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

1.1 Product Identifier: Lithium Hydroxide, Monohydrate
1.1.1 Substances Not applicable
Alternate names and trade name Lectro® Lyte 900 salt
1.1.2 Mixture name: Lithium Hydroxide, Monohydrate

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 Lithium USA Corp
  2801 Yorkmont Road, Suite 300
  Charlotte, NC 28208
  Phone: +1.704.426.5300
  Fax: +1.704.426.5370
  1.888.lithium

- **Europe**
  FMC Chemicals Limited
  Commercial Road
  Bromborough, Merseyside
  CH62 3NL, England
  Phone: +44.151.334.8085
  Fax: +44.151.482.7361

- **Asia Pacific**
  FMC Specialty Chemicals (Zhangjiagang) Co. Ltd.
  32 Beijing Road,
  Yangtse River Chemical Park,
  Zhangjiagang Free Trade Zone, Jiangsu
  215635, China
  T: +86.512.5832.7307
  Fax: +86.512.5832.7311

email: lithium.info@fmc.com
Web: www.livent.com

1.4 Emergency Telephone Number:

- **North America**
  CHEMTREC: +1.800.424.9300
  +1.703.527.3887
  Plant: +1.704.629.5361

- **Europe**
  24 hr Specialist advice number: CHEMTREC: +44 870 8200418

- **Asia Pacific**
  Phone: +86.21.2067.5888

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
Eye damage; Category 1
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.  
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  

**Additional Precautionary Statement(s):**  
Do not breathe dust/fume/gas/mist/vapours/spray. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Store locked up. Dispose of contents/container to an approved waste disposal plant.

2.3 **Other Hazards**  
None.

### 3. Composition / Information on Ingredients

#### 3.1 Substances  
Not applicable. Lithium hydroxide monohydrate is considered to be a mixture of anhydrous in water.

#### 3.2 Mixtures

**3.2.1 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, anhydrous</td>
<td>1310-65-2</td>
<td>215-183-4</td>
<td>not avail.</td>
<td>01-2119560576-31-0012</td>
<td>57</td>
<td>Skin Corr. 1B Acute Tox. 4 H314 H302</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>43</td>
<td>None</td>
</tr>
</tbody>
</table>

**3.2.2 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, anhydrous</td>
<td>1310-65-2</td>
<td>215-183-4</td>
<td>57</td>
<td>C Xn</td>
<td>R34 R22</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>None</td>
<td>43</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

(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
Flammability:
Flashpoint: Not applicable
Flammable limits in air: Not applicable
Auto ignition temperature: Not applicable
Sensitivity to static discharge: Not applicable
Sensitivity to static impact: 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)
Defined in Exposure scenarios. Industrial and professional use only

8. Exposure Controls / Personal Protection

8.1 Control parameters
Lithium hydroxide, anhydrous

DNEL
Long-term exposure, systemic, inhalation 14.5 mg/m³
Long-term exposure, systemic, dermal 41.4 mg/kg/day

PNEC
PNEC aqua (freshwater) 2.3 mg/l
PNEC STP 80 mg/l

EXPOSURE LIMITS

<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></td>
<td>none*</td>
<td></td>
<td>none*</td>
<td></td>
<td>none*</td>
<td></td>
</tr>
</tbody>
</table>
Lithium hydroxide, anhydrous | none* | --- | 1 mg/m³ | none* | none* | none*

* 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. See Exposure Scenario for more details.

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**

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

9.2 **Other information**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-reactive properties</strong></td>
<td>Does not meet classification criteria.</td>
</tr>
<tr>
<td><strong>Pyrophoric properties</strong></td>
<td>Does not meet classification criteria.</td>
</tr>
<tr>
<td><strong>Self-heating properties</strong></td>
<td>Does not meet classification criteria.</td>
</tr>
<tr>
<td><strong>Water reactive properties</strong></td>
<td>Does not meet classification criteria.</td>
</tr>
<tr>
<td><strong>Corrosive to metals</strong></td>
<td>Does not meet classification criteria.</td>
</tr>
<tr>
<td><strong>Molecular weight</strong></td>
<td>41.96</td>
</tr>
</tbody>
</table>

10. Stability and Reactivity

10.1 **Reactivity**
Reacts with acids.

10.2 **Chemical stability**
Stable

10.3 **Possibility of hazardous reaction**
Hazardous polymerization will not occur

10.4 **Conditions to avoid**
Contact with acids, aluminium or zinc.
11. Toxicological Information

11.1 Information on toxicological effects

(a) acute toxicity  Lithium hydroxide is classed as acute oral category 4 based on read across data.

(b) skin corrosion/irritation  Classified as corrosive, category 1B on the basis of lithium hydroxide.

(c) serious eye damage/irritation  Classified as corrosive to eyes on the basis of lithium hydroxide.

(d) respiratory/skin sensitisation  Classified as not sensitizing to skin on the basis of lithium hydroxide.

(e) germ cell mutagenicity  Classified as not mutagenic based on lithium hydroxide.

(f) carcinogenicity  Classified as not carcinogenic based on lithium hydroxide.

(g) reproductive toxicity  Classified as not a reproductive toxin based on lithium hydroxide.

(h) STOT-single exposure  Classified as not causing organ damage based on lithium hydroxide.

(i) STOT-repeated exposure  Classified as not causing organ damage on repeat exposure based on lithium hydroxide.

(j) aspiration hazard  Lithium hydroxide, a solid, does not present an aspiration hazard.

12. Ecological Information

12.1 Toxicity:  No classification.

Lithium hydroxide, anhydrous

- Daphnia magna: 48 hr. EC50 = 34.3 mg/L
- Daphnia reproduction 21 day, NOEC 2.3 mg/l
- Fish: 96 hr. LC50 = 62 mg/L
- Algal growth inhibition: EC50 88 mg/l (anhydrous)
- Sludge Respiration inhibition: EC50 180 mg/l (anhydrous)

12.2 Persistence and degradability  No applicable for metal salts.

12.3 Bioaccumulative potential  No applicable for metal salts.

12.4 Mobility in soil  No data available for the product.

12.5 Results of PBT and vPvB assessment  No applicable for metal salts.

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. UN Number and Proper Shipping Names

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

### 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.
- **Section 302 Extremely Hazardous Substances (40 CFR 355):**
  
  - Not listed
- **CERCLA Hazardous Substance (40 CFR 302.4):**
  
  - Not listed
- **TSCA Sec 12b Export Notification:**
  
  - This product is not subject to TSCA 12 (b) Export Notification Requirements.

**NFPA Rating:**

- **Health:** 3
- **Flammability:** 0
- **Reactivity:** 1
- **Special:** None

**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 been completed for lithium hydroxide anhydrous.

### 16. Other Information

**European Union:**

- **R Phrases:**
  
  - R22: Harmful if swallowed.
  - R34: Causes burns

**List of Abbreviations used in this SDS:**

- **PBT:** Persistent, Bioaccumulative and Toxic
- **vPvB:** very Persistent, very Bioaccumulative
- **PEC:** Predicted environmental concentration
- **PNEC:** Predicted no effect concentration
- **DNEL:** Derived no effect level

**Specific uses identified for Exposure Scenarios**
ES1  Formulation
ES2  Chemical processing
ES3  Professional use of products

**REVISION SUMMARY:** Revision # 2. Sections 1 and 16 modified. Legal entity and addresses changed.

This SDS has been prepared to meet U. S. OSHA Hazard Communication Standard requirements.

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