

CHEMETALL FOOTE CORPORATION

MATERIAL SAFETY DATA SHEET

LITHIUM CARBONATE

CFM 051

Page 1 of 6

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION	
<p>CHEMETALL FOOTE CORPORATION 348 HOLIDAY INN DRIVE KINGS MOUNTAIN, NC 28086 704-739-2501 (8 AM-5 PM M-F)</p> <p>SUBSTANCE: LITHIUM CARBONATE</p> <p>TRADE NAMES/SYNONYMS: Carbonic Acid, Dilithium Salt; Dilithium Carbonate; Carbonic Acid, Lithium Salt; Lithium Carbonate (Li₂CO₃)</p> <p>CHEMICAL FAMILY: Inorganic Salt FORMULA: Li₂CO₃</p> <p>CREATION DATE: 05/08/95</p>	<p>FOR EMERGENCY TRANSPORTATION INFORMATION, CALL CHEMTREC 1-800-424-9300</p> <p>REVISION DATE: 03/31/05 (see Section 16 for revision details)</p>

SECTION 2 HAZARDS IDENTIFICATION
<p>EMERGENCY OVERVIEW: Lithium Carbonate is a white, odorless powder. Lithium Carbonate is neither flammable nor reactive.</p> <p>WARNING! Lithium Carbonate may moderately to severely irritate skin and eyes. Inhalation of dust may cause respiratory irritation and systemic lithium poisoning. May be harmful if swallowed. Emergency responders must wear personal protective equipment suitable for the situations to which they are responding.</p> <p>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 treatments). In terms of anticipated occupational overexposure situations for employees, the main health effect from overexposure would be irritation of contaminated skin and eyes.</p> <p>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. Severe inhalation overexposure may be fatal.</p> <p>CONTACT WITH SKIN or EYES: Lithium Carbonate is a moderate to severe skin and eye irritant. Skin contact can cause itching, pain, and redness. Prolonged or repeated skin exposures can lead to dermatitis (dry, red skin). Depending on the duration and concentration of overexposure, eye contact can cause pain, tearing, and redness.</p> <p>SKIN ABSORPTION: Skin absorption is not a significant route of exposure for Lithium Carbonate.</p> <p>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.</p> <p>TARGET ORGANS: ACUTE: Eyes, skin. CHRONIC: Central nervous system, heart, thyroid, kidney</p> <p>MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing respiratory, skin, central nervous system, and kidney conditions can be aggravated by overexposure to Lithium Carbonate. Persons with significant cardiovascular or renal disease, sodium and water imbalance, and pre-existing hypothyroidism may also be at increased risk. Alertness may be impaired.</p> <p>Lithium Carbonate may cause adverse effects on the developing fetus. Refer to Section 11 (Toxicological Information) for additional information.</p>

SECTION 3 COMPOSITION, INFORMATION ON INGREDIENTS		
Component	CAS #	% w/w
Lithium Carbonate	554-13-2	> 99
NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-2004 format.		

Supplier: The Pottery Supply House Ltd.
1120 Speers Rd, Oakville, ON
L6L 2X4 Tel: 1-800-465-8544

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 MSDS 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 contaminates the skin, immediately begin decontamination with running water. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victims must seek immediate 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 15 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.

NOTE TO PHYSICIAN:

The most important object of management of overdose is removal of lithium /lithium carbonate/ from the body as rapidly as possible. Hemodialysis is most effective for this purpose. If the overdose occurred very recently, gastric lavage can be performed but is not adequate alone. Hemodialysis should be used routinely when lithium levels exceed 2.5 mEq/l or when renal function is impaired. [American Medical Association, Council on Drugs. AMA Drug Evaluations Annual 1994. Chicago, IL: American Medical Association, 1994., p. 312]

There is no specific antidote for lithium intoxication, and treatment is supportive. Vomiting induced by rapidly rising plasma lithium may tend to limit absorption, but fatalities have occurred. Care must be taken to assure that the patient is not sodium and water-depleted. Dialysis is the most effective means of removing the ion from the body and should be considered in severe poisonings, i.e., in patients exhibiting symptoms of toxicity or patients with serum lithium concentrations greater than 4.0 mEq/l in acute overdoses or greater than 1.5 mEq/l in chronic overdoses. /Lithium salts/ [Hardman, J.G., L.E. Limbird, P.B. Molinoff, R.W. Ruddon, A.G. Goodman (eds.). Goodman and Gilman's The Pharmacological Basis of Therapeutics. 9th ed. New York, NY: McGraw-Hill, 1996., p. 449]

Intermittent hemodialysis is considered the modality of choice when enhanced lithium removal is indicated. However, postdialysis rebound in serum lithium concentration is frequently observed after the dialysis sessions and results from incomplete intracellular removal. Continuous renal replacement therapy could provide a more gradual and complete lithium removal since it is performed over longer time periods, thus avoiding rebound following therapy. Seven patients presenting with symptomatic lithium intoxication were treated by continuous renal replacement therapy (continuous arteriovenous and venovenous hemodiafiltration (CAVHDF and CVVHDF)). ... Mean dialyzer lithium removal for the seven cases was 106.4 mEq, while mean renal lithium removal was 21.5 mEq during the same period. It was concluded that HDFR CAVHDF and CVVHDF are effective alternatives to intermittent hemodialysis for treatment of lithium poisoning. [Leblaanc M et al; Am J Kidney Dis 27 (3): 365-72 (1996)]

SECTION 5 FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume): Not applicable

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

UNUSUAL 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 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

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.

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

HANDLING PRACTICES: 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 mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	
Lithium Carbonate	NE	NE	15 (Total dust) 5 (Respirable fraction) as Particulates not otherwise classified	NE	mg/m ³ NE

NE = Not Established See Section 16 for Definition of other terms and acronyms used.

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.

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation, to ensure exposure levels are minimized. Mechanical exhaust may be needed.

RESPIRATORY PROTECTION: 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.

EYE PROTECTION: Splash goggles or safety glasses. 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 Tyvek 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.

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.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): Not applicable. EVAPORATION RATE: Not applicable.
SPECIFIC GRAVITY (water = 1): 2.1 MELTING/FREEZING POINT: 723°C (1333°F)
SOLUBILITY IN WATER @ 20°C: 1.3 g/ 100 mL BOILING POINT: 1310°C (2390°F) decomposes
VAPOR PRESSURE, mm Hg @ 20°C: 0 pH: 11.2 (1% solution)
ODOR THRESHOLD: Not applicable.
COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT): Not established.
APPEARANCE AND COLOR: White, odorless solid.
HOW TO DETECT THIS SUBSTANCE (warning properties): Lithium Carbonate does not have any unique warning properties.

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Stable.
DECOMPOSITION PRODUCTS: Thermal decomposition of Lithium Carbonate can generate lithium and carbon oxides.
MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Lithium Carbonate is not compatible with strong acids, strong oxidizers, and fluorine.
HAZARDOUS POLYMERIZATION: Will not occur.
CONDITIONS TO AVOID: Avoid excessive heat.

SECTION 11 TOXICOLOGICAL INFORMATION

Acute toxicity values for Lithium Carbonate:
LD₅₀ (Oral-Rat) 525 mg/kg: Behavioral: somnolence (general depressed activity); Lungs, Thorax, or Respiration: respiratory depression; Gastrointestinal: hypermotility, diarrhea
LD₅₀ (Oral-Mouse) 531 mg/kg
LD₅₀ (Oral-Dog) 500 mg/kg

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 skin and eyes.

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. Overexposures to Lithium Carbonate may cause reproductive disorders. Lithium Carbonate may cause fetal harm when administered to a pregnant woman. Children of mothers who received Lithium Carbonate during the first three months of pregnancy have reported in some, but not all, studies to have a slightly increased frequency of malformations of the heart and blood vessels. Even though this risk is low and uncertain, it is strongly recommended that women discontinue lithium therapy during the first three months of pregnancy. Additionally, lithium is excreted in human milk. Nursing should not be undertaken during lithium therapy except in rare and unusual circumstances.

NOTE! It is important for pregnant women not to be exposed during the first trimester, due to the reported teratogenicity of Lithium Carbonate.

Mutagenicity: Lithium Carbonate causes changes in genetic material in tests with both human and laboratory animal cells.

Teratogenicity: Lithium Carbonate is reported to produce teratogenic effects in humans. Clinical studies on test animals exposed to relatively high doses of Lithium Carbonate showed teratogenic effects.

Reproductive Toxicity: Lithium Carbonate is not reported to produce adverse reproductive effects in humans. Clinical studies on test animals exposed to relatively high doses of Lithium Carbonate showed effects on fertility.

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.
No specific ecotoxicological data is available for lithium carbonate. Releases of large quantities of Lithium Carbonate may be detrimental to an aquatic environment, by altering the salinity of a body of water.

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 (2004): 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: No.
 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.

ANSI STANDARD LABELING (Precautionary Statements): **WARNING! CAUSES SKIN AND EYE IRRITATION. MAY BE HARMFUL IF INHALED OR SWALLOWED. CAN CAUSE CENTRAL NERVOUS SYSTEM EFFECTS, HEART, THYROID AND KIDNEY DAMAGE. SUSPECTED REPRODUCTIVE TOXIN.**
 Avoid contact with skin, eyes, and clothing. Wash thoroughly after handling. Use in well-ventilated area. Wear gloves, goggles and appropriate body protection. **FIRST-AID:** In case of skin or eye contact, flush with water for 15 minutes. Remove contaminated clothing and shoes. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If ingested, do not induce vomiting. Seek immediate medical attention. **IN CASE OF FIRE:** Use water fog, dry chemical, CO₂, or "alcohol" foam. **IN CASE OF SPILL:** Sweep up or vacuum spilled material. Place in a suitable container. Consult Material Safety Data Sheet before use.

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

REVISIONS MADE IN 2005:

All Sections – Changes to MSDS format and content. Significant health effect added – effect on kidneys.

The information in this Material Safety Data Sheet is based on data that Chemetall Foote Corporation believes to be reliable as of the MSDSs date of revision. Chemetall Foote Corporation makes no warranty or representation of any kind that the MSDS does not contain errors. The data in this MSDS 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 Chemetall Foote Corporation, there are no warranties, expressed or implied, and Chemetall Foote Corporation 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.

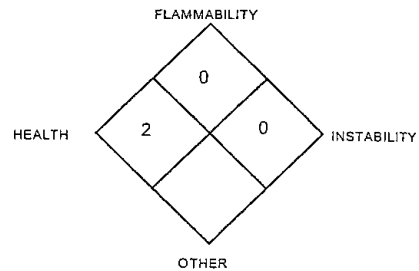
OSHA - U.S. Occupational Safety and Health Administration. **PEL** - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based on the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal 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.

GRAPHICAL REPRESENTATION OF HAZARDS

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM RATING NATIONAL FIRE PROTECTION SYSTEM RATING

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM		
HEALTH	(BLUE)	2
FLAMMABILITY	(RED)	0
PHYSICAL HAZARD	(YELLOW)	0
PROTECTIVE EQUIPMENT		
EYES	RESPIRATORY	HANDS BODY
SEE SECTION 8		
For Routine Industrial Applications		



WHMIS SYMBOL
Class D2A: Materials Causing Other Toxic Effects

