

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Lithium Hydroxide (7Li(OH)) Monohydrate, Enriched Lithium
Chemical Formula	⁷ LiOH: H ₂ O
Molecular Weight	41.96 g/mol
CAS No.	76576-68-6
EINECS No.	215-183-4
Synonyms	Lithium-7 hydroxide, monohydrate
Supplier Address*	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac/ +1 800-535-5053 *May include subsidiaries or affiliate companies/divisions
Email	iusa@isoflex.com
Website	www.isoflex.com
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

2. HAZARDS IDENTIFICATION

Emergency Overview: POISON! DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED OR INHALED. CAUSES BURNS TO ANY AREA OF CONTACT.

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazard Statements

H304: May be fatal if swallowed and enters airways.
H312: Harmful in contact with skin
H314: Causes severe skin burns and eye damage
H332: Harmful if inhaled



Precautionary Statements

P261 Avoid breathing dust or mist.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
 P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
 P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
 P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
 P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position 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 POISON CENTER or doctor/ physician.
 P322 Specific measures (see supplemental first aid instructions on this label).
 P363 Wash contaminated clothing before reuse.
 P405 Store locked up.
 P501 Dispose of contents/ container to an approved waste disposal plant.
 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none.

EU Hazard Statements

EUH071: Corrosive to the respiratory tract.

Lab Protective Equipment:

Goggles & shield, lab coat & apron, vent hood, proper gloves

Storage Color Code:

White (Corrosive)

NFPA Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 3 Flammability = 0 Reactivity = 0



HMS Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 3 Flammability = 0 Physical Hazard = 0

HEALTH HAZARD	3
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	

Lab Protective Equipment:

Goggles & shield, lab coat & apron, vent hood, proper gloves

Storage Color Code:

White (Corrosive)

Potential Health Effects

Inhalation

Corrosive. Extremely destructive to tissues of the mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. Inhalation may be fatal as a result of spasm inflammation and edema of the larynx and bronchi, chemical pneumonitis and

<i>Ingestion</i>	pulmonary edema. Corrosive. Swallowing can cause severe burns of the mouth, throat and stomach, leading to death. Can cause sore throat, vomiting, diarrhea. In severe cases, lithium can cause apathy, sluggishness, drowsiness, slurred speech, blurred vision, irregular eye movements, weakness, incoordination, lethargy, heart effects, brain effects, ringing in the ears, tremors and muscle twitching, central nervous system damage, kidney effects, thyroid changes, coma, pulmonary edema and renal failure.
<i>Skin Contact</i>	Dermal contact with alkaline corrosives may produce pain, redness, severe irritation or full thickness burns.
<i>Eye Contact</i>	Corrosive. Contact can cause blurred vision, redness, pain and severe tissue burns.
<i>Chronic Exposure</i>	Prolonged skin contact causes dermatitis, deep burns and scarring. Chronic exposure may damage the liver or kidneys and may cause central nervous system depression.
<i>Pre-existing Conditions</i>	Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name:	Lithium Hydroxide Monohydrate
CAS Number:	72255-97-1
Chemical Formula:	H ₂ LiO
Molecular Weight:	41.96 g/mol

Ingredient Name	CAS No.	%
Lithium Hydroxide Monohydrate	76576-68-6	52-58
Water	7732-18-5	42-48

4. FIRST AID MEASURES

<i>Inhalation Exposure</i>	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
<i>Oral Exposure</i>	If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.
<i>Dermal Exposure</i>	Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.
<i>Eye Exposure</i>	Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. FIREFIGHTING MEASURES

<i>Fire</i>	Not considered to be a fire hazard
<i>Explosion</i>	Not considered to be an explosion hazard

Suitable Extinguishing Media

Use any means suitable for extinguishing surrounding fire.

Firefighting

Protective Equipment

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

Specific Hazards

Lithium oxides

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Avoid dust formation. Avoid breathing vapors, mist or gas.

Environmental Precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods for Cleaning Up

Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust.

7. HANDLING AND STORAGE

Handling

Always add the caustic to water while stirring; never the reverse. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed.

Storage

Keep in a tightly closed container. Store in a cool, dry, corrosion-proof, ventilated area away from moisture, sources of heat or ignition, combustibles and oxidizers. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Airborne Exposure Limits

Component:	Lithium hydroxide monohydrate
CAS No.:	76576-68-6
Value:	CEIL
Control parameters:	1 mg/m ³
Basis:	USA. Workplace Environmental Exposure Levels (WEEL)

Ventilation System

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

Personal Protective Equipment

Personal Respirators

A NIOSH-approved respirator with an APF of 50 is required in

accordance with 29 CFR 1910.134. If the exposure limit is exceeded and engineering controls are not feasible, a half (*NIOSH Approved*) facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection

Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Gloves that are impervious to the new chemical substance are required

Eye Protection

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	Crystalline solid
Color	White
Odor	Odorless

Safety Data

Solubility:	Appreciable (> 10%) 216 g/l at 20 °C (68 °F)
Specific Gravity:	1.51
pH:	ca. 14.0 (1.0N solution)
% Volatiles @ 21 °C (70 °F):	0
Boiling Point:	100 °C (212 °F) at 1013 hPa (760 mmHg)
Melting Point:	470 °C (878 °F)
Vapor Density (Air=1):	Not applicable
Vapor Pressure (mm Hg):	Not applicable
Evaporation Rate (BuAc=1):	No information found

10. STABILITY AND REACTIVITY

Stability

Stable under ordinary conditions of use and storage. When exposed to air, lithium hydroxide picks up carbon dioxide and cakes over.

Hazardous Decomposition Products

Emits toxic fumes of lithium when heated to decomposition

Hazardous Polymerization

Will not occur

Incompatible Materials

For Lithium Hydroxide: water, carbon dioxide, strong acids, aluminum, zinc, and strong oxidizers

Conditions to Avoid

Moisture, extreme heat and incompatibles

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

<i>LD50 Oral (Rat, Female)</i>	368 mg/kg
<i>LC50 Inhalation (Rat, Male and Female - 4 h) (OECD Test Guideline 403)</i>	>6.15 mg/l
<i>Dermal</i>	No data available
<i>Skin Corrosion/Irritation</i>	Skin - in vitro assay Result: Corrosive (In Vitro Membrane Barrier Test Method for Skin Corrosion - CORROSITEX)
<i>Serious Eye Damage/ Eye Irritation</i>	No data available
<i>Respiratory or Skin Sensitization</i>	No data available
<i>Germ Cell Mutagenicity</i>	Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Not mutagenic in Ames Test.

Carcinogenicity

<i>IARC</i>	No component of this product present at levels greater than or equal to 0.1% is identified as a probable, possible or confirmed human carcinogen by IARC.
<i>ACGIH</i>	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
<i>NTP</i>	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
<i>OSHA</i>	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive Toxicity Lithium and its compounds are possible teratogens by analogy to lithium carbonate which has equivocal human teratogenic data and positive animal teratogenic data.

Specific Target Organ Toxicity / Single Exposure No data available

Specific Target Organ Toxicity / Repeated Exposure No data available

Aspiration Hazard No data available

Additional Information RTECS: Not available

Large doses of lithium ion have caused dizziness and prostration and can cause kidney damage if sodium intake is limited. Dehydration, weight loss, dermatological effects and thyroid disturbances have been reported. Central nervous system effects that include slurred speech, blurred vision, sensory loss, ataxia and convulsions may occur. Diarrhea, vomiting, and neuromuscular effects such as tremor, clonus and hyperactive reflexes may occur as a result of repeated exposure to lithium ion. Cyanosis and t-wave inversion have occurred in the breast-fed infants of women receiving lithium carbonate therapy. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Cough and shortness of breath may occur.

Toxicity

<i>Toxicity to Fish</i>	Static test LC50 - <i>Danio rerio</i> (Zebra fish) - 109 mg/l - 96 h (OECD Test Guideline 203)
<i>Toxicity to Daphnia and Other Aquatic Invertebrates</i>	Static test EC50 - <i>Daphnia magna</i> (Water flea) ca. 33.5 mg/l - 48 h (OECD Test Guideline 202)
<i>Toxicity to Algae</i>	Static test EC50 - <i>Pseudokirchneriella subcapitata</i> (<i>Selenastrum capricornutum</i>) - 41.62 mg/l - 72 h (OECD Test Guideline 201)
<i>Toxicity to Bacteria</i>	Respiration inhibition EC50 - Sludge Treatment - ca. 316.8 mg/l - 3 h (OECD Test Guideline 209)
<i>Persistence and Degradability</i>	No data available
<i>Bioaccumulative Potential</i>	Does not bioaccumulate
<i>Mobility in soil</i>	No data available
<i>Results of PBT and vPvB Assessment</i>	PBT/vPvB assessment not available, as chemical safety assessment not required/not conducted
<i>Other Adverse Effects</i>	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life.

13. DISPOSAL CONSIDERATIONS

<i>Product</i>	Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of unused contents in accordance with federal, state and local requirements.
<i>Contaminated Packaging</i>	Dispose of container in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

DOT

<i>Proper Shipping Name</i>	LITHIUM HYDROXIDE MONOHYDRATE
<i>Hazard Class</i>	8
<i>UN/NA</i>	UN2680
<i>Packing Group</i>	II
<i>Information Reported for Product/Size</i>	1 KG

International (Water, I.M.O.)

<i>Proper Shipping Name</i>	LITHIUM HYDROXIDE MONOHYDRATE
<i>Hazard Class</i>	8
<i>UN/NA</i>	UN2680
<i>Packing Group</i>	II
<i>Information Reported for Product/Size</i>	1 KG

International (Air, I.C.A.O.)

<i>Proper Shipping Name</i>	LITHIUM HYDROXIDE MONOHYDRATE
<i>Hazard Class</i>	8
<i>UN/NA</i>	UN2680
<i>Packing Group</i>	II
<i>Information Rreported for Product/Size</i>	1 KG

15. REGULATORY INFORMATION**EPA:**

Based on EPA's assessment that includes analogue data, this substance may cause skin corrosion, serious eye damage, reproductive toxicity, and specific target organ toxicity.

Chemical Inventory Status - Part 1

<i>Ingredient</i>	<i>TSCA</i>	<i>EC</i>	<i>Japan</i>	<i>Australia</i>
Lithium Hydroxide (76576-68-6)	Yes	Yes	Yes	Yes

Chemical Inventory Status - Part 2

<i>Ingredient</i>	<i>Korea</i>	<i>DSL</i>	<i>NDSL</i>	<i>Phil.</i>
Lithium Hydroxide (76576-68-6)	Yes	Yes	No	Yes

Federal, State & International Regulations - Part 1

SARA 302 / SARA 313

<i>Ingredient</i>	<i>RQ</i>	<i>TPQ</i>	<i>List</i>	<i>Chemical Catg.</i>
Lithium Hydroxide (76576-68-6)	No	No	No	No

Federal, State & International Regulations - Part 2

<i>Ingredient</i>	<i>RCRA-CERCLA</i>	<i>TSCA-261.33</i>	<i>8(d)</i>
Lithium Hydroxide (76576-68-6)	No	No	No

<i>Chemical Weapons Convention</i>	No
<i>TSCA 12(b)</i>	No
<i>CDTA</i>	No

SARA 311/312

<i>Acute</i>	Yes
<i>Chronic</i>	Yes
<i>Fire</i>	No
<i>Pressure</i>	No
<i>Reactivity</i>	No (Pure / Solid)
<i>Australian Hazchem Code</i>	2R
<i>Poison Schedule</i>	None allocated
<i>WHMIS</i>	This SDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR), and the SDS contains all of the information required by the CPR.

Massachusetts Right to Know Components	No components are subject to the Massachusetts Right to Know Act.
Pennsylvania Right to Know Components	Lithium hydroxide monohydrate / CAS No. 72255-97-1
New Jersey Right to Know	Lithium hydroxide monohydrate / CAS No. 72255-97-1
California Prop. 65 Components	This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.



16. OTHER INFORMATION

Prepared By	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
Issuing Date	January 12, 2014
Revision Date	October 20, 2024
Revision Number	6
Revision Note	Update supplier address

ISOFLEX USA's Commonly Used Abbreviations and Acronyms*

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
CAM	Continuous Air Monitor
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLP	Classification, Labelling and Packaging (European Union)
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)
DOT	United States Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EC50	Half Maximal Effective Concentration
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
LOEC	Lowest-Observed-Effective Concentration
MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)
NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified

NRC	Nuclear Regulatory Commission (USA)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
RCT	Radiation Control Technician
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act (USA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährdungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

*One or more of the above-listed items may not appear in this document.

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For terms and conditions, including limitation of liability, please refer to the purchase agreement in effect between ISOFLEX USA (or any of its affiliates and subsidiaries) and the purchaser.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. ISOFLEX shall not be held liable for any damage resulting from handling or from contact with the above product.