

Safety data sheet according to 1907/2006/EC, Article 31

Printing date 13.11.2023

Version number 30 (replaces version 29)

Revision: 13.11.2023

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

· **1.1 Product identifier**

· **Product name: Manganese LR 2**

· **Catalog number:** 00516091, 516090BT, 4516090BT, 516091BT, 4516091BT, 00516099BT

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

· **Application of the substance / the preparation:** Reagent for water analysis

· **1.3 Details of the supplier of the safety data sheet**

· **Supplier:**

Tintometer GmbH
Schleefstraße 8-12
44287 Dortmund
Made in Germany
www.lovibond.com

phone: +49 (0)231 94510-0
e-mail: sales@lovibond.com

The Tintometer Limited
Lovibond® House
Sun Rise Way
Amesbury
Wiltshire SP4 7GR
United Kingdom

phone : +44 1980 664800
e-mail: SDS@lovibond.uk

· **Informing department:**

e-mail: sds@lovibond.com
Product Safety Department

· **1.4 Emergency telephone number:**

+44 1235 239670
Languages: English

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**

· **Classification according to Regulation (EC) No 1272/2008**



GHS05 corrosion

Skin Corr. 1A H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

· **2.2 Label elements**

· **Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labelled according to the GB CLP regulation.

· **Hazard pictograms**



GHS05

GHS07

· **Signal word** Danger

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Hazard-determining components of labelling:

lithium hydroxide

Hazard statements

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

Precautionary statements

P280 Wear protective gloves/protective clothing/eye protection.

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 skin with water or shower.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a doctor.

2.3 Other hazards Acid burns have to treated immediately, as it may otherwise cause badly curing wounds.**Results of PBT and vPvB assessment**

This mixture does not contain any substances that are assessed to be persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB), according to the criteria given in Annex XIII of Regulation (EC) No. 1907/2006.

Determination of endocrine-disrupting properties

The product does not contain substances with endocrine disrupting properties.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Description: Mixture of inorganic compounds.

Dangerous components:

CAS: 1310-65-2	lithium hydroxide	10–20%
EINECS: 215-183-4	⚠ Skin Corr. 1A, H314; Eye Dam. 1, H318; ⚠ Acute Tox. 4, H302	
Reg.nr.: 01-2119560576-31-XXXX	ATE: LD50 oral: 330 mg/kg	

Additional information For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information Instantly remove any clothing soiled by the product.

After inhalation Supply fresh air or oxygen; call for doctor.

After skin contact

Instantly rinse with water.

Immediate medical treatment necessary. Failure to treat burns can prevent wounds from healing.

After eye contact

Rinse opened eye for several minutes (at least 15 min) under running water.

Call a doctor immediately.

After swallowing

Rinse out mouth and then drink 1-2 glasses of water.

Do not induce vomiting; instantly call for medical help.

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

burns

absorption

after inhalation:

coughing

breathing difficulty

damage to the affected mucous membranes possible

after swallowing:

strong caustic effect.

sickness

vomiting

after absorption of large amounts:

cardiovascular disorders

CNS disorders

ataxia (impaired locomotor coordination)

cramps

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- **Danger**
 Danger of system failure.
 Danger of gastric perforation.
 Danger of disturbed cardiac rhythm.
 - **4.3 Indication of any immediate medical attention and special treatment needed:**
 If swallowed or in case of vomiting, danger of entering the lungs
 Subsequent observation for pneumonia and pulmonary oedema
-

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
 - **Suitable extinguishing agents** Use fire fighting measures that suit the environment.
 - **For safety reasons unsuitable extinguishing agents**
 Water
 --> Aqueous solution reacts strongly alkaline.
 If possible use dry extinguishing agents.
 - **5.2 Special hazards arising from the substance or mixture**
 The product is not combustible.
 Formation of toxic gases is possible during heating or in case of fire.
 Hydrogen chloride (HCl)
 Dipotassium oxide
 LiOx
 - **5.3 Advice for firefighters**
 - **Protective equipment:**
 Wear self-contained breathing apparatus.
 Wear full protective suit.
 - **Additional information**
 Collect contaminated fire fighting water separately. It must not enter drains.
 Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
 Ambient fire may liberate hazardous vapours.
-

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
 - **Advice for non-emergency personnel:**
 Wear protective equipment. Keep unprotected persons away.
 Avoid substance contact.
 Ensure adequate ventilation
 Use breathing protection against the effects of fumes/dust/aerosol.
 - **Advice for emergency responders:** Protective equipment: see section 8
 - **6.2 Environmental precautions:** Do not allow product to reach sewage system or water bodies.
 - **6.3 Methods and material for containment and cleaning up:**
 Ensure adequate ventilation.
 Collect mechanically.
 Dispose of contaminated material as waste according to item 13.
 - **6.4 Reference to other sections**
 See Section 8 for information on personal protection equipment.
 See Section 13 for information on disposal.
-

SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
- **Advice on safe handling:** Provide suction extractors if dust is formed.
- **Hygiene measures:**
 Do not inhale dust / smoke / mist.
 Do not get in eyes, on skin, or on clothing.
 Take off immediately all contaminated clothing.
 Wash hands during breaks and at the end of the work.
 Do not eat, drink or smoke when using this product.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Requirements to be met by storerooms and containers:** Store in cool location.

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Information about storage in one common storage facility:

Do not store together with acids.
Store away from oxidising agents.

Further information about storage conditions:

Store in cool, dry conditions in well sealed containers.
Protect from heat and direct sunlight.
Protect from the effects of light.
Protect from humidity and keep away from water.
This product is hygroscopic.

Recommended storage temperature: 20°C +/- 5°C**7.3 Specific end use(s)** No further relevant information available.**SECTION 8: Exposure controls/personal protection****8.1 Control parameters****Components with limit values that require monitoring at the workplace:****CAS: 1310-65-2 lithium hydroxide**WEL (Great Britain) Short-term value: 1 mg/m³**Regulatory information** WEL (Great Britain): EH40/2020**DNELs**

Derived No Effect Level (DNEL)

CAS: 1310-65-2 lithium hydroxide

Oral	DNEL	12.4 mg/kg /bw/d (Consumer / acute / systemic effects)
		4.13 mg/kg /bw/d (Consumer / long-term / systemic effects)
Dermal	DNEL	100 mg/kg /bw/d (Worker / acute / systemic effects)
		41.35 mg/kg /bw/d (Worker / long-term / systemic effects)
		50 mg/kg /bw/d (Consumer / acute / systemic effects)
Inhalative	DNEL	41.35 mg/kg /bw/d (Consumer / long-term / systemic effects)
		30 mg/m ³ (Worker / acute / systemic effects)
		10 mg/m ³ (Worker / long-term / systemic effects)
		18.63 mg/m ³ (Consumer / acute / systemic effects)
		6.21 mg/m ³ (Consumer / long-term / systemic effects)

PNECs

Predicted No Effect Concentration (PNEC)

CAS: 1310-65-2 lithium hydroxide

PNEC	79.2 mg/l (Sewage treatment plant)
	0.23 mg/l (Marine water)
	2.3 mg/l (Fresh water)
PNEC	0.45 mg/kg (Soil)
	0.9 mg/kg (Marine sediment)
	9 mg/kg (Fresh water sediment)

Additional information: The lists that were valid during the compilation were used as basis.**8.2 Exposure controls****Engineering measures:**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.
See item 7.

Individual protection measures, such as personal protective equipment

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled.

Eye/face protection

Tightly sealed safety glasses.
Use safety glasses that have been tested and approved in accordance with government standards such as EN 166.

Hand protection

Protective gloves.
After use of gloves apply skin-cleaning agents and skin cosmetics.

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- **Material of gloves**
nitrile rubber, NBR
Recommended thickness of the material: ≥ 0.11 mm
- **Penetration time of glove material**
Value for the permeation: Level = 1 (< 10 min)
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **Other skin protection (body protection):** Protective work clothing.
- **Breathing equipment:** Use breathing protection against the effects of fumes/dust/aerosol.
- **Recommended filter device for short term use:** Filter P2
- **Environmental exposure controls** Do not allow product to reach sewage system or water bodies.

SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**
- **Physical state** Solid.
- **Form:** Tablets
- **Colour:** White
- **Odour:** Odourless
- **Odour threshold:** Not applicable.
- **Melting point/Freezing point:** Not determined.
- **Boiling point or initial boiling point and boiling range** Not determined.
- **Flammability** The product is not combustible.
- **Explosive properties:** Product is not explosive.
- **Lower and upper explosion limit**
- Lower: Not applicable.
- Upper: Not applicable.
- **Flash point:** Not applicable.
- **Auto-ignition temperature:** Not applicable (solid).
- **Decomposition temperature:** Not determined.
- **pH (11.7 g/l) at 20°C** 12.9
- **Kinematic viscosity** Not applicable (solid).
- **Solubility**
- **Water:** Soluble
- **Partition coefficient n-octanol/water (log value)** Not applicable (mixture).
- **Vapour pressure:** Not applicable.
- **Density and/or relative density**
- **Density at 20°C:** ~ 2.1 g/cm³
- **Relative density:** Not determined.
- **Relative gas density** Not applicable (solid).
- **Particle characteristics** Not determined.

· 9.2 Other information

- **Information with regard to physical hazard classes**
- **Corrosive to metals** Void
- **Other safety characteristics**
- **Oxidising properties:** none
- **Additional information**
- **Solids content:** 100 %

SECTION 10: Stability and reactivity

- **10.1 Reactivity** see section 10.3
- **10.2 Chemical stability** Stable at ambient temperature (room temperature).
- **10.3 Possibility of hazardous reactions**
Aqueous solution reacts alkaline.
Aqueous solution reacts with metals.
Reacts with acids
Corrodes aluminium
Reacts with oxidizing agents
--> forms heat
Reacts with light alloys to form hydrogen

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- **10.4 Conditions to avoid** Exposure to moisture.
- **10.5 Incompatible materials:**
 - organic substances
 - aluminium
 - zinc
- **10.6 Hazardous decomposition products:** see section 5

SECTION 11: Toxicological information

- **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**

- **Acute toxicity**

Classification according to calculation procedure:
Harmful if swallowed.

- **Acute toxicity estimate (ATE_(MX)) - Calculation method:**

Oral	CLP ATE _(MX)	1716 mg/kg (.)
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- **LD/LC50 values that are relevant for classification:**

CAS: 1310-65-2 lithium hydroxide

Oral	LD50	330 mg/kg (ATE) (Registrant, ECHA) Acute toxicity data are available for oral route of exposure: LD50 (rat, oral): female: 210 mg/kg bw; male: 280 mg/kg bw, both for lithium hydroxide anhydrous. As these values are most likely linked to local tissue damage due to the corrosiveness of the substance and are not only a result of "primary" systemic toxicity the LD50 oral of lithium chloride and lithium carbonate were taken into account after conversion. A LD50 value of 330 mg/kg bw were found to reflect properly the systemic toxicity of the corrosive substance lithium hydroxide anhydrous.
Dermal	LD50.	>2000 mg/kg /bw (rat) (Registrant, ECHA)
Inhalative	LC50	>3.4 mg/l /4h (rat) (Registrant, ECHA)
	NOAEL	13.9–84.8 mg/kg /bw/d (rat) (Registrant, ECHA: oral)

- **Skin corrosion/irritation** Causes severe skin burns and eye damage.
- **Serious eye damage/irritation**
Causes serious eye damage.
Risk of blindness!
- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT (specific target organ toxicity) -single exposure** Based on available data, the classification criteria are not met.
- **STOT (specific target organ toxicity) -repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard** Based on available data, the classification criteria are not met.
- **Additional toxicological information:**
The following applies to lithium compounds in general:
after absorption: CNS disorders, ataxia (impaired locomotor coordination) due to disturbed electrolyte balance
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.
- **11.2 Information on other hazards**
- **Endocrine disrupting properties** The product does not contain substances with endocrine disrupting properties.
- **Other information**
According to the information available to us, the chemical, physical and toxicological properties of the substances mentioned in Chapter 3 have not been thoroughly investigated.

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SECTION 12: Ecological information

· 12.1 Toxicity

· Aquatic toxicity:

CAS: 1310-65-2 lithium hydroxide

EC50	19.1 mg/l/48h (Daphnia magna) without pH-adjustment
NOEC	5.71 mg/l/72h (Pseudokirchneriella subcapitata)
NOEC	9.9 mg/l /34d (zebrafish) 2.3 mg/l /21d (Daphnia magna)
EC50	87.57 mg/l/72h (Pseudokirchneriella subcapitata)
LC50	62.2 mg/l/96h (zebrafish)

· Other information:

The following applies for lithium compounds in general:
fish toxic from 100 mg/l, Daphnia toxic from 16 mg/l, plants toxic from 0,2 mg/l

· 12.2 Persistence and degradability .

· Other information:

Mixture of inorganic compounds.
Methods for the determination of biodegradability are not applicable to inorganic substances.

· 12.3 Bioaccumulative potential

No further relevant information available.

· 12.4 Mobility in soil

No further relevant information available.

· 12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB), according to the criteria given in Annex XIII of Regulation (EC) No. 1907/2006.

· 12.6 Endocrine disrupting properties

The product does not contain substances with endocrine disrupting properties.

· 12.7 Other adverse effects

Harmful effect due to pH shift.

Avoid transfer into the environment.

· Water hazard:

Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.

Must not reach sewage water or drainage ditch undiluted or unneutralised.

SECTION 13: Disposal considerations

· 13.1 Waste treatment methods

· Recommendation

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Hand over to disposers of hazardous waste.

· European waste catalogue

16 05 07*	discarded inorganic chemicals consisting of or containing hazardous substances
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· Uncleaned packagings:

· Recommendation:

Disposal must be made according to official regulations.

· Recommended cleaning agent:

Water, if necessary with cleaning agent.

SECTION 14: Transport information

· 14.1 UN number or ID number

· ADR, IMDG, IATA

UN2680

· 14.2 UN proper shipping name

· ADR

2680 LITHIUM HYDROXIDE mixture

· IMDG, IATA

LITHIUM HYDROXIDE mixture

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· 14.3 Transport hazard class(es)	
· ADR	
	
· Class	8 (C6) Corrosive substances.
· Label	8
· IMDG, IATA	
	
· Class	8 Corrosive substances.
· Label	8
· 14.4 Packing group	
· ADR, IMDG, IATA	II
· 14.5 Environmental hazards:	
	Not applicable.
· 14.6 Special precautions for user	
· Warning:	Warning: Corrosive substances.
· Kemler Number:	80
· EMS Number:	F-A,S-B
· Segregation groups	(SGG18) Alkalis
· Stowage Category	A
· Segregation Code	SG35 Stow "separated from" SGG1-acids
· 14.7 Maritime transport in bulk according to IMO instruments	
	Not applicable.
· Transport/Additional information:	
· ADR	
· Limited quantities (LQ)	1 kg
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 500 g
· Transport category	2
· Tunnel restriction code	E
· IMDG	
· Limited quantities (LQ)	1 kg
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 500 g

SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**· **Poisons Act UK**· **Regulated explosives precursors**

None of the ingredients is listed.

· **Regulated poisons**

None of the ingredients is listed.

· **Reportable explosives precursors**

None of the ingredients is listed.

· **Reportable poisons**

None of the ingredients is listed.

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· Regulation (EU) 2019/1148 on the marketing and use of explosives precursors not regulated
· Regulation (EU) No 649/2012 concerning the export and import of hazardous chemicals (PIC) None of the ingredients is listed.
· Regulation (EC) No 1334/2000 setting up a Community regime for the control of exports of dual-use items and technology: None of the ingredients is listed.
· Regulation (EC) No 273/2004 on drug precursors None of the ingredients is listed.
· Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors None of the ingredients is listed.
· Regulation (EC) No 1005/2009 on substances that deplete the ozone layer: None of the ingredients is listed.
· REGULATION (EU) 2019/1021 on persistent organic pollutants (POP) None of the ingredients is listed.
· LIST OF SUBSTANCES SUBJECT TO AUTHORISATION (ANNEX XIV) None of the ingredients is listed.
· Substances of very high concern (SVHC) according to REACH, Article 57 This product does not contain any substances of very high concern above the legal concentration limit of $\geq 0.1\%$ (w / w).
· Substances of very high concern (SVHC) according to UK REACH This product does not contain any substances of very high concern above the legal concentration limit of $\geq 0.1\%$ (w / w).
· Directive 2012/18/EU (SEVESO III):
· Named dangerous substances - ANNEX I None of the ingredients is listed.
· Information about limitation of use: Employment restrictions concerning young persons must be observed (94/33/EC).
· 15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

This Safety Data Sheet is in compliance with Regulation (EC) No 1907/2006, Article 31 as amended by Regulation (EU) 2020/878.

· **Training hints** Provide adequate information, instruction and training for operators.

· **Relevant phrases**

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

· **Abbreviations and acronyms:**

STOT: specific target organ toxicity

SE: single exposure

RE: repeated exposure

EC50: half maximal effective concentration

IC50: half maximal inhibitory concentration

NOEL or NOEC: No Observed Effect Level or Concentration

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

DNEL: Derived No-Effect Level (UK REACH)

PNEC: Predicted No-Effect Concentration (UK REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

SVHC: Substances of Very High Concern

vPvB: very Persistent and very Bioaccumulative

Acute Tox. 4: Acute toxicity – Category 4

Skin Corr. 1A: Skin corrosion/irritation – Category 1A

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Eye Dam. 1: Serious eye damage/eye irritation – Category 1

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· Sources

Data arise from safety data sheets, reference works and literature.

ECHA: European CHemicals Agency <http://echa.europa.eu>

RTECS (Registry of Toxic Effects of Chemical Substances)

GESTIS- Stoffdatenbank (Substance Database, Germany)

IUCLID (International Uniform Chemical Information Database)

· * Data compared to the previous version altered.

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