SAFETY DATA SHEET  LITHIUM HYDROXIDE, MONOHYDRATE

1. Identification of the Substance/Mixture and of the Company/Undertaking:

1.1 **Product Identifier:** Lithium Hydroxide, Monohydrate

1.1.1 **Substances**

1.1.2 **Alternate names and trade name** Lectro® Lyte 900 salt

1.2 **Mixture name:** Not applicable

1.2 **Relevant Identified Uses of the Substance or Mixture and Uses Advised Against:**

- Formulation and chemical synthesis in industrial manufacturing operations;
- Additive for preparations and articles for industrial and consumer use.
- Raw material in manufacture of lithium greases.
- Do not use for private purposes (household).

1.3 **Details of the Supplier of the Safety Data Sheet**

- **North America**
  - FMC
  - Seven LakePointe Plaza
  - 2801 Yorkmont Rd, Suite 300
  - Charlotte, NC 28208
  - Phone: +1.704.868.5300
  - Fax: +1.704.868.5370
  - 1.888.lithium
  - Email: lithium.info@fmc.com
  - Web: www.fmclithium.com

- **Europe**
  - FMC Chemicals
  - Commercial Road
  - Bromborough, Merseyside
  - CH62 3NL, England
  - Phone: +44.151.482.7356
  - Fax: +44.151.482.7361

- **Asia Pacific**
  - FMC Asia Pacific Office
  - 15F Far East International Plaza
  - Shanghai 200051, PRC
  - Phone: +86.21.6235 1919
  - Fax: +86.21.6235 1917

1.4 **Emergency Telephone Number:**

- **North America**
  - CHEMTREC: +1.800.424.9300
  - Plant: +1.704.629.5361
  - Medical: +1.303.595.9048

- **Europe**
  - 24 hr Specialist advice number (Carechem): +44.1865.407333
  - Office (0900-1700): +44.151.334.8085

2. Hazards Identification

2.1 **Classification of the Substance or mixture:**

- **2.1.1 GHS Classification [EC Regulation No 1272/2008 and US OSHA regulation]:**
  - Skin Corrosion Category 1B
  - Acute Toxicity Category 4

- **2.2.2 EC: Classification according to 67/548/EEC or 1999/45/EC (DSD/DPD)**
  - C, R34; Xn, R22

2.2 **Label Elements:**

- **2.2.3 Hazard Pictograms(s):**

2.2.4 **Signal Word:** Danger

**Hazard Statement(s):**

- Causes severe skin burns and eye damage. H314
- Harmful if swallowed. H302

**Precautionary Statement(s):**
Wear protective gloves/protective clothing/eye protection/face protection. P280
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P305 + P351 + P338
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P301 + P330 + P331
 Immediately call a POISON CENTER or doctor/physician. P310
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P303 + P361 + P353
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P304 + P340

2.3 Other Hazards
None.

3. Composition / Information on Ingredients

3.1 Substances

3.1.1 GHS Classification [EC: Regulation No 1272/2008; US: OSHA regulations]

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS #</th>
<th>EC No</th>
<th>EC Index No</th>
<th>REACH Reg No</th>
<th>Wt.%</th>
<th>Classification, Hazard Statement Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium hydroxide, monohydrate</td>
<td>1310-66-3</td>
<td>215-183-4</td>
<td>not avail.</td>
<td>not available</td>
<td>&gt;99</td>
<td>Skin Corr. 1B Acute Tox. 4 H314 H302</td>
</tr>
<tr>
<td>(anhyd. form)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.1.2 EC: Classification according to 67/548/EEC or 1999/45/EC [DSD/DPD]

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS #</th>
<th>EC No</th>
<th>Wt.%</th>
<th>Symbols</th>
<th>R-phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium hydroxide, monohydrate</td>
<td>1310-66-3</td>
<td>215-183-4</td>
<td>&gt;99</td>
<td>C Xn</td>
<td>R34 R22</td>
</tr>
<tr>
<td>(anhyd. form)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.2 Mixtures
Not applicable.
(see Section 16 for R-phrase text)

4. First Aid Measures

4.1 Description of First Aid Measures
EYES: Immediately flush with water for at least 15 minutes, lifting the upper and lower eyelids intermittently. See a medical doctor or ophthalmologist immediately.

SKIN: Immediately flush with plenty of water while removing contaminated clothing and/or shoes, and thoroughly wash with soap and water. Obtain immediate medical attention. Contact a medical doctor if necessary.

INGESTION: Rinse mouth with water. Dilute by giving 1 or 2 glasses of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. See a medical doctor immediately.

INHALATION: Remove to fresh air. If breathing discomfort occurs and persists, see a medical doctor. If breathing has stopped, give artificial respiration and see a medical doctor immediately.

4.2 Most Important Symptoms and effects, both acute and delayed
This product is corrosive.

4.3 Indication of any immediate medical attention and special treatment needed.
Notes to medical doctor:
This product is corrosive to the skin, eyes and mucous membranes of the respiratory and gastrointestinal tracts. Consideration should be given to gastric lavage, with endotracheal tube in place. Treatment is controlled removal of exposure with symptomatic and supportive care.

5. Fire-Fighting Measures

5.1 Extinguishing media
Dry chemical, CO₂, water spray or regular foam.

5.2 Special hazards arising from the substance or mixture
Hazardous combustion products
Corrosive lithium hydroxide dust.

General Hazard
None

Properties contributing to Flammability
None

Flashpoint
Not applicable
5.3 Advice for fire-fighters

Wear full protective clothing and self-contained breathing apparatus (SCBA) approved for fire fighting. This is necessary to protect against the hazards of heat, products of combustion and oxygen deficiency. Do not breathe smoke, gases or vapors generated.

COMMENTS:
(See Section 10, Stability and Reactivity)

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Before cleanup measures begin, review the entire SDS with particular attention to Section 2, Hazards Identification; and Section 8, Exposure Controls/Personal Protection.

6.2 Environmental precautions

Do not wash into drains. Dispose of at qualified waste disposal facility.

6.3 Methods and material for containment and cleaning up

Sweep up and place in suitable transport container. Dispose of waste according to all local and Federal laws and regulations.

6.4 Reference to other sections

Before cleanup measures begin, review the entire SDS with particular attention to Section 2, Hazards Identification; and Section 8, Exposure Controls/Personal Protection.

6.5 Additional information

Not specified.

7. Handling and Storage

7.1 Precautions for safe handling

Do not get in eyes, on skin or clothing. Avoid breathing dust. Wash thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

Keep container closed. Store away from acids and water.

7.3 Specific end use(s)

Not available. Chemical safety assessment has not been completed for this product.

8. Exposure Controls / Personal Protection

8.1 Control parameters

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>EU TWA</th>
<th>STEL</th>
<th>EH40 (UK WEL) TWA</th>
<th>STEL</th>
<th>USA (ACGIH) TWA</th>
<th>STEL/Ceiling</th>
<th>USA (OSHA) PEL</th>
<th>STEL/Ceiling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium hydroxide, monohydrate</td>
<td>none*</td>
<td>none*</td>
<td>none*</td>
<td></td>
<td>none*</td>
<td></td>
<td>none*</td>
<td></td>
</tr>
<tr>
<td>Lithium hydroxide, anhydrous</td>
<td>none*</td>
<td>---</td>
<td>1 mg/m³</td>
<td></td>
<td>none*</td>
<td></td>
<td>none*</td>
<td></td>
</tr>
</tbody>
</table>

* No occupational exposure limit value

8.2 Exposure controls

Engineering controls:
Use local exhaust ventilation to keep airborne concentrations below exposure limits.

Personal protective equipment

Eyes and Face: Safety glasses or goggles
Respiratory: When engineering controls are not adequate, wear a respirator approved for protection against inorganic dusts.
US: NIOSH or MSHA approved
Europe: CEN Class P type

Protective Clothing: Gloves: Nitrile (Typical permeation breakthrough time >480 minutes)
These glove recommendations should not be used as the absolute basis for glove selection. Actual in-use conditions may vary glove performance from the controlled conditions of laboratory tests. Factors such as concentration and temperature, glove thickness and glove reuse, may affect performance. Other glove requirements, such as length, dexterity, cut, abrasion, puncture and snag resistance, or glove grip need to be considered in making your final selection. **Other:** Not specified.

**Work Hygienic Practices:** Quick-drench eyewash and safety shower.

### 9. Physical and Chemical Properties

#### 9.1 Information on basic physical and chemical properties

- **Appearance:** White crystals
- **Odor:** Odorless
- **Odor threshold:** Not applicable
- **pH:** (1% solution) @ 25°C: >13
- **Melting point:** 470°C (878°F)
- **Boiling point:** Not applicable
- **Flash point:** Not applicable
- **Evaporation rate (butyl acetate = 1):** Not applicable
- **Flammability:** Not flammable
- **Flammable limits:** Not applicable
- **Vapor pressure:** Not applicable
- **Vapor density (air = 1):** Not applicable
- **Specific gravity:** 1.5 g/cc
- **Solubility in water:** % by wt. @ 25°C (77°F): 10
- **Partition coefficient n-octanol/ water:** Not applicable
- **Autoignition temperature:** Not applicable
- **Decomposition temperature:** Not available
- **Viscosity:** Not applicable
- **Explosive properties:** Not explosive
- **Oxidizing properties:** Not an oxidizer

#### 9.2 Other information

- **Self-reactive properties**
  - Does not meet classification criteria.
- **Pyrophoric properties**
  - Does not meet classification criteria.
- **Self-heating properties**
  - Does not meet classification criteria.
- **Water reactive properties**
  - Does not meet classification criteria.
- **Corrosive to metals**
  - Does not meet classification criteria.
- **Molecular weight:** 41.96

### 10. Stability and Reactivity

#### 10.1 Reactivity

- Reacts with acids.

#### 10.2 Chemical stability

- Stabile

#### 10.3 Possibility of hazardous reaction

- Hazardous polymerization will not occur

#### 10.4 Conditions to avoid

- Contact with acids, aluminum or zinc

#### 10.5 Incompatible materials

- Acids, aluminum, zinc

#### 10.6 Hazardous decomposition products

- None

### 11. Toxicological Information

#### 11.1 Toxicokinetics, metabolism and distribution

- **Non-human toxicological data**
  - **Method:** Not available
  - **Dosis:**
  - **Routes of administration:**
  - **Results:**
  - **Absorption:**
  - **Distribution:**
  - **Metabolism:**
  - **Excretion:**
11.2 Information on toxicological effects

11.2.1 Acute Toxicity: Acute Toxicity Category 4

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>Oral:</th>
<th>Dermal:</th>
<th>Inhalation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium hydroxide, monohydrate</td>
<td>Read across data indicates acute oral category 4 classification</td>
<td>Based on available data, the classification criteria are not met.</td>
<td>Based on available data, the classification criteria are not met.</td>
</tr>
</tbody>
</table>

11.2.2 Skin Corrosion/Irritation: Skin Corrosion Category 1B

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>Data:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium hydroxide, monohydrate</td>
<td>Packing Group II, Corrositex skin corrosion assay</td>
</tr>
</tbody>
</table>

11.2.3 Serious Eye Damage/Irritation: No classification

11.2.4 Respiratory or Skin Sensitization: No classification

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>Data:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium hydroxide, monohydrate</td>
<td>Based on available data, the classification criteria are not met.</td>
</tr>
</tbody>
</table>

11.2.5 Carcinogenicity, Mutagenicity, Reproductive Toxicity: No classification

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>Germ Cell Mutagenicity</th>
<th>Carcinogenicity</th>
<th>Reproductive Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium hydroxide, monohydrate</td>
<td>Based on available data, the classification criteria are not met.</td>
<td>Based on available data, the classification criteria are not met.</td>
<td>Based on available data, the classification criteria are not met.</td>
</tr>
</tbody>
</table>

Carcinogenicity Listings

- EH40: Not listed.
- IARC: Not listed.
- NTP: Not listed.
- OSHA: Not considered a carcinogen under OSHA.
- ACGIH: Not listed.

11.2.6 Specific Target Organ Toxicity (STOT) -- Single Exposure: No classification

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>Data:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium hydroxide, monohydrate</td>
<td>Based on available data, the classification criteria are not met.</td>
</tr>
</tbody>
</table>

11.2.7 Specific Target Organ Toxicity (STOT) -- Repeated Exposure: No classification

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>Data:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium hydroxide, monohydrate</td>
<td>Based on available data, the classification criteria are not met.</td>
</tr>
</tbody>
</table>

11.2.8 Aspiration Hazard: No classification

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>Data:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium hydroxide, monohydrate</td>
<td>Based on available data, the classification criteria are not met.</td>
</tr>
</tbody>
</table>

12. Ecological Information

12.1 Toxicity: No classification.

<table>
<thead>
<tr>
<th>Substance/mixture</th>
<th>Data:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium hydroxide, monohydrate</td>
<td>Based on the available data, the classification criteria are not met.</td>
</tr>
</tbody>
</table>

12.2 Persistence and degradability

- No data available for the product.

12.3 Bioaccumulative potential

- No data available for the product.

12.4 Mobility in soil

- No data available for the product.

12.5 Results of PBT and vPvB assessment

- No data available for the product.

12.6 Other adverse effects

- None

13. Disposal Considerations

13.1 Waste treatment methods
Use a qualified industrial waste disposal facility. Dispose of waste according to local and Federal laws and regulations.

14. Transport Information

14.1 UN Number
UN2680
14.2 UN proper shipping name (IMDG, ICAO, ADR, DOT)
Lithium hydroxide
14.3 Transport hazard class(es) (IMDG, ICAO, ADR, DOT)
8, Corrosive
14.4 Packing group (IMDG, ICAO, ADR, DOT)
II
14.5 Environmental hazards
Based on available data, the classification criteria are not met.
14.6 Special precautions for user
None
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
None

15. Regulatory Information

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

EUROPEAN UNION:

German Wassergefährdungsklasse (water hazard class)
lithium hydroxide, anhydrous 2

UNITED STATES:

Section 311 Hazard Category (40 CFR 370):
Immediate (Acute) Health Hazard
Section 313 Reportable Ingredients (40 CFR 372):
This product does not contain a toxic chemical subject to the reporting requirements of Section 313 of Emergency Planning and Community Right-To-Know Act of 1986.
Not listed
Section 302 Extremely Hazardous Substances (40 CFR 355):
Not listed
CERCLA Hazardous Substance (40 CFR 302.4):
This product is not subject to TSCA 12 (b) Export Notification Requirements.
NFPA Rating:
Health: 3 Flammability: 0 Reactivity: 1 Special: None

CANADA:

WHMIS:
Product Identification No.: 2680
Ingredient Disclosure List: Lithium hydroxide, anhydrous is listed

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

INTERNATIONAL INVENTORY STATUS:

<table>
<thead>
<tr>
<th>Inventory/Country</th>
<th>Product Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS (EU)</td>
<td>Lithium hydroxide is listed; the hydrated form is not required to be listed.</td>
</tr>
<tr>
<td>TSCA (US)</td>
<td>Lithium hydroxide is listed; the hydrated form is not required to be listed.</td>
</tr>
<tr>
<td>ECL (Korea)</td>
<td>Lithium hydroxide is listed; the hydrated form is not required to be listed.</td>
</tr>
<tr>
<td>DSL (Canada)</td>
<td>Lithium hydroxide is listed; the hydrated form is not required to be listed.</td>
</tr>
</tbody>
</table>

15.2 Chemical Safety Assessment
The Chemical Safety Assessment has not been completed for this mixture.

16. Other Information

European Union:

R Phrases:
Causes burns. R34
Harmful if swallowed. R22
**REVISION SUMMARY:** Revision # 1. Regular review completed. No changes needed.

This SDS has been prepared to meet European Regulation (EC) No 1907/2006 [and No 1272/2008], U. S. OSHA Hazard Communication Standard, and Canada's Workplace Hazardous Materials Information System (WHMIS) requirements.

type 7a

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