1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

Product Identifier: Lithium Hydroxide, Monohydrate

Sales name: Lithium Hydroxide Monohydrate

Company name:

Nexchem Ltd
Unit 3 Barshaw Park
Leycroft Road
Leicester
LE4 1ET
Tel: 0116 2311130
24/7 Emergency Tel: 0800 246 1274
Email: sales@nexchem.co.uk

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

CLP Classification:

Acute Tox.4	H302	Harmful if swallowed
Skin Corr. 1B	H314	Causes severe skin burns and eye damage

DSD Classification:

Xn; Harmful	R22	Harmful if swallowed
Xi; Irritant	R34	Causes burns

2.2 Label elements:

Label elements-CLP Classification

Hazard Pictogram(s):

Signal word: Danger

Hazard Statements: Only the wording of the hazard statement itself needs to go on the label

[cont...]

Precautionary Statements:

P260	Do not breathe dust/fumes.
P280	Wear protective gloves/eye protection.
P304+340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P303+P361+P353	IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338	IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
P501	Dispose of contents/container according to local regulations.

Label elements-DSD Classification

Hazard Pictogram(s):

Safety phrases:

S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28	After contact with skin, wash immediately with plenty of water.
S36/37/39	Wear suitable protective clothing.

Other hazard information: PBT and vPvB assessment is not applicable to inorganic substances.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances:

Chemical Name	CAS No	EC No	% w/w
Lithium Hydroxide, Monohydrate	1310-66-3	215-183-4	c.100

4. FIRST AID MEASURES (SYMPTOMS)

4.1 Description of first aid measures

Eyes: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. If eye irritation persists: Get medical advice/attention.

Skin: Remove/take off immediately all contaminated clothing. Rinse skin with water/shower
If skin is burnt or sore: Seek medical advice/attention.

Ingestion: Wash out mouth thoroughly with water. Give plenty of water to drink. Obtain immediate medical attention.

Inhalation: Remove casualty to fresh air and keep at rest in a position comfortable for breathing. Allow casualty to regain normal breathing pattern. Wash out mouth with water if necessary. If discomfort persists then obtain medical advice. Apply artificial respiration if the casualty is not breathing and seek immediate medical attention.

[cont...]

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

In case of skin contact:	Causes severe skin burns.
In case of eye contact:	Causes severe eye damage (burns).
In case of inhalation:	May be corrosive/irritant to the respiratory tract.
In case of ingestion:	Harmful if swallowed.
	The substance is corrosive to mucous membranes; acute effects are related to this property.

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

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media: Any suitable for fire in surrounding area.

5.2 Special hazards arising from the substance or mixture: Thermal decomposition can lead to the escape of toxic/irritating gases and vapours.

5.3 Special protective actions for fire-fighters: Wear self-contained breathing apparatus.
Wear protective suit.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Wear an approved dust mask if dust is likely.
Wear gloves and safety glasses or face shield.
Persons not wearing personal protective clothing should be restricted from the spillage area.

6.2 Environmental precautions: Seal inlets to sewers or water courses and seek to contain spillage.
Water used for final wash down of the spillage site should be contained and collected for disposal (see section 13).

6.3 Methods and material for containment and cleaning up: Collect spillage using clean, dry, metal tools (e.g. small scoop), taking precautions to avoid generation of dust and place in a clean, dry, suitable labelled drum for disposal or re-use (see section 13). The area affected area should then be washed down and the washings collected for disposal by an accredited waste disposal company.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling: When handling, wear personal protective equipment (section 8) and take measures to prevent generation of dusts. Eating, drinking and smoking should not be permitted in areas where this substance is handled.
Do not handle close to substances incompatible with bases.

7.2 Conditions for safe storage, including any incompatibilities: Reseal carefully any opened container and set upright to avoid leakages. Keep away from acids and other substances incompatible with bases. Keep the product dry in containers tightly closed in a dry, well ventilated and cool place.
Store in a cool dry, covered, bunded and secure area. Containers should be protected from physical damage.
Store away from acids.

7.3 Specific end uses: No further relevant information available.

[cont...]

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters: Under UK legislation, the STEL for Lithium Hydroxide Monohydrate is 1mg/m^3.

DNEL/DMEL and PNEC Values

Workers (Industrial/professional):

DNEL Human,dermal,acute: 100mg LiOH/kg bw/day (systemic)

DNEL Human,inhalation,acute: 4.55mg LiOH/m^3 (systemic)

DNEL Human,dermal,long term: 17.25mg LiOH/kg/day (systemic)

DNEL Human,inhalation,long term: 1.52mg LiOH/ m^3 (systemic)

Consumer

DNEL Human,oral,acute: 5.18mg LiOH/kg/day (systemic)

DNEL Human,dermal,acute: 50mg LiOH/kg/day (systemic)

DNEL Human,inhalation,acute: 1.95mg LiOH/m^3 (systemic)

DNEL Human,dermal,long term: 17.25 LiOH/kg/day (systemic)

DNEL Human,inhalation,long term: 0.65mg LiOH/m^3 (systemic)

DNEL Human,oral,long term: 1.73mg LiOH/kg bw/day (systemic)

PNEC Environment,freshwater: 0.2mg Li+/L

PNEC Environment,marine water: 0.02mg Li+/L

PNEC Environment,aqua,intermittent releases: 0.0055mg Li+/L

PNEC Environment,sediment,freshwater: 0.17mg Li+/L

PNEC Environment,sediment,marine water: 0.017mg Li+/L

PNEC Environment,soil: 0.0347mg Li+/kg dw

PNEC Environment,sewage treatment plant: 22.95mg Li+/L

8.2 Exposure controls

Engineering controls: UK Law (COSHH) imposes a duty on the employer to take all reasonable precautions and to exercise all due diligence to ensure that exposure is kept far below the maximum exposure limit as is reasonably practicable. Use engineering controls (e.g. local exhaust ventilation) and supply personal protective equipment. Take measures to avoid the production of dust. Personal protective equipment (PPE):

Eye/Face: When handling then approved safety goggles should be adequate.

Respiratory: Any work with this substance in a laboratory should be carried out in a fume cupboard. When handling larger quantities in a manufacturing/ repacking process a half-face respirator or an air helmet should be used, along with local exhaust ventilation.

Protective clothing: Laboratory coat or other cotton/polyester overalls fully covering the body and limbs should be used when handling small quantities in a laboratory or manufacturing/repacking process.
Disposable vinyl gloves should be the minimum protection used when handling.

8.3 Environmental exposure controls: The substance should only be used in a bunded area to prevent escape to the external environment. Local exhaust ventilation should be used where there is a chance of dust being generated.

[cont...]

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:	Solid
Colour:	White
Odour:	None
Odour threshold:	Not applicable
pH:	>13 (1% aqueous solution)
Melting point:	424OC
Boiling Point:	Not applicable (decomposes)
Flash Point:	Not applicable
Evaporation rate:	Not applicable
Flammability:	Not flammable
Flammable limits:	Not applicable
Vapour pressure:	Not applicable
Relative density:	1.5 g/cm^3 @ 20OC
Solubility in water:	189-223g/L at 20OC
Partition coefficient:	Not applicable
Auto ignition temperature:	Not applicable
Decomposition temperature:	924OC
Viscosity:	Not applicable
Explosive properties:	Not explosive
Oxidising properties:	Not an oxidizer

10. STABILITY AND REACTIVITY

10.1 Reactivity: Stable under normal storage and temperature conditions. Absorbs carbon dioxide from the air.

10.2 Chemical stability: Stable under normal storage and temperature conditions.

10.3 Possibility of hazardous reaction: None identified

10.4 Conditions to avoid: None identified

10.5 Incompatible materials: Strong acids, metals such as zinc and aluminium

10.6 Hazardous decomposition products: Thermal decomposition products-Lithium Oxides

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Toxic kinetics, metabolism and distribution: Lithium Hydroxide Monohydrate dissociates in water where Lithium and Hydroxide ions are generated. After oral uptake, Lithium (Li+) is readily and almost completely absorbed from the gastrointestinal tract. In the stomach, due to gastric acid the respective salt is formed. The absorption of Li+ through the skin is considered to be very poor to negligible. Upon inhalation, resorption and bioavailability of Li+ from noncorrosive aerosols is expected to be low. After absorption, Lithium is quickly distributed and excreted unchanged. Bioaccumulation can be excluded. The Hydroxide ion may react with free H+, forming water which is toxicologically not relevant.

[cont...]

Acute toxicity: LD50 (Oral, rat): 596-921mg/kg bw
LD50 values for the substance are likely to be influenced by the corrosiveness of the substance. To represent properly the acute systemic toxicity, values were derived by converting Lithium Carbonate and Lithium Chloride LD50s into Lithium Hydroxide.

LD50 (Dermal, rat):>2000mg/kg bw
LD50 (Inhalation, rat):>6.15mg/L(4h)

Lithium Hydroxide is classified and labelled Xn,R22 under DSD and as Acute Tox. 4, H302 under CLP.

Skin corrosion/irritation: Lithium Hydroxide is classified and labelled C R34 under DSD and as Skin Corr. 1B,H314 under CLP.

Serious eye damage/irritation: Corrosive to eyes.

Respiratory or skin sensitisation: Not sensitising on guinea pig
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: Lithium Carbonate is not considered to have effects on fertility. Limited and not clear evidence suggests reproductive effects in animals(not reliable supporting study). In humans, reports suggest reproductive impairment during Lithium therapy, however, no conclusions can be drawn from reports as the number of cases is very low and confounding factors are not considered.

Adverse effects on development toxicity:
NOAEL: 34.1mg/kg bw/day (maternal toxicity)
NOAEL: 102mg/kg bw/day (embryotoxicity)
Effects of Lithium on human development have been studied. Medical monitoring of patients has revealed no link between congenital malformations, physical or mental anomalies and Lithium therapy. Reports indicating potential effects are of low cohort size and side effects were not excluded. Equivocal information on cardiovascular developmental effects is found.
Based on available data the classification criteria are not met.

STOT-Single exposure: No relevant effects have been observed after single exposure to the substance.
Based on available date, the classification criteria are not met.

STOT-repeated exposure:

Non-human information: NOAEL: 84mg LiOH.H2O/kg bw/day (Worst case NOAEL calculated from LiCl intake for LiOH.H2O)

Human information: Lithium compounds are used as treatment in psychiatric therapy. Long term dose used in psychiatric therapy: 450-900 mg/day.
Assuming therapeutic range (long term) as without significant toxicological side effects a NOAEL could be derived.
NOAEL: 0.50mg Lithium /kg bw/day
Based on available date, the classification criteria are not met.

Aspiration hazard: Physicochemical and toxicological data does not indicate a potential aspiration hazard.
Based on available date, the classification criteria are not met.

[cont...]

12. ECOLOGICAL INFORMATION

12.1 Toxicity:

Aquatic toxicity (acute toxicity): 96 hour LC50 (zebra fish) 109mg LiOH.H2O/L
48 hour EC50 (big water flea) 33.5 mg LiOH.H2O/L
72 hour EC50 (P. subcapitata) 153.44mg LiOH.H2O/L
72 hour NOEC (P. Subcapitata) 10mg LiOH.H2O/L

Aquatic toxicity (long term toxicity): 26 day NOEC (P. promelas) 1.19mg LiOH.H2O/L
21 day NOEC (Big water flea) 4mg LiOH.H2O/L

Respiratory inhibition of municipal activated sludge: 3 hour EC50 (Aquatic micro-organisms) 316.8mg Based on available data, the classification criteria are not met

12.2 Persistence and degradability: Lithium Hydroxide completely dissociates in water forming Lithium captions and the corresponding Hydroxide anions. Lithium ions do not undergo further degradation and will finally incorporated into the soil minerals inventory.

12.3 Bioaccumulative potential: Lithium Hydroxide has a low potential for bioaccumulation based on physicochemical properties.

12.4 Mobility in soil: Lithium Hydroxide has a low potential for adsorption.

12.5 Results of PBT and vPvB assessment: Not applicable to inorganic substances.

12.6 Other adverse effects: None specified.

13. DISPOSAL CONSIDERATIONS

Suitable methods: Any waste must not be discharged to sewer or river unless a written discharge consent has been issued by the appropriate authority (in the UK this is the local water authority or the Environment Agency). This procedure should be carried out by suitable trained personnel, using appropriate equipment. Packaging must be thoroughly rinsed with water before disposal or recycling. Wash water should be disposed of as above. Containers, even when cleaned, are considered to be a controlled waste and the duty of care still applies.

14. TRANSPORT INFORMATION

14.1 UN Number: 2680

14.2 UN Proper shipping name: LITHIUM HYDROXIDE

14.3 Transport hazard class(es): 8

14.4 Packing group: II

14.5 Environmental hazards: None

14.6 Special precautions for user: None

14.7 Tunnel Code: E

14.8 Transport in bulk according to Annex II of MARPOL73/78 and the IBC code: Not applicable

15. REGULATORY INFORMATION

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

The substance is classified and labelled according to the CLP Regulation and to the DSD Regulation

[cont...]

Note: The regulatory information given above only indicates the principal regulations specifically Applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

16. OTHER INFORMATION

Legal disclaimer: The information contained in this SDS does not constitute a risk assessment, and should not replace the user's own assessment of risks as required by other health and safety legislation. This advice is given by Nexchem Ltd who accept no legal liability for it except otherwise provided by law. The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. It should not therefore be construed as guaranteeing specific properties.