

# Safety Data Sheet

## Lithium Carbonate

### 1. Identification of the substance/preparation and of the Company/undertaking

#### 1.1 Product identifier

Product name	Lithium Carbonate
Product code	CH2O3.2Li
CAS-Number	554-13-2
EC-Number	209-062-5

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended use	Manufacture of substances
Uses advised against	Formulation, Uses at industrial sites, Uses by professional workers, Consumer Uses

#### 1.3 Details of the supplier of the safety data sheet

##### Supplier identification

Puna Mining SA  
Cachi 900, Club de Campo El Típal  
4400 Salta, Argentina  
+54 9 387 683 2429  
[pha@punamining.com.ar](mailto:pha@punamining.com.ar)

### 2. Hazards identification

#### 2.1 Classification of the substance or mixture

##### Self-classification according to Regulation (EC) No 1272/2008

##### Health hazards

Acute toxicity - oral	Acute Tox. 4. H302: Harmful if swallowed.
Serious eye damage / eye irritation	Eye Irrit. 2. H319: Causes serious eye irritation.
Acute toxicity – dermal, inhalation, skin irritation	Not classified.

##### Environmental hazards

Not classified	Data conclusive but not sufficient for classification or lacking data
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##### Physical hazards

Not classified	Data conclusive but not sufficient for classification or lacking data
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**2.2 Label Elements**



**Signal word**

Warning

**Hazard statements**

H302: Harmful if swallowed.

H319: Causes serious eye irritation.

**2.3 Other data**

The substance is not PBT / vPvB. According to REACH Regulation 1907/2006, Annex XIII, the PBT assessment was not conducted for lithium carbonate as the substance is an inorganic salt.

**3. Composition/information on ingredients**

**3.1 Substance**

Formula: Li<sub>2</sub>CO<sub>3</sub>

Molecular weight: 73.89g/mol

**3.2 Mixtures**

Component	EC-No.	CAS-No.	Weight % - range	Classification (Reg. 1272/2008)
Lithium Carbonate	209-062-5	554-13-2	90-100	Acute Tox. 4 Eye Irrit. 2

**Comments**

Amounts specified are typical and do not represent a specification. The remaining components are not dangerous and / or are present in amounts below the limits to which reporting is required.

**4. First aid measures**

**4.1 First Aid**

**Inhalation**

Provide fresh air. If symptoms persist, call a physician.

**Ingestion**

If swallowed, seek medical advice immediately and show this container or label.

**Skin contact**

Wash off immediately with plenty of water. If symptoms persist, call a physician.

**Eye contact**

Immediately flush eye(s) with plenty of water. If eye irritation persists, consult a specialist.

#### **4.2 Most important symptoms and effects, both acute and delayed**

**General advice** Take off contaminated clothing and shoes immediately.

#### **Main symptoms**

**Inhalation** Please see Section 11. Toxicological Information for further information.  
**Ingestion** Please see Section 11. Toxicological Information for further information.  
**Skin contact** Please see Section 11. Toxicological Information for further information.  
**Eye contact** Please see Section 11. Toxicological Information for further information.

#### **4.3 Indication of any immediate medical attention and special treatment needed**

**Notes to physician** Treat symptomatically.

### **5. Fire-fighting measures**

#### **5.1 Extinguishing media**

The product is not flammable. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

#### **5.2 Special hazards arising from the substance or mixture**

Carbon oxides, Lithium oxides

#### **5.3 Advice for firefighters**

##### **Special protective equipment for fire-fighters**

In the event of fire, wear self-contained breathing apparatus.

### **6. Accidental release measures**

#### **6.1 Personal precautions, protective equipment and emergency procedures**

Wear personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Avoid breathing dust.

#### **6.2 Environmental precautions**

Do not flush into surface water or sanitary sewer system.

#### **6.3 Methods and materials for containment and cleaning up**

Sweep up or vacuum up spillage and collect in suitable container for disposal.

#### **6.4 Reference to other sections**

See section 13 for more information.

**7. Handling and storage**

**7.1 Precautions for safe handling**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

**7.2 Conditions for safe storage, including any incompatibilities**

Avoid dust formation. Keep in a dry place. Keep container tightly closed in a dry and well-ventilated place.

**7.3 Specific end uses**

See also Section 1.2.

**8. Exposure controls/personal protection**

**8.1 Control parameters**

**Short term exposure local effects**

Inhalation Acute systemic effects:

Workers 7.02mg/m<sup>3</sup>

Consumers 3.03mg/m<sup>3</sup>

Skin contact Acute systemic effects:

Workers 100mg/kg BW/d

Consumers 50mg/kg BW/d

**Long term exposure local effects**

Inhalation Long-term systemic effects:

Workers 2.34mg/m<sup>3</sup>

Skin contact Long-term systemic effects:

Workers 26.61mg/kg BW/d

**Predicted No Effect Concentration (PNEC)**

Lithium Carbonate – Compartments Value

Soil 0.8381mg/l

Marine water 0.11mg/l

Fresh water 1.05mg/l

Marine sediment 0.41mg/kg

Fresh water sediment 4.09mg/kg

Sewage treatment plant 122.2mg/l

**8.2 Exposure controls**

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazard present and the risk of exposure to those hazards. The PPE recommendations below are based on an assessment of the chemical hazards associated with this product. Where this product is used in a mixture with other products or fluids, additional hazards may be created and as such further assessment of risk may be required. The risk of exposure and need of respiratory protection will vary from workplace to workplace and should be assessed by the user in each situation.

**8.3 Engineering measures to reduce exposure**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal protective equipment**

<b>Eye/face protection</b>	Safety glasses with side-shields Use equipment for eye protection. Tightly fitting safety goggles
<b>Hand protection</b>	Wear chemical resistant gloves such as nitrile or neoprene. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with good laboratory practices. Wash and dry hands. <b>General advice:</b> The exact break through time can be obtained from the protective glove producer and this has to be observed. Protective gloves have to be replaced at the first sign of deterioration.
<b>Respiratory protection</b>	Dust mask recommended. For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator.
<b>Skin and body protection</b>	Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
<b>Hygiene measures</b>	Take off contaminated clothing and shoes immediately. Avoid contact with the skin and the eyes. Keep away from food, drink and animal feeding stuffs. Wash hands before breaks and at the end of workday. Do not breathe dust.



**9. Physical and chemical properties**

**9.1 Information on basic physical and chemical properties**

Physical state	Solid
Appearance form	Powder
Odour	Odourless
Colour	White

<u>Property</u>	<u>Value</u>	<u>Remarks</u>
pH	9.0 – 11.0	at 1000 ppm
Melting/freezing point	618°C	
Boiling point/range		No need to be conducted (solid)
Flash Point		Not applicable
Evaporation rate		
Flammability (solid, gas)		Not flammable
Flammability Limits in Air		Not flammable
Upper flammability Limit		Not flammable
Lower flammability Limit		Not flammable
Vapor pressure		Not applicable
Vapor density		Not applicable
Specific gravity	2.1g/mL	at 25°C
Bulk density	430 kg/m <sup>3</sup>	
Relative density	2.1g/mL	at 25°C
Water solubility	8.4g/l	at 20°C
Solubility in other solvents		Inorganic substance
Autoignition temperature		Not flammable
Decomposition temperature		Not applicable
Viscosity, dynamic		No need to be conducted (solid)
Explosive properties		Not explosive
Oxidizing properties	> 180 s	Under the conditions of this test, the test item did not appear to be a Division 5.1 Solid Oxidizer, as defined by UN/DOT criteria.

**9.2 Other information**

Pour point	No information available
Molecular weight	73.89 g/mol
Density VALUE	2.1 g/cm <sup>3</sup>

**10. Stability and reactivity**

**10.1 Reactivity**

Reacts with Fluorine.

**10.2 Chemical stability**

Stable under recommended storage conditions.

**10.3 Incompatible materials**

Incompatible with strong acids and oxidizing agents. Acids, fluorine.

**10.4 Hazardous decomposition products**

Hazardous decomposition products formed under fire conditions - Carbon oxides, Lithium Oxides.

## 11. Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

<b>Inhalation</b>	LD50 (rat, inhalation) > 2000 mg/m <sup>3</sup>
<b>Eye contact</b>	Serious eye damage/eye irritation. Eyes – Rabbit. Result: Eye irritation
<b>Skin contact</b>	Skin sensitisation. LD50 (rat, dermal) > 3000 mg/kg bw. Did not cause sensitisation on laboratory animals.
<b>Ingestion</b>	LD50 Oral - Rat - 525mg/kg

**Germ cell mutagenicity** Animal testing did not show any mutagenic effects.

**Reproductive toxicity** Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments. Lithium and its compounds are possible teratogens by analogy to lithium carbonate which has equivocal human teratogenic data and positive animal teratogenic data.

**Effects on or via lactation** Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.  
Nausea, Anorexia. 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. Diarrhoea, vomiting and neuromuscular effects such as tremor, clonus, and hyperactive reflexes may occur as a result of repeated exposure to lithium ion. Vomiting, Cyanosis and t-wave inversion have occurred in the breast-fed infants of women receiving lithium carbonate therapy.

## 12. Ecological information

### 12.1 Toxicity

#### Toxicity to fish

LC50 - Oncorhynchus mykiss (rainbow trout) – 30.3 mg/l - 96h

#### Toxicity to daphnia and other aquatic invertebrates

EC50 - Daphnia magna (Water flea) – 33.2 mg/l - 48h

#### Toxicity to algae

Static test EC50 - Desmodesmus subspicatus (green algae) - > 400mg/l - 72h

### 12.2 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

**12.3 Bioaccumulative potential**

Lithium salts are not considered to bioaccumulate. The anionic part of the lithium salts is either natural or chemically indistinguishable from natural substances. Anionic parts like carbonate, chloride or nitrate can be found ubiquitous in nature. Thus, only data on the bioaccumulation potential of the lithium component are presented here. The highest BCF/BAF was determined by Antonkiewicz et al. (2017) for terrestrial plants under hydroponic conditions with values between 9 and 16 over the different dosing groups. Barber et al (2006) determined a BCF of around 8 L/kg in freshwater fish. Other publications indicate BCF/BAF values of 1 (Karlsson et al. 2002) or below 1 (Pokorska et al., 2012). Kastanek (2015) concluded in his study with three different algae species that the bioaccumulation potential of lithium is negligible.

Recalculation of the highest BAF/BCF values of the evaluated literature resulted in a BCF of 42 L/kg and a BAF of 84 for lithium carbonate. Thus, lithium carbonate is not considered as bioaccumulative.

**12.4 Biotic degradation**

Biodegradation in water: screening test, Biodegradation in water and sediment, Biodegradation in soil. In accordance with column 2 of REACH Regulation 1907/2006/EC Annex VII section 9.2.1.1, a biodegradation test does not need to be conducted as the test substance lithium carbonate is an inorganic substance. Furthermore, according to REACH Annex X, Section 9.2, Column 2, further biotic degradation testing shall be proposed, if the chemical safety assessment according to Annex I indicates the need to investigate further degradation. The CSA does not indicate any need to further assess degradation. Risk assessment was already performed assuming worst case conditions including “no biodegradation”. All risks are adequately controlled. Thus, any further information that would lead to the conclusion that the registered substance is not biodegradable would not influence the chemical safety assessment. Please refer to the attached CSR in IUCLID section 13 for further information.

**12.5 Abiotic degradation**

Lithium carbonate is an inorganic substance soluble in water (8.4 – 13 g/L at 20 °C). Hydrolysis of lithium carbonate produces basic solutions of lithium hydroxide and lithium hydrogen carbonate. Further decay produces lithium ions, hydrogen carbonate and carbonate. The hydrolysis of carbonates is a well known chemical process. In water, CO<sub>2</sub> is the predominant species at a pH lower than 6.33, HCO<sub>3</sub><sup>-</sup> (hydrogen carbonate ion) at a pH in the range of 6.35 -10.33, and CO<sub>3</sub><sup>2-</sup> (carbonate ion) at a pH higher than 10.33. The carbonate will finally be incorporated into the inorganic and organic carbon cycle. Lithium ions do not undergo further degradation and are eventually incorporated into the soil minerals inventory.

**13. Disposal considerations**

**13.1 Waste treatment methods**

<b>Product</b>	Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Dispose of as special waste in compliance with local and national regulations.
<b>Waste key for the unused Product</b>	Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.



**Contaminated packaging:** Dispose of as unused product. Dispose of as special waste in compliance with local and national regulations.

**14. Transport information**

**14.1 Classification**

Not classified as dangerous in the meaning of transport regulations. This material is not hazardous as defined by 49 CFR 172.101 by the U.S. Department of Transportation.

<b>Proper Shipping Name</b>	Not regulated
<b>Hazard Class Number and Description</b>	Not Applicable
<b>UN Identification Number</b>	Not Applicable
<b>Packing Group</b>	Not Applicable
<b>DOT label(s) required</b>	Not Applicable
<b>Marine Pollutant</b>	Lithium Carbonate is not designated as a Marine Pollutant by the DOT (per 49 CFR 172.101, Appendix B).
<b>DOT Classification</b>	Not a DOT controlled material (United States). Is not regulated by norm IATA.
<b>Special Provisions for Transport</b>	Not applicable.

**15. Regulatory information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

<b>National legislation</b>	Storage class 10 – 13
<b>U.S. REGULATIONS:</b>	
<b>U.S. SARA Reporting Requirements</b>	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.
<b>CERCLA SECTION 103 (40 CFR 302.4)</b>	Listed CERCLA Extremely Hazardous Substance: No
<b>SARA SECTION 302 (40 CFR 355.30)</b>	Extremely Hazardous Substance: No
<b>SARA SECTION 304 (40 CFR 355.40)</b>	RQ-CERCLA or SARA 302: No
<b>SARA SECTION 313 (40 CFR 372.65)</b>	Toxic Chemical Release Inventory (TRI/Form R): Yes
<b>U.S. SARA Threshold Planning Quantity</b>	There are no specific Threshold Planning Quantities for this compound. The default Federal MSDS submission and inventory requirement filing

## Lithium Carbonate – SDS

Revision date 18/Jun/2020

	threshold of 10,000 lb (4,544 kg) may apply, per 40 CFR 370.20.
<b>U.S. CERCLA Reportable Quantity (RQ)</b>	Not applicable.
<b>U.S. TSCA Inventory Status</b>	Lithium Carbonate is listed on the TSCA Inventory.
<b>U.S. TSCA 12b Export Notification: TSCA 12(b)</b>	Notification is not required, per 40 CFR 707, for Lithium Carbonate.
<b>Other US Federal Regulations</b>	Not applicable.
<b>U.S. State Regulatory Information</b>	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.
<b>CANADIAN REGULATIONS:</b>	
<b>Canadian Inventory Status</b>	Lithium Carbonate is on the DSL.
<b>Canadian WHMIS Classification</b>	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

### 16. Other information

<b>Prepared by</b>	Pablo Alurralde / Luis Sansot
<b>Revision date</b>	22/Jun/2020
<b>Version</b>	3
<b>The following sections have been revised</b>	Formatting of the document. Additional content has been added.

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