

Section 1. Product and Company Identification

**Product Name** Lithium Hydroxide Monohydrate  
**CAS Number** 1310-66-3

**Parchem - fine & specialty chemicals**  
**415 Huguenot Street**  
**New Rochelle, NY 10801**  
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EMERGENCY RESPONSE NUMBER  
CHEMTEL  
Toll Free US & Canada: 1 (800) 255-3924  
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Collect Calls Accepted

Section 2. Hazards Identification

**Classification of the substance or mixture**

**GHS Classification**

**Health**

Eye Corrosion/Irritation: Category 1  
Skin Corrosion/Irritation: Category 1B  
Acute Toxicity (Oral): Category 4

**Environmental**

Acute aquatic toxicity: Category 3

**GHS Label Elements**

**Pictograms:**



**Signal word:** DANGER

**Hazard and precautionary statements**

**Hazard Statements**

H302: Harmful if swallowed.  
H314: Causes severe skin burns and eye damage.  
H402: Harmful to aquatic life.

**Precautionary Statements**

**Prevention**

P260: Do not breathe dust or mist.  
P264: Wash thoroughly after handling.  
P270: Do not eat, drink or smoke when using this product.



P273: Avoid release to the environment.  
P280: Wear protective gloves, eye protection, face protection.

**Storage**

P405: Store locked up.

**Disposal**

P501: Dispose of contents/container to an approved waste disposal plant

**Response**

P301 + P330 + P331: If Swallowed, rinse mouth. Do not induce vomiting.  
P310: Immediately call a poison center or doctor/physician.  
P303 + P361 + P553: If on skin (or hair), remove immediately all contaminated clothing. Rinse skin with water.  
P310: Immediately call a poison center or doctor/physician.  
P363: Wash contaminated clothing before reuse.  
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 poison center or doctor/physician.  
P304+P340: If inhaled, remove person to fresh air and keep comfortable for breathing.  
P310: Immediately call a poison center or doctor/physician.

Section 3. Composition / Information on Ingredients

**Common Name** Lithium Hydroxide Monohydrate  
**Synonym(s)** Lithium Hydroxide Hydrate; Lithium Hydroxide Hydrated  
**Formula** LiOH · H<sub>2</sub>O  
**CAS Number** 1310-66-3

COMPONENT	CAS NUMBER	CONCENTRATION
Lithium Hydroxide Monohydrate	1310-66-3	> 99% wt.

Section 4. First Aid Measures

**First-Aid Measures:** Rescuers should not attempt to retrieve victims of exposure to this product without adequate personal protective equipment or by themselves. At a minimum, chemical impervious clothing should be worn. Victims of chemical exposure must be taken for medical attention if any adverse effect occurs. Rescuers should be taken for medical attention if necessary. Take copy of label and SDS to physician or health professional with victim

**Skin Exposure:** If this solution contaminates the skin, immediately begin decontamination with running water Do not interrupt flushing. Minimum flushing time is 30 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Seek immediate medical attention.

**Eye Exposure:** If this solution contaminates the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 30



minutes. Seek immediate medical attention.

**Inhalation:** If Lithium Hydroxide Monohydrate is inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers. Seek immediate medical attention.

**Ingestion:** If Lithium Hydroxide Monohydrate is swallowed, immediately call physician or poison control center for most current information. Do not induce vomiting. If conscious, have victim rinse mouth with water. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow.

**Most Important Symptoms/Effects, Acute and Delayed:** Irritation or burns to skin, eyes, and tissues of the respiratory system.

**Indication of Immediate Medical Treatment and Special Treatment:** Immediate medical treatment is required for contact, inhalation or ingestion.

**Recommendations to Physicians:** Treat symptoms and eliminate overexposure.

#### Section 5. Firefighting Measures

**Fire Extinguishing Media:** Lithium Hydroxide is not flammable. Use fire extinguishing material appropriate for surrounding fires.

**Specific Fire and Explosion Hazards:** Lithium Hydroxide Monohydrate is corrosive and presents a severe contact hazard to firefighters. When involved in a fire, Lithium Hydroxide Monohydrate may decompose and produce irritating fumes and toxic gases (lithium compounds).

**Explosion Sensitivity to Mechanical Impact:** Not sensitive.

**Explosion Sensitivity to Static Discharge:** Not sensitive.

**Special Firefighting Equipment and Procedures:** Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move containers from fire area if it can be done without risk to personnel. If possible, firefighters should control runoff water to prevent environmental contamination.

#### Section 6. Accidental Release Measures

**Personal Precautions, Protective Equipment and Emergency Procedures:** Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a spill, clear the affected area and protect people. The minimum Personal Protective Equipment recommended for response to non-incident releases should be: gloves, chemical resistant suit and boots, hard-hat, and air-purifying respirator with high-efficiency particulate filter. Self-Contained Breathing Apparatus would be worn in situations where the oxygen level is below 19.5 % or is unknown.

**Methods and Materials for Containment/Cleanup:** Sweep up or vacuum spilled Lithium Hydroxide Monohydrate carefully, avoiding the generation of dusts. Decontaminate the area thoroughly. If necessary, neutralize area with citric acid. Test area with litmus paper to insure



neutralization is complete. Place all spill residues in a suitable container and seal. Dispose of in accordance with U.S. Federal, State, and local or Canadian solid waste disposal regulations (see Section 13, Disposal Considerations).

Section 7. Handling and Storage

**Precautions for Safe Handling:** As with all chemicals, avoid getting Lithium Hydroxide Monohydrate on you or in you. Wash thoroughly after handling Lithium Hydroxide Monohydrate. Do not eat, drink, or smoke while handling this product. Remove contaminated clothing immediately. Use ventilation and other engineering controls to minimize potential exposure to Lithium Hydroxide Monohydrate. All employees who handle Lithium Hydroxide Monohydrate should be trained to handle it safely. Ensure containers of Lithium Hydroxide Monohydrate are properly labeled. Open containers slowly on a stable surface. Read instructions provided with the product prior to use. Empty containers may contain residual material; therefore, empty containers must be handled with care.

**Storage:** Store containers in a cool, dry location, away from direct sunlight or sources of intense heat. Keep container tightly closed after use. Store away from incompatible materials (see Section 10, Stability and Reactivity). Inspect containers of Lithium Hydroxide for leaks or damage

Section 8. Exposure Controls / Personal Protection

Component	Exposure Limits in Air				
	ACGIH-TLVs		OSHA-PELs		Other
	TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>	TWA mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>	mg/m <sup>3</sup>
Lithium Hydroxide Monohydrate (exposure limit is for Lithium Oxide, a compound with similar hazard properties)	NE	NE	NE	NE	1 Ceiling AIHA WEEL

Derived No Effect Levels (DNEL)	Inhalation Acute Effects	Skin Contact Acute Effects	Inhalation Chronic Effects
Workers	4.55 mg/m <sup>3</sup>	100 mg/kg	1.52 mg/m <sup>3</sup>
Consumers	3.03 mg/m <sup>3</sup>	50 mg/kg	0.66 mg/m <sup>3</sup>

**Predicted No Effect Concentrations (PNEC)**

Fresh Water	Fresh Water Sediment	Marine Water	Marine Sediment	Soil	Behavior in waste water treatment plants
0.69 mg/L	0.54 mg/kg	0.069 mg/L	0.054 mg/kg	0.082 mg/kg	79.2 mg/L



The information presented is based only on Lithium Hydroxide. The Exposure Controls and Personal Protection required will be dependent on the conditions present in the workplace, including the presence of other chemicals. PPE should be based on a Hazard Assessment as required in 29CFR1910.132

**Ventilation And Engineering Controls:** Use with adequate ventilation, to ensure exposures are below the occupational exposure limits provided above. Mechanical exhaust may be needed.

**Respiratory Protection:** If ventilation is inadequate, an approved dust/mist respirator may be required. For higher exposures or in potentially oxygen deficient atmospheres, a supplied air respirator may be required. Respirator selection and use should be based on contaminant type, form and concentration. Follow OSHA 1910.134, ANSI Z88.2, CSA Standard Z94.4-02 and good Industrial Hygiene practice.

**Eye Protection:** Splash goggles and face shield. If necessary, refer to U.S. OSHA 29 CFR 1910.133, and appropriate Canadian Standards.

**Hand Protection:** Wear neoprene gloves for routine industrial use. If necessary, refer to U.S. OSHA 29 CFR 1910.138 and appropriate Standards of Canada.

**Body Protection:** Use body protection appropriate for task (e.g., Apron or Protective suit). Where there is any possibility that an employee's eyes or skin may be exposed to this substance, the employer should provide an eye wash/safety shower within the immediate work area for emergency use

#### Section 9. Physical and Chemical Properties

**Appearance:** White, odorless crystalline solid.

**Odor:** None

**Odor Threshold:** Not applicable.

**pH:** 12 (0.4 g/L Solution)

**Melting/Freezing Point:** 462°C (863.6°F)

**Boiling Point:** No data available

**Flash Point:** Not combustible.

**Evaporation Rate:** Not applicable.

**Flammability:** No data available

**Flammable Limits (in air by volume):** Not applicable

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable.

**Specific Gravity (water = 1):** 1.51

**Solubility in Water @ 20°C:** 216 g/L

**Coefficient of Oil/Water Distribution (Partition Coefficient):** Not established.

**Autoignition Temperature:** Not applicable.

**Decomposition Temperature:** Releases water @ 100°C (212°F)

**Viscosity:** Not applicable



#### Section 10. Stability and Reactivity

**Reactivity:** Lithium Hydroxide Monohydrate may react with carbon dioxide in air to form lithium carbonate.

**Stability:** Stable.

**Possibility Of Hazardous Reactions:** May react with strong acids generating heat with boiling and spattering.

**Conditions to Avoid:** Mixing Lithium Hydroxide Monohydrate with incompatible chemicals. To avoid thermal decomposition, do not overheat.

**Incompatible Materials:** Lithium Hydroxide, Monohydrate is not compatible with strong acids. Lithium Hydroxide, Monohydrate is corrosive to aluminum, lead, and zinc.

**Hazardous Decomposition Products:** Thermal decomposition of the components of Lithium Hydroxide Monohydrate include lithium compounds and caustic vapors

#### Section 11. Toxicological Information

**Symptoms of Overexposure by Route of Exposure:** In terms of anticipated occupational overexposure situations for employees, the main health effect from overexposure would be irritation or burns of contaminated skin, eyes, and tissues of the respiratory system.

**Inhalation:** Inhalation of airborne dusts of Lithium Hydroxide Monohydrate dusts may severely irritate or damage the tissues of the eyes, nose, and respiratory system. Symptoms of such overexposure can include coughing, sneezing, and a sore throat. Inhalation of relatively large quantities of Lithium Hydroxide Monohydrate may damage the tissues of the respiratory system, which can lead to the development of breathing difficulty, chemical pneumonitis, and pulmonary edema (a potentially life-threatening accumulation of fluid in the lungs). Severe inhalation overexposure may be fatal.

**Contact with Skin or Eyes:** Depending on the duration and concentration of overexposure, Lithium Hydroxide Monohydrate can cause severe irritation and corrosive damage to the skin and eyes. Symptoms of skin contact can include redness, irritation, pain, and burns that are slow to heal. Permanent scarring may occur. Repeated skin overexposure may cause dermatitis (dry, red skin). Symptoms of eye contact can include redness, irritation, pain, tearing, and blurred vision. Severe eye overexposure may cause permanent damage or blindness.

**Skin Absorption:** Skin absorption is not a significant route of exposure for Lithium Hydroxide Monohydrate.

**Ingestion:** Ingestion is not anticipated to be a significant route of occupational exposure. If Lithium Hydroxide, Monohydrate is swallowed, it can irritate and burn the mouth, throat, and other tissues of the digestive system. Symptoms can include vomiting, diarrhea, and collapse. Vomiting (which can occur after ingestion of Lithium Hydroxide, Monohydrate) may lead to aspiration, causing lung damage. In humans, ingestion of 10 grams of Lithium Hydroxide, Monohydrate may be fatal. Severe ingestion overexposures can be fatal due to corrosive effects.

**Chronic:** Repeated skin overexposure may cause dermatitis (dry, red skin). Lithium poisoning may result in kidney and central nervous system effects.



**Target Organs**

**Acute:** Eyes, skin, mucous membranes.

**Chronic:** Skin, Nervous System, Kidney

**Toxicity Data**

**LC50 (Inhalation-Rat):** > 6.15 mg/L/4 hours (extrapolated)

**LD50 (Oral-Rat):** ~500 mg/kg estimated

**Eye Irritation:** Causes burns

**Skin Irritation:** Causes burns

**Skin Sensitization:** Negative in Buehler Test

**Germ Cell Mutagenicity:** Negative in-vitro gene mutation study in bacteria, chromosome aberration test in-vitro, Ames test

**Carcinogenicity Status:** Lithium Hydroxide is not listed as a carcinogen or suspected carcinogen by IARC, NTP, OSHA, or ACGIH.

**Irritancy of Product:** This solution will cause severe irritation and corrosive damage to the skin, eyes, and any other contaminated tissue.

**Sensitization to The Product:** Lithium Hydroxide Monohydrate is not known to be a skin or respiratory sensitizer.

**Reproductive Toxicity Information:** Some lithium compounds including Lithium Carbonate are used as medications for manic-depression. While there have been reports that lithium carbonate treatment is associated with heart defects in the children of women treated while pregnant, epidemiological studies have not demonstrated a statistically significant effect. No embryo toxic effects were seen in a prenatal developmental toxicity study in rats (OECD 414) at a maternally toxic dose of 90 mg /kg/day. While lithium has been found in breast milk of women treated with lithium, no adverse effects were seen in babies in a 2007 study. Lithium Hydroxide Monohydrate is not reported to produce adverse reproductive effects in humans or animals.

**Mutagenicity:** Lithium Hydroxide Monohydrate is not reported to cause mutagenic effects in humans and tested negative in in-vitro and in-vivo tests.

Section 12. Ecological Information

**All work practices must be aimed at eliminating environmental contamination.**

**Environmental Stability:** Lithium Hydroxide Monohydrate may react with carbon dioxide in air to form lithium carbonate.

**Effect of material on plants or animals:** Due to its corrosivity, Lithium Hydroxide Monohydrate can be harmful or fatal to contaminated plants and animals.

**Effect of Chemical on Aquatic Life:** Due to its corrosivity, Lithium Hydroxide Monohydrate can be harmful or fatal to aquatic plants and animals in contaminated bodies of water.





**Acute Aquatic Toxicity**

**LC50 Oncorhynchus mykiss (rainbow trout):** 109 mg/L/96 hr (OECD 203); NOEC 1.2 mg/L (OECD 210)

**EC50 daphnia magna:** 60 mg/L/48 hr pH adjustment (OECD 202); NOEC 4 mg/L (OECD 211)

**ErC50 Pseudokirchneriella subcapitata (green algae):** 268.8 mg/L/72 hr; **EyC50:** 78.4 mg/L/72 hr; NOEC 17.5 mg/L (OECD 201)

**Toxicity To Bacteria:** Respiration inhibition EC50 318.4 mg/L (OECD 209)

**Persistence and Degradability:** The methods for determining biodegradability are not applicable to inorganic substances.

**Bioaccumulative Potential:** No data currently available. Bioaccumulation is unlikely.

**Mobility In Soil:** No data available

**Other Adverse Effects:** No data available

Section 13. Disposal Considerations

**Waste Treatment Methods:** Dispose of product and contaminated packaging in accordance with all local, state, and federal environmental control regulations.

Section 14. Transport Information

**This material is hazardous as defined by 49 CFR 172.101 by the U.S. Department of Transportation.**

**Proper Shipping Name:** Lithium hydroxide

**Hazard Class Number and Description:** 8 (Corrosive)

**UN Identification Number:** UN 2680

**Packing Group:** II

**DOT Labels Required:** Class 8 (Corrosive)

**North American Emergency Response Guidebook Number (2012):** 154

**Marine Pollutant:** Lithium Hydroxide, Monohydrate is not designated as a DOT Marine Pollutant (49 CFR 172.101, Appendix B).

**Transport Canada Transportation Of Dangerous Goods Regulations:** This material is considered as Dangerous Goods, per regulations of Transport Canada. The use of the above U.S. DOT information from the U.S. 49 CFR regulations is allowed for shipments that originate in the U.S. For shipments via ground vehicle or rail that originate in Canada, the following information is applicable.

**Proper Shipping Name:** Lithium hydroxide monohydrate

**Hazard Class Number and Description:** 8 (Corrosive)

**UN Identification Number:** UN 2680

**Hazard Labels Required:** Class 8 (Corrosive)

**Packing Group:** II





**Special Provisions:** None

**Explosive Limit & Limited Quantity Index:** 1

**ERAP Index:** None

**Passenger Carrying Ship Index:** None

**Passenger Carrying Road or Rail Vehicle Index:** 15

**Marine Pollutant:** No component of this product is listed as a marine pollutant under TC regulations.

**International Air Transport Association Dangerous Goods Regulations:** Use the following information for international shipments via air transport.

**Proper Shipping Name:** Lithium hydroxide

**Hazard Class Number and Description:** 8 (Corrosive)

**UN Identification Number:** UN 2680

**Packing Group:** II

**LABELS REQUIRED:** Corrosive

#### **Packing Instructions**

**Passenger Aircraft:** 859

**Cargo Aircraft:** 863

#### **IMDG**

**UN number:** 2680

**Class:** 8

**Packing group:** II

**EMS-No:** F-A, S-B

**Proper shipping name:** LITHIUM HYDROXIDE

**Marine pollutant:** No

#### Section 15. Regulatory Information

#### **Additional U.S. Regulations**

**U.S. SARA Reporting Requirements:** Lithium Hydroxide Monohydrate is not subject to the reporting requirements of the Comprehensive Environmental Response, Compensation, and Liability Act and Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act.

**CERCLA Section 103 (40 CFR 302.4) Listed CERCLA hazardous substance:** No

**SARA Section 302 (40 CFR 355.30) Extremely Hazardous Substance:** No

**SARA Section 304 (40 CFR 355.40) RQ - CERCLA or SARA 302:** No

**SARA Section 313 (40 CFR 372.65) Toxic Chemical Release Inventory (TRI Form R):**  
No

**U.S. SARA Threshold Planning Quantity:** There are no specific Threshold Planning Quantities for this product. The default Federal SDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

**U.S. CERCLA Reportable Quantity (RQ):** Not applicable



**U.S. TSCA Inventory Status:** Lithium Hydroxide Monohydrate is not listed on the TSCA Inventory; however, as a hydrate of a listed material (lithium hydroxide), this material is excepted from listing.

**U.S. TSCA 12(b) Export Notification:** TSCA 12(b) Notification is not required, per 40 CFR 707, for Lithium Hydroxide Monohydrate.

**Other U.S. Federal Regulations:** Not applicable.

**U.S. State Regulatory Information:** Lithium Hydroxide Monohydrate is covered under specific State regulations, as denoted below:

**Massachusetts - Substance List:** No.

**Michigan - Critical Materials Register:** Lithium Compounds.

**New Jersey - Right to Know Hazardous Substance List:** Lithium Hydroxide Monohydrate.

**Pennsylvania - Hazardous Substance List:** No.

**California Safe Drinking Water and Toxic Enforcement Act (Proposition 65):** Lithium Hydroxide Monohydrate is not on the California Proposition 65 lists.

#### **Additional Canadian Regulations**

**Canadian DSL/NDSL Inventory Status:** Lithium Hydroxide Monohydrate is on the DSL Inventory.

**Canadian WHMIS Classification and Symbols:** Class E Corrosive

#### **Hazardous Material Identification System Rating**

**Health:** 3

**Flammability:** 0

**Reactivity:** 0

#### **NFPA Rating**

**Health:** 3

**Flammability:** 0

**Reactivity:** 0

#### Section 16. Other Information

**Disclaimer:** The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.

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