


SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION	
ROCKWOOD LITHIUM 348 HOLIDAY INN DRIVE KINGS MOUNTAIN, NC 28086 704-739-2501 (8 AM-5 PM M-Th) (8 AM- 12 PM F)	FOR EMERGENCY TRANSPORTATION INFORMATION, CALL CHEMTREC 1-800-424-9300
SUBSTANCE: LITHIUM CARBONATE TRADE NAMES/SYNONYMS: Carbonic Acid, Dilithium Salt; Dilithium Carbonate; Carbonic Acid, Lithium Salt; Lithium Carbonate (Li ₂ CO ₃) CHEMICAL FAMILY: Inorganic Salt PRODUCT USE: Used for a variety of industrial and research applications. FORMULA: Li ₂ CO ₃ REACH Registration Numbers: 01-2119516034-53-0002 (Chile); 01-2119516034-53-0003 (USA)	

SECTION 2 HAZARDS IDENTIFICATION		
GHS Classification:		
Health	Environmental	Physical
Eye Corrosion/Irritation- Category 2 Acute Toxicity (Oral) – Category 4	Acute Aquatic- Category 3	None
GHS Label		
		
Contains Lithium carbonate WARNING! H302 Harmful if swallowed. H319 Causes serious eye irritation. H402 Harmful to aquatic life Prevention: 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.	Response: P301+P312 IF SWALLOWED: Call a POISON Center or doctor/physician if you feel unwell. P330 Rinse Mouth P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337+P313 If eye irritation persists: Get medical advice/attention Disposal: P501 Dispose of contents/container to an approved waste disposal plant.	

SECTION 3 COMPOSITION, INFORMATION ON INGREDIENTS			
Component	CAS #	REACH Registration No.	% w/w
Lithium Carbonate	554-13-2	01-2119516034-53-0002 (Chile) 01-2119516034-53-0003 (USA)	> 99
NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-2004 format.			

SECTION 4 FIRST-AID MEASURES
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. Refer below to "Recommendations to Physicians" for specific information for physicians on treatment of poisoning of this product. SKIN EXPOSURE: If Lithium Carbonate irritates the skin, begin decontamination with running water. Remove

SECTION 4 FIRST-AID MEASURES

exposed or contaminated clothing, taking care not to contaminate eyes. Victims should seek medical attention if adverse effect occurs.

EYE EXPOSURE: If Lithium Carbonate 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 20 minutes. Victims must seek immediate medical attention if any adverse effect occurs.

INHALATION: If Lithium Carbonate is inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Obtain immediate medical attention.

INGESTION: If Lithium Carbonate is swallowed, IMMEDIATELY CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING, unless directed by medical personnel. 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 of eyes, rash, ringing in the ears, nausea, vomiting, diarrhea, difficulty speaking, drowsiness, tremors, visual disturbances, and coma.

INDICATION OF IMMEDIATE MEDICAL TREATMENT AND SPECIAL TREATMENT: Immediate medical treatment is advised in the case of eye contact or ingestion.

NOTE TO PHYSICIAN:

Treat symptomatically. For specialist advice physicians should contact their Poison Center.

SECTION 5 FIRE-FIGHTING MEASURES

FIRE EXTINGUISHING MEDIA: Lithium Carbonate is not flammable. Use fire extinguishing media appropriate for surrounding fires.

SPECIFIC FIRE AND EXPLOSION HAZARDS: This material presents a moderate contact hazard to firefighters. When involved in a fire, this material may decompose and produce irritating fumes and toxic gases (e.g., lithium compounds, carbon oxides).

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING EQUIPMENT AND PROCEDURES: Fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. 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. (See Section 8, Exposure Controls/Personal Protection) In case of a spill, clear the affected area and protect people.

METHODS AND MATERIALS FOR CONTAINMENT/CLEANUP: Sweep up or vacuum spilled Lithium Carbonate carefully, avoiding the generation of airborne dusts. Decontaminate the area thoroughly. Place all spill residue 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 Carbonate ON YOU or IN YOU. Wash thoroughly after handling Lithium Carbonate. Avoid creating airborne dusts or particulates of Lithium Carbonate. Clean work areas periodically to avoid generation of dusts. Do not eat or drink while handling Lithium Carbonate. Remove contaminated clothing immediately. All employees who handle this material should be trained to handle it safely. Use in a well-ventilated location.

STORAGE: Store containers in a cool, dry location, away from direct sunlight, or sources of intense heat. Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). Keep container tightly closed when not in use.

Empty containers may contain residual amounts of Lithium Carbonate; therefore, empty containers should be handled with care.

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION

Component	Exposure Limits in Air				
	ACGIH-TLVs		OSHA-PELs		OTHER
	TWA	STEL	TWA	STEL	

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION					
	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³
Lithium Carbonate	NE	NE	15 (Total dust) 5 (Respirable fraction) as Particulates not otherwise classified	NE	NE
NE = Not Established See Section 16 for Definition of other terms and acronyms used.					
Derived No Effect Levels (DNEL)	Inhalation Acute Effects		Skin Contact Acute Effects		Inhalation Chronic Effects
Workers	7.02 mg/m ³		100 mg/kg		2.34 mg/m ³
Consumers	3.03 mg/m ³		50 mg/kg		
Predicted No Effect Concentrations (PNEC)					
Fresh Water	Fresh Water Sediment	Marine Water	Marine Sediment	Soil	Behavior in waste water treatment plants
1.05 mg/L	4.09 mg/kg	0.11 mg/L	0.41 mg/kg	0.8381 mg/kg	122.2 mg/L
See Section 16 for Definition of DNEL and PNEC.					
<p><u>The information presented is based only on lithium carbonate. 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.</u></p> <p><u>VENTILATION AND ENGINEERING CONTROLS:</u> Use with adequate ventilation, to ensure exposure levels are minimized. Mechanical exhaust may be needed.</p> <p><u>RESPIRATORY PROTECTION:</u> If ventilation is inadequate, an approved dust 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.</p> <p><u>EYE PROTECTION:</u> Splash goggles or safety glasses. If necessary, refer to U.S. OSHA 29 CFR 1910.133, and appropriate Canadian Standards.</p> <p><u>HAND PROTECTION:</u> Wear neoprene gloves for routine industrial use. If necessary, refer to U.S. OSHA 29 CFR 1910.138 and appropriate Standards of Canada.</p> <p><u>BODY PROTECTION:</u> Use body protection appropriate for task (e.g., Apron or protective suit). If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, wear foot protection, as described in U.S. OSHA 29 CFR 1910.136.</p> <p>Where there is any possibility that an employee's eyes may be exposed to Lithium Carbonate, the employer should provide an eye wash fountain within the immediate work area for emergency use.</p>					

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES	
<p><u>APPEARANCE:</u> White, odorless crystalline powder.</p> <p><u>ODOR:</u> None</p> <p><u>ODOR THRESHOLD:</u> Not applicable.</p> <p><u>pH:</u> 9-11 (0.1% solution)</p> <p><u>MELTING/FREEZING POINT:</u> 732°C (1350°F)</p> <p><u>BOILING POINT:</u> 1310°C (2390°F) decomposes</p> <p><u>FLASH POINT:</u> Not applicable</p> <p><u>EVAPORATION RATE:</u> Not applicable</p> <p><u>FLAMMABILITY:</u> No data available</p> <p><u>FLAMMABLE LIMITS (in air by volume):</u> Not applicable</p>	<p><u>VAPOR PRESSURE, mm Hg @ 20°C:</u> 1 hPa @ 610°C</p> <p><u>VAPOR DENSITY (air = 1):</u> Not applicable.</p> <p><u>SPECIFIC GRAVITY (water = 1):</u> 2.11 g/cm³@20°C</p> <p><u>SOLUBILITY IN WATER @ 20°C:</u> 13.3 g/L</p> <p><u>COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT):</u> Not established.</p> <p><u>AUTOIGNITION TEMPERATURE:</u> Not applicable</p> <p><u>DECOMPOSITION TEMPERATURE:</u> >600°C</p> <p><u>VISCOSITY:</u> Not applicable</p>

SECTION 10 STABILITY AND REACTIVITY
<p><u>REACTIVITY:</u> Not reactive or unstable under normal conditions of storage and use.</p> <p><u>STABILITY:</u> Stable.</p> <p><u>POSSIBILITY OF HAZARDOUS REACTIONS:</u> May react with strong oxidizers generating heat.</p> <p><u>CONDITIONS TO AVOID:</u> Avoid open flames, hot surfaces and sources of ignition. Protect from moisture. Take precautionary measures against static discharges</p> <p><u>INCOMPATIBLE MATERIALS:</u> Lithium Carbonate is not compatible with strong acids, strong oxidizers, and fluorine.</p> <p><u>HAZARDOUS DECOMPOSITION PRODUCTS:</u> Thermal decomposition of Lithium Carbonate can generate</p>

SECTION 10 STABILITY AND REACTIVITY

lithium and carbon oxides..

SECTION 11 TOXICOLOGICAL INFORMATION

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The most serious health consequences reported for Lithium Carbonate have been adverse effects on the central nervous system, heart, kidney and thyroid from chronic overexposure through ingestion (during medical treatment). In terms of anticipated occupational overexposure situations for employees, the main health effect from overexposure would be irritation of contaminated skin and eyes.

INHALATION: Inhalation of airborne dusts may irritate the nose, throat, and other tissues of the respiratory system. Symptoms include burning sensation, coughing, wheezing, shortness of breath, and headache. Overexposure may cause systemic effects similar to those described under ingestion.

CONTACT WITH SKIN or EYES: Lithium Carbonate is a moderate to severe eye irritant. Eye contact can cause pain, tearing, and redness. Skin contact may cause irritation in some individuals with cause itching, pain, and redness. Prolonged or repeated skin exposures can lead to dermatitis.

SKIN ABSORPTION: Skin absorption is not a significant route of exposure for Lithium Carbonate.

INGESTION: Ingestion is not anticipated to be a significant route of occupational exposure. Acute or chronic ingestion of Lithium Carbonate may cause rash, ringing in the ears, nausea, vomiting, diarrhea, difficulty speaking, drowsiness, tremors, visual disturbances, and coma. Chronic ingestion of Lithium Carbonate may adversely affect the central nervous system, heart, kidney, and thyroid. Severe ingestion overexposure may be fatal.

TARGET ORGANS: ACUTE: Eyes, skin. CHRONIC: Central nervous system, heart, thyroid, kidney

Toxicity data for Lithium Carbonate:

LD₅₀ (Oral-Rat) 525 mg/kg

Skin Irritation: no irritation in rats (OECD 404) May cause skin irritation in susceptible persons

Eye Irritation: irritating in rats (OECD 405)

Skin Sensitization: negative in guinea pigs (OECD 406)

Germ Cell Mutagenicity: negative in AMES test, chromosome aberration test in vitro, positive in Chinese hamster V79/HGPRT gene mutation assay.

Reproductive Toxicity: rat offspring NOEL >90 mg/kg; maternal NOEL 30 mg/kg. 2-generation study on-going.

CARCINOGENICITY STATUS: Lithium Carbonate is not listed as a carcinogen or suspected carcinogen by IARC, NTP, OSHA or ACGIH.

IRRITANCY OF PRODUCT: Lithium Carbonate is expected to moderately to severely irritate the eyes and may irritate skin.

SENSITIZATION TO THE PRODUCT: Lithium Carbonate is not known to be a human skin or respiratory sensitizer.

- **REPRODUCTIVE TOXICITY INFORMATION:** Lithium Carbonate is used as a medication 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 embryotoxic 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.

Mutagenicity: Lithium Carbonate causes changes in genetic material in some studies but did not in others. Not classified as a germ cell mutagen.

ACGIH BIOLOGICAL EXPOSURE INDICES (BEIs): Currently there are no ACGIH Biological Exposure Indices (BEIs) determined for Lithium Carbonate.

SECTION 12 ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: The effects on exposed animals would be primarily irritation of contaminated tissue. The main effect on plants would be the alteration of salinity of contaminated soils if large volumes of this solution are released.

EFFECT OF CHEMICAL ON AQUATIC LIFE: Releases of large quantities of this solution can be detrimental to an aquatic environment by altering the salinity of a body of water.

AQUATIC TOXICITY: The following aquatic toxicity data are available for the components of this product:

EC50 Oncorhynchus mykiss (rainbow trout) 30.3 mg/L/96 hr (OECD 203); NOEC 19.1 mg/L (OECD 210)

EC50 daphnia magna 33 mg/L/48 hr (OECD 202); NOEC 20 mg/L (OECD 211)

ErC50 Pseudokirchneriella subcapitata (green algae) >400 mg/L/72 hr; EyC50 123 mg/L/72 hr; NOEC 50 mg/L (OECD 201)

TOXICITY TO BACTERIA: Respiration inhibition EC50 180 mg/L (lithium hydroxide OECD 209)

SECTION 12 ECOLOGICAL INFORMATION

PERSISTENCE AND DEGRADABILITY: The methods for determining biodegradability are not applicable to inorganic substances.

BIOACCUMULATIVE POTENTIAL: No data currently available.

MOBILITY IN SOIL: No data available

OTHER ADVERSE EFFECTS: No data available

SECTION 13 DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations or with regulations of Canada and its Provinces. Lithium Carbonate, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local solid waste regulatory authority.

U.S. EPA WASTE NUMBER: Not applicable to wastes consisting only of Lithium Carbonate.

SECTION 14 TRANSPORT INFORMATION

THIS MATERIAL IS NOT HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Not Regulated

HAZARD CLASS NUMBER and DESCRIPTION: Not Applicable

UN IDENTIFICATION NUMBER: Not Applicable

PACKING GROUP: Not Applicable

DOT LABEL(S) REQUIRED: Not Applicable

NORTH AMERICAN EMERGENCY RESPONSE GUIDE NUMBER (2008): Not Applicable

MARINE POLLUTANT: Lithium Carbonate is not designated as a Marine Pollutant by the DOT (per 49 CFR 172.101, Appendix B).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This material is not considered as dangerous goods, per regulations of Transport Canada.

EMERGENCY RESPONSE CONTACT FOR AN INCIDENT DURING TRANSPORTATION:

CHEMTREC 1-800-424-9300 or 1-703-527-3887

SECTION 15 REGULATORY INFORMATION**U.S. REGULATIONS:**

U.S. SARA REPORTING REQUIREMENTS: Lithium Carbonate 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 Extremely 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): Yes

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this compound. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,544 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

U.S. TSCA INVENTORY STATUS: Lithium Carbonate is listed on the TSCA Inventory.

U.S. TSCA 12b EXPORT NOTIFICATION: TSCA 12(b) Notification is not required, per 40 CFR 707, for Lithium Carbonate.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

U.S. STATE REGULATORY INFORMATION: Lithium Carbonate is covered under specific State regulations, as denoted below:

Massachusetts - Substance List: Lithium carbonate.

Michigan - Critical Materials Register: Lithium Compounds.

New Jersey - Right to Know Hazardous Substance List: Lithium Carbonate.

Pennsylvania - Hazardous Substance List: No.

CALIFORNIA PROPOSITION 65: WARNING! Lithium Carbonate is chemical known to the State of California to cause birth defects or other reproductive harm.

CANADIAN REGULATIONS:

CANADIAN INVENTORY STATUS: Lithium Carbonate is on the DSL.

CANADIAN WHMIS CLASSIFICATION: Class D, Division 2, Subdivision A (Very Toxic Material causing other Toxic Effects)

This SDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the SDS

SECTION 15 REGULATORY INFORMATION

contains all of the information required by the CPR.

SECTION 16 OTHER INFORMATION

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM RATING: Health Hazard = 2; Fire Hazard = 0; Physical Hazard = 0

NFPA RATING: Health Hazard = 2; Fire Hazard = 0; Instability Hazard = 0

4 = Severe Hazard 3 = Serious Hazard 2 = Moderate Hazard 1 = Slight Hazard 0 = Minimal Hazard

CREATION DATE: 05/08/95

REVISION DATE: 02/03/14

REVISIONS MADE IN 2012:

Conversion to new Hazcom 2012 Format. Reviewed 2/3/14. Minor changes 5/26/15 in Section 1 to include product use.

The information in this Safety Data Sheet is based on data that Rockwood Lithium believes to be reliable as of the SDSs date of revision. Rockwood Lithium makes no warranty or representation of any kind that the SDS does not contain errors. The data in this SDS relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside the control of Rockwood Lithium, there are no warranties, expressed or implied, and Rockwood Lithium assumes no liability in connection with the use of this information. Nothing herein is to be taken as a license to operate under or a recommendation to infringe on any patents. Any use of these data and information must be determined by the user to be in accordance with Federal, State and local laws and regulations.

DEFINITIONS OF EXPOSURE LIMIT TERMS AND ABBREVIATIONS

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association that establishes exposure limits. **TLV** - Threshold Limit Value - an airborne concentration of a substance that represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average (**TWA**), the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level (**C**). Skin absorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration. **PEL** - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based on the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order.

IDLH - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. **The DFG MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). NIOSH issues exposure guidelines called **Recommended Exposure Levels (RELs)**. When no exposure guidelines are established, an entry of **NE** is made for reference.

DNEL(Derived No-Effect Level): A DNEL is the level of exposure to the substance below which no adverse effects are expected to occur. It is therefore the level of exposure to the substance above which humans should not be exposed. DNEL is a derived level of exposure because it is normally calculated on the basis of available dose descriptors from animal studies such as No Observed Adverse Effect Levels (NOAELs) or benchmark doses (BMDs). This value is derived under EU REACH when a chemical safety assessment is performed as part of registration.

PNEC (Predicted No-Effect Concentration): Concentration of the substance below which adverse effects in the environmental sphere of concern are not expected to occur. This value is derived under EU REACH when a chemical safety assessment is performed as part of registration.