chemical name	Italy	Portugal	Netherlands	Finland	Denmark
Tin Metal 7440-31-5	-	TWA: 2 mg/m³	-	TWA: 2 mg/m³	TWA: 2 mg/m³
Silver Metal 7440-22-4	TWA: 0.1 mg/m³	TWA: 0.01 mg/m³	TWA: 0.1 mg/m³	TWA: 0.1 mg/m³	TWA: 0.01 mg/m³
Silicon 7440-21-3	-	-	-	-	TWA: 10 mg/m³
Nickel Metal 7440-02-0	-	TWA: 1.5 mg/m³	-	TWA: 0.01 mg/m³ TWA: 0.05 mg/m³	TWA: 0.05 mg/m³
Molybdenum Metal 7439-98-7	-	TWA: 10 mg/m³ TWA: 3 mg/m³	-	TWA: 0.5 mg/m³	TWA: 10 mg/m³
Manganese Metal 7439-96-5	-	TWA: 0.2 mg/m³	-	TWA: 0.2 mg/m³ TWA: 0.02 mg/m³	TWA: 0.2 mg/m³ TWA: 0.1 mg/m³

Lead Metal 7439-92-1	TWA: 0.075 mg/m³ TWA: 0.15 mg/m³	TWA: 0.15 mg/m³ TWA: 0.05 mg/m³	-	TWA: 0.1 mg/m³	TWA: 0.05 mg/m³
Copper Metal 7440-50-8	-	TWA: 0.2 mg/m³ TWA: 1 mg/m³	TWA: 0.1 mg/m³	TWA: 1 mg/m³ TWA: 0.1 mg/m³	TWA: 1.0 mg/m³ TWA: 0.1 mg/m³
Chromium Metal 7440-47-3	TWA: 0.5 mg/m³	TWA: 2 mg/m³	TWA: 0.5 mg/m³	TWA: 0.005 mg/m³	TWA: 0.5 mg/m³
Cadmium Metal 7440-43-9	-	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³	-	TWA: 0.02 mg/m³ iho*	TWA: 0.005 mg/m³
Boric Acid 10043-35-3	-	TWA: 2 mg/m³ STEL: 6 mg/m³	-	-	-
Barium 7440-39-3	-	TWA: 0.5 mg/m³	TWA: 0.5 mg/m³	TWA: 0.5 mg/m³	TWA: 0.5 mg/m³
Aluminum Metal 7429-90-5	-	TWA: 10 mg/m³ TWA: 5 mg/m³	-	TWA: 1.5 mg/m³	TWA: 5 mg/m³ TWA: 2 mg/m³
Chemical name	Austria	Switzerland	Poland	Norway	Ireland
Zinc 7440-66-6	-	TWA: 0.1 mg/m³ TWA: 2 mg/m³ STEL: 0.4 mg/m³	-	-	-
Vanadium 7440-62-2	TWA: 0.5 mg/m³ STEL 1 mg/m³	-	-	TWA: 0.2 mg/m³ STEL: 0.6 mg/m³ Ceiling: 0.05 mg/m³	-
Titanium Metal 7440-32-6	-	-	STEL: 30 mg/m³ TWA: 10 mg/m³	-	-
Tin Metal 7440-31-5	TWA: 2 mg/m³ STEL 4 mg/m³	TWA: 2 mg/m³ STEL: 4 mg/m³ H*	TWA: 2 mg/m³	TWA: 2 mg/m³ STEL: 2 mg/m³	TWA: 2 mg/m³ STEL: 6 mg/m³
Silver Metal 7440-22-4	TWA: 0.1 mg/m³ STEL 0.1 mg/m³ Ceiling 0.1 mg/m³	TWA: 0.1 mg/m³ TWA: 0.01 mg/m³ STEL: 0.8 mg/m³ STEL: 0.02 mg/m³	TWA: 0.05 mg/m³	TWA: 0.1 mg/m³ STEL: 0.3 mg/m³	TWA: 0.1 mg/m³ STEL: 0.3 mg/m³
Silicon 7440-21-3	-	TWA: 3 mg/m³	-	TWA: 10 mg/m³ STEL: 20 mg/m³	TWA: 10 mg/m³ TWA: 4 mg/m³ STEL: 30 mg/m³ STEL: 12 mg/m³
Phosphorus 7723-14-0	TWA: 0.1 mg/m³ STEL 0.2 mg/m³	TWA: 0.02 mg/m³ STEL: 0.02 mg/m³	-	STEL: 0.1 mg/m³	-
Nickel Metal 7440-02-0	-	TWA: 0.5 mg/m³	TWA: 0.25 mg/m³	TWA: 0.05 mg/m³ STEL: 0.05 mg/m³	TWA: 0.5 mg/m³ STEL: 1.5 mg/m³
Molybdenum Metal 7439-98-7	TWA: 10 mg/m³ STEL 20 mg/m³	TWA: 10 mg/m³	STEL: 10 mg/m³ TWA: 4 mg/m³	TWA: 10 mg/m³ STEL: 10 mg/m³	TWA: 3 mg/m³ TWA: 0.5 mg/m³ STEL: 9 mg/m³ STEL: 1.5 mg/m³
Manganese Metal 7439-96-5	TWA: 0.5 mg/m³ STEL 2 mg/m³	TWA: 0.5 mg/m³	TWA: 0.2 mg/m³ TWA: 0.05 mg/m³	TWA: 1 mg/m³ TWA: 0.1 mg/m³ STEL: 1 ppm STEL: 0.1 mg/m³	TWA: 0.2 mg/m³ STEL: 0.6 mg/m³ STEL: 3 mg/m³
Lead Metal 7439-92-1	TWA: 0.1 mg/m³ STEL 0.4 mg/m³	TWA: 0.1 mg/m³ STEL: 0.8 mg/m³	TWA: 0.05 mg/m³	TWA: 0.05 mg/m³ STEL: 0.05 mg/m³	TWA: 0.15 mg/m³ STEL: 0.45 mg/m³
Copper Metal 7440-50-8	TWA: 1 mg/m³ TWA: 0.1 mg/m³ STEL 4 mg/m³ STEL 0.4 mg/m³	TWA: 0.1 mg/m³ STEL: 0.2 mg/m³	TWA: 0.2 mg/m³	TWA: 0.1 mg/m³ TWA: 1 mg/m³ STEL: 0.1 mg/m³ STEL: 1 mg/m³	TWA: 0.2 mg/m³ TWA: 1 mg/m³ STEL: 0.6 mg/m³ STEL: 2 mg/m³
Chromium Metal 7440-47-3	TWA: 2 mg/m³	TWA: 0.5 mg/m³	TWA: 0.5 mg/m³	TWA: 0.5 mg/m³ STEL: 0.5 mg/m³	TWA: 2 mg/m³ STEL: 6 mg/m³
Cadmium Metal 7440-43-9	-	TWA: 0.015 mg/m³ H*	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³	TWA: 0.05 mg/m³ STEL: 0.05 mg/m³	TWA: 0.025 mg/m³ TWA: 0.002 mg/m³ TWA: 0.01 mg/m³ STEL: 0.075 mg/m³ STEL: 0.03 mg/m³

					STEL: 0.006 mg/m³
Boric Acid 10043-35-3	-	TWA: 10 mg/m³ STEL: 10 mg/m³	-	-	-
Barium 7440-39-3	TWA: 0.5 mg/m³ STEL 2 mg/m³	-	TWA: 0.5 mg/m³	TWA: 0.5 mg/m³ STEL: 0.5 mg/m³	-
Aluminum Metal 7429-90-5	TWA: 10 mg/m³ STEL 20 mg/m³	TWA: 3 mg/m³	TWA: 2.5 mg/m³ TWA: 1.2 mg/m³	TWA: 5 mg/m³ STEL: 5 mg/m³	TWA: 1 mg/m³ STEL: 3 mg/m³

Biological occupational exposure limits

Chemical name	European Union	United Kingdom	France	Spain	Germany
Lead Metal 7439-92-1	Lead 70 µg/100mL no restriction Lead 0.075 mg/m³ 40 hours per week Lead 40 µg/100mL no restriction	-	-	70	300 µg/L 400 µg/L
Cadmium Metal 7440-43-9	-	-	-	5	
Chemical name	**Italy**	**Portugal**	**Netherlands**	**Finland**	**Denmark**
Nickel Metal 7440-02-0	-	-	-	0.1	
Lead Metal 7439-92-1	-	-	-	1.4	Lead 20 µg/100mL blood
Chemical name	**Austria**	**Switzerland**	**Poland**	**Norway**	**Ireland**
Nickel Metal 7440-02-0	-	45	-	-	-
Manganese Metal 7439-96-5	-	20	-	-	-
Lead Metal 7439-92-1	-	400 100	-	-	-
Cadmium Metal 7440-43-9	-	5	-	-	-
Aluminum Metal 7429-90-5	-	60	-	-	-

Derived No Effect Level (DNEL) No information available.

Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Engineering controls Apply technical measures to comply with the occupational exposure limits. Showers, eyewash stations, and ventilation systems. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Hand Protection Protective gloves. Ensure that the breakthrough time of the glove material is not exceeded. Refer to glove supplier for information on breakthrough time for specific gloves. Wash hands thoroughly after handling.

Skin and body protection Wear suitable protective clothing. Chemical resistant apron. Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls No information available.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Appearance	May vary
Odor	May vary.
Color	May vary
Odor threshold	No information available

Property	**Values**	**Remarks • Method**
pH	No data available	None known
Melting point / freezing point	No data available	None known
Boiling point / boiling range	260 - 427 °C	None known
Flash point	> 160 °C	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability limit:	No data available	
Lower flammability limit:	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	No data available	None known
Water solubility	Insoluble in water	None known
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Explosive properties	No information available	
Oxidizing properties	No information available	

9.2. Other information

Softening point	No information available
Molecular weight (g/mol)	No information available
VOC Content (%)	No information available
Liquid Density	No information available
Bulk density	No information available
Particle Size	No information available
Particle Size Distribution	No information available

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity

Reactivity No information available.

10.2. Chemical stability

Stability Stable under normal conditions.

Explosion data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions None under normal processing.

10.4. Conditions to avoid

Conditions to avoid None known based on information supplied.

10.5. Incompatible materials

Incompatible materials None known based on information supplied.

10.6. Hazardous decomposition products

Hazardous decomposition products None known based on information supplied.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Information on likely routes of exposure

Product Information

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Inhalation Specific test data for the substance or mixture is not available.

Eye contact Specific test data for the substance or mixture is not available.

Skin contact Specific test data for the substance or mixture is not available.

Ingestion Specific test data for the substance or mixture is not available.

Information on toxicological effects

Symptoms No information available.

Numerical measures of toxicity

Acute toxicity

The following values are calculated based on chapter 3.1 of the GHS document
ATEmix (oral) 5,016.00 mg/kg

Unknown acute toxicity 100 % of the mixture consists of ingredient(s) of unknown toxicity.
0.21 % of the mixture consists of ingredient(s) of unknown acute oral toxicity.
100 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity.
100 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas).
100 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor).
100 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist).

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
mineral oil, white, heavy	> 5000 mg/kg (Rat)		
Tin Metal	= 700 mg/kg (Rat)		
Silver Metal	> 2000 mg/kg (Rat)		
Silicon	= 3160 mg/kg (Rat)		
Phosphorus	= 3030 µg/kg (Rat)	= 100 mg/kg (Rat)	= 4.3 mg/L (Rat) 1 h
Nickel Metal	> 9000 mg/kg (Rat)		
Manganese Metal	= 9 g/kg (Rat)		
Magnesium Metal	= 230 mg/kg (Rat)		
Iron Metal	= 984 mg/kg (Rat)		
Cadmium Metal	= 1140 mg/kg (Rat)		= 25 mg/m³ (Rat) 30 min
Boric Acid	= 2660 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 0.16 mg/L (Rat) 4 h
Barium	= 132 mg/kg (Rat)		

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation No information available.

Serious eye damage/eye irritation No information available.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity If this product is a mixture, the classification is not based on toxicology studies for this product, but is based solely on toxicology studies for ingredients found within this product. More detailed substance and/or ingredient information may be provided in the other sections of this SDS. Contains a known or suspected mutagen.

Chemical name	European Union
Cadmium Metal	Muta. 2

Carcinogenicity Contains a known or suspected carcinogen.

Chemical name	European Union
Nickel Metal	Carc. 2
Cadmium Metal	Carc. 1B

Reproductive toxicity Contains a known or suspected reproductive toxin.

Chemical name	European Union
Lead Metal	Repr. 1A
Cadmium Metal	Repr. 2
Boric Acid	Repr. 1B

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Aspiration hazard No information available.

Section 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity Should not be released into the environment. Harmful to aquatic life with long lasting effects. The environmental impact of this product has not been fully investigated.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
mineral oil, white, heavy	-	10000: 96 h Lepomis	-	-

		macrochirus mg/L LC50		
Zinc	0.11 - 0.271: 96 h Pseudokirchneriella subcapitata mg/L EC50 static 0.09 - 0.125: 72 h Pseudokirchneriella subcapitata mg/L EC50 static	2.16 - 3.05: 96 h Pimephales promelas mg/L LC50 flow-through 30: 96 h Cyprinus carpio mg/L LC50 0.24: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 0.59: 96 h Oncorhynchus mykiss mg/L LC50 semi-static 0.41: 96 h Oncorhynchus mykiss mg/L LC50 static 2.66: 96 h Pimephales promelas mg/L LC50 static 3.5: 96 h Lepomis macrochirus mg/L LC50 static 0.45: 96 h Cyprinus carpio mg/L LC50 semi-static 7.8: 96 h Cyprinus carpio mg/L LC50 static 0.211 - 0.269: 96 h Pimephales promelas mg/L LC50 semi-static	-	0.139 - 0.908: 48 h Daphnia magna mg/L EC50 Static
Silver Metal	-	0.00155 - 0.00293: 96 h Pimephales promelas mg/L LC50 static 0.064: 96 h Lepomis macrochirus mg/L LC50 static 0.0062: 96 h Oncorhynchus mykiss mg/L LC50 flow-through	-	0.00024: 48 h Daphnia magna mg/L EC50 Static
Phosphorus	-	0.015 - 0.032: 96 h Oncorhynchus mykiss mg/L LC50 static 0.0017 - 0.0035: 96 h Lepomis macrochirus mg/L LC50 flow-through 0.001 - 0.004: 96 h Lepomis macrochirus mg/L LC50 static 0.011 - 0.028: 96 h Pimephales promelas mg/L LC50 static 100: 96 h Brachydanio rerio mg/L LC50 static	-	0.025 - 0.037: 48 h Daphnia magna mg/L EC50 Static 0.03: 48 h Daphnia magna mg/L EC50
Nickel Metal	0.18: 72 h Pseudokirchneriella subcapitata mg/L EC50 0.174 - 0.311: 96 h Pseudokirchneriella subcapitata mg/L EC50 static	1.3: 96 h Cyprinus carpio mg/L LC50 semi-static 100: 96 h Brachydanio rerio mg/L LC50 10.4: 96 h Cyprinus carpio mg/L LC50 static	-	100: 48 h Daphnia magna mg/L EC50 1: 48 h Daphnia magna mg/L EC50 Static
Lead Metal	-	1.32: 96 h Oncorhynchus mykiss mg/L LC50 static 0.44: 96 h Cyprinus carpio mg/L LC50 semi-static 1.17: 96 h Oncorhynchus mykiss mg/L LC50 flow-through	-	600: 48 h water flea µg/L EC50
Iron Metal	-	13.6: 96 h Morone	-	-

		saxatilis mg/L LC50 static		
Copper Metal	0.0426 - 0.0535: 72 h Pseudokirchneriella subcapitata mg/L EC50 static 0.031 - 0.054: 96 h Pseudokirchneriella subcapitata mg/L EC50 static	0.3: 96 h Pimephales promelas mg/L LC50 static 1.25: 96 h Lepomis macrochirus mg/L LC50 static 0.8: 96 h Cyprinus carpio mg/L LC50 static 0.3: 96 h Cyprinus carpio mg/L LC50 semi-static 0.052: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 0.112: 96 h Poecilia reticulata mg/L LC50 flow-through 0.0068 - 0.0156: 96 h Pimephales promelas mg/L LC50 0.2: 96 h Pimephales promelas mg/L LC50 flow-through	-	0.03: 48 h Daphnia magna mg/L EC50 Static
Cadmium Metal	-	0.003: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 4.26: 96 h Cyprinus carpio mg/L LC50 semi-static 0.002: 96 h Cyprinus carpio mg/L LC50 21.1: 96 h Lepomis macrochirus mg/L LC50 flow-through 0.0004 - 0.003: 96 h Pimephales promelas mg/L LC50 0.006: 96 h Oncorhynchus mykiss mg/L LC50 static 0.24: 96 h Cyprinus carpio mg/L LC50 static 0.016: 96 h Oryzias latipes mg/L LC50	-	0.0244: 48 h Daphnia magna mg/L EC50 Static
Boric Acid	-	1020: 72 h Carassius auratus mg/L LC50 flow-through	-	115 - 153: 48 h Daphnia magna mg/L EC50

12.2. Persistence and degradability

Persistence and degradability No information available.

12.3. Bioaccumulative potential

Bioaccumulation No information available.

Chemical name	Partition coefficient
mineral oil, white, heavy	>6
Boric Acid	-0.757

12.4. Mobility in soil

Mobility in soil No information available.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment No information available.

12.6. Other adverse effects

Other adverse effects No information available.

Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

Section 14: TRANSPORT INFORMATION

IMDG

14.1 UN/ID no.	Not regulated
14.2 Proper shipping name	No information available
14.3 Hazard Class	No information available
14.4 Packing Group	No information available
14.5 Marine pollutant	No information available
14.6 Special Provisions	No information available
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	No information available

RID

14.1 UN/ID no.	Not regulated
14.2 Proper shipping name	No information available
14.3 Hazard Class	No information available
14.4 Packing Group	No information available
14.5 Environmental hazard	No information available
14.6 Special Provisions	No information available

ADR

14.1 UN/ID no.	Not regulated
14.2 Proper shipping name	No information available
14.3 Hazard Class	No information available
14.4 Packing Group	No information available
14.5 Environmental hazard	No information available
14.6 Special Provisions	No information available

IATA

14.1 UN/ID no.	Not regulated
14.2 Proper shipping name	No information available
14.3 Hazard Class	No information available
14.4 Packing Group	No information available
14.5 Environmental hazard	No information available
14.6 Special Provisions	No information available

Section 15: REGULATORY INFORMATION

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

France

Occupational Illnesses (R-463-3, France)

Chemical name	French RG number	Title
Zinc 7440-66-6	RG 61	-
Vanadium 7440-62-2	RG 66	-
Phosphorus 7723-14-0	RG 5	-
Nickel Metal 7440-02-0	RG 37ter	-
Lead Metal 7439-92-1	RG 1	-
Iron Metal 7439-89-6	RG 44,RG 44bis,RG 94	-
Chromium Metal 7440-47-3	RG 10	-
Cadmium Metal 7440-43-9	RG 61,RG 61bis	-
Aluminum Metal 7429-90-5	RG 32 RG 16,RG 16bis	-

European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Authorizations and/or restrictions on use:

This product contains one or more substance(s) subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Chemical name	Restricted substance per REACH Annex XVII	Substance subject to authorization per REACH Annex XIV
Nickel Metal - 7440-02-0	27.	
Lead Metal - 7439-92-1	63.	
Cadmium Metal - 7440-43-9	23. 28.	
Boric Acid - 10043-35-3	30.	

Persistent Organic Pollutants

Not applicable

Export Notification requirements

This product contains substances which are regulated pursuant to Regulation (EC) No. 689/2008 of the European parliament and of the council concerning the export and import of dangerous chemicals

Chemical name	European Export/Import Restrictions per (EC) 689/2008 - Annex Number
Cadmium Metal - 7440-43-9	I.1

Ozone-depleting substances (ODS) regulation (EC) 1005/2009 Not applicable

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Complies

PICCS	Complies
AICS	Complies

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

15.2. Chemical safety assessment

Chemical Safety Report A Chemical Safety Assessment has not been carried out for this substance

Section 16: OTHER INFORMATION

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under section 3
H360FD - May damage fertility. May damage the unborn child
H228 - Flammable solid
H261 - In contact with water releases flammable gases
H302 - Harmful if swallowed
H332 - Harmful if inhaled
H360Df - May damage the unborn child. Suspected of damaging fertility
H373 - May cause damage to organs through prolonged or repeated exposure if inhaled
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects
H317 - May cause an allergic skin reaction
H351 - Suspected of causing cancer if swallowed
H372 - Causes damage to organs through prolonged or repeated exposure if inhaled
H330 - Fatal if inhaled
H341 - Suspected of causing genetic defects if swallowed
H350 - May cause cancer in contact with skin
H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child
H250 - Catches fire spontaneously if exposed to air
H260 - In contact with water releases flammable gases which may ignite spontaneously
H412 - Harmful to aquatic life with long lasting effects

Legend
SVHC: Substances of Very High Concern for Authorization:

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation

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This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Disclaimer
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date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet