RioTinto

Section 1. Identification of the substance/mixture and of the company/undertaking

Product name : Lithium Carbonate

Other means of identification : Dilithium carbonate, Carbonic acid, Lithium salt (1:2)

Product type : Powder.

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

Material uses : Industrial applications: Manufacture of chemicals. Chemical synthesis. Lithium hydroxide production. Manufacture of ceramics and glass. Cathode / battery manufacturing.

Supplier's details : Rio Tinto Commercial Americas Inc.
200 E. Randolph Street,
Suite 7100, Chicago IL 60601-7329,
United States
Tel: +1 800 872 6729

Manufacturer:
Rincon Mining Pty Limited
Necochea 867, Planta Baja
CP 4400, Salta
Argentina
Tel: +54 387 495 5900

e-mail address of person responsible for this SDS : rtb.sds@riotinto.com

Emergency telephone number : +56 2 2582 9336 (Rio Tinto Lithium)
For advice on chemical emergencies, spillages, fires or first aid.

Section 2. Hazard identification

Classification of the substance or mixture : ACUTE TOXICITY (oral) - Category 4
EYE IRRITATION - Category 2

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Harmful if swallowed.
Causes serious eye irritation.

Precautionary statements

Prevention : Wear eye or face protection.

Section 2. Hazard identification

Response : IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. Rinse mouth. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Storage : Not applicable.

Disposal : Dispose of contents/container in accordance with local regulation.

Supplemental label elements : Not applicable.

Other hazards which do not result in classification : Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat. Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Other means of identification : Dilithium carbonate, Carbonic acid, Lithium salt (1:2)

Ingredient name	Synonyms	Identifiers	%	GHS Classification	Type
lithium carbonate	Dilithium carbonate, Carbonic acid, Lithium salt (1:2)	CAS: 554-13-2 EC: 209-062-5	≥98	ACUTE TOXICITY (oral) - Category 4 EYE IRRITATION - Category 2	[1]

There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

[1] Constituent

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Section 4. First aid measures

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

Skin contact : No known significant effects or critical hazards.

Ingestion : Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : No specific fire or explosion hazard.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark : The product is not flammable, combustible or explosive.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods and materials for containment and cleaning up

Small spill : Move containers from spill area. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Note: see section 8 for personal protective equipment and section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing dust. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
lithium carbonate	**Rio Tinto recommended OEL (United States, 6/2022) [Lithium and compounds (as Li)]** STEL: 0.02 mg/m³ (Inhalable). Form: (as Li).

Biological exposure indices

Section 8. Exposure controls/personal protection

No exposure indices known.

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles. If operating conditions cause high dust concentrations to be produced, use dust goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Solid. [Crystalline powder.]

Color : White.

Odor : Odorless.

Odor threshold : Not available.

pH : 11.2 [Conc. (% w/w): 1%]

Melting point/freezing point : 722°C (1331.6°F) [EU A.1]

Boiling point or initial boiling point and boiling range : Not applicable. [Decomposes]

Section 9. Physical and chemical properties

Flash point : Not applicable (solid).

Evaporation rate : Not available.

Flammability : Non-flammable. [EU A.10]

Lower and upper explosion limit/flammability limit : Not applicable (solid).

Vapor pressure : Not applicable. [melting point >300°C]

Relative vapor density : Not applicable (solid).

Relative density : 2.1 [20 °C]

Density : 2.1 g/cm³ [20°C (68°F)]

Bulk density : Not available.

Granulometry : Not available.

Solubility in water : 8.4 g/l at 20 ± 0.5 °C [OECD 105]

Partition coefficient: n-octanol/water : Not applicable. [Inorganic substance.]

Auto-ignition temperature : Not applicable (solid).

Decomposition temperature : 1300°C (2372°F)

Viscosity : Not applicable. (solid)

Flow time (ISO 2431) : Not available.

Explosive properties : Not applicable. The product is not flammable, combustible or explosive.

Oxidizing properties : Not oxidizing. [UN Test of Oxidising Solids O.1]

Particle characteristics

Median particle size : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Strong acids and Strong oxidizer (such as Fluorine.)
Reacts violently with Fluorine.

Hazardous decomposition products : Hazardous decomposition products: Lithium oxide. Thermal decomposition: Hazardous decomposition products: > 600 °C

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
lithium carbonate	LC50 Inhalation Dusts and mists LD50 Dermal LD50 Oral	Rat Rabbit Rat	>2 mg/l >3000 mg/kg 525 mg/kg	4 hours - -

Conclusion/Summary : Harmful if swallowed.

Irritation/Corrosion

Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
lithium carbonate	Eyes - Irritant	New Zealand White Rabbit	-	0.1g	-
	Skin - Not irritant	New Zealand White Rabbit	-	0.5g	-

Conclusion/Summary

Skin : Non-irritant to skin. Based on the available data, the classification criteria are not met.

Eyes : Irritant to eyes. Based on the results obtained with unwashed eyes, lithium carbonate has to be classified and labelled as Cat.2 (H319).

Respiratory : Based on the available data, the classification criteria are not met.

Respiratory or skin sensitization

Product/ingredient name	Route of exposure	Species	Result
lithium carbonate	skin	Guinea pig	Not sensitizing

Conclusion/Summary

Skin : Not a skin sensitizer. Based on the available data, the classification criteria are not met.

Respiratory : No respiratory sensitization studies have been conducted. Based on the available data, the classification criteria are not met.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
lithium carbonate (based on read-across to Lithium hydroxide).	OECD 471	Experiment: In vitro Subject: Bacteria	Negative
	OECD 476	Experiment: In vitro Subject: Mammalian-Animal	Negative
	OECD 473	Experiment: In vitro Subject: Mammalian-Human	Negative

Conclusion/Summary : Not mutagenic (based on read-across to Lithium hydroxide). Based on the available data, the classification criteria are not met.

Carcinogenicity

Not available.

Conclusion/Summary : No Carcinogenicity studies have been conducted. Based on the available data, the classification criteria are not met.

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Development toxin	Species	Dose	Exposure
lithium carbonate	-	-	-	Rat	Oral	-

Conclusion/Summary : The available experimental test data are reliable and suitable for classification purposes under Regulation (EC) No 1272/2008. Based on the available data, the classification criteria are not met.

Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure
lithium carbonate	Positive - Oral	Rat	-	-

Conclusion/Summary : See Reproductive toxicity.

Specific target organ toxicity (single exposure)

Section 11. Toxicological information

Product/ingredient name	Category	Route of exposure	Target organs
Based on the available data, the classification criteria are not met.			

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Based on the available data, the classification criteria are not met.			

Aspiration hazard

Product/ingredient name	Result
Physical form of solid powder indicates no aspiration hazard potential.	

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

Skin contact : No known significant effects or critical hazards.

Ingestion : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : No known significant effects or critical hazards.

Numerical measures of toxicity

Section 11. Toxicological information

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Lithium Carbonate Lithium Carbonate	500 525	N/A N/A	N/A N/A	N/A N/A	N/A 1.5

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
lithium carbonate	Acute EC50 135 mg/l Fresh water Acute NOEC 9 mg/l Fresh water Acute LC50 30.3 mg/l Fresh water Chronic NOEC 9 mg/l Fresh water Acute EC50 33.2 mg/l Fresh water Chronic NOEC 15.28 mg/l Fresh water	Algae Algae Oncorhynchus mykiss Daphnia: Daphnia magna Daphnia: Daphnia magna Brachydanio rerio	72 hours 72 hours 96 hours 21 days 48 hours 34 days

Conclusion/Summary : Based on the available data, the classification criteria are not met.

Persistence and degradability

Conclusion/Summary : Not applicable. Inorganic substance.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Lithium Carbonate 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 considered. Recalculation of the highest BAF/BCF values of the evaluated literature resulted in a BCF of 43 L/kg and a BAF of 85 for lithium carbonate. Thus, lithium carbonate is not considered as bioaccumulative.			

Mobility in soil

Soil/water partition coefficient (K_{OC}) : The mobility of the test item depends on the anion exchange capacity of the soils as the main component of the test material is an anion, however based on available Kd values the substance adsorption potential can be regarded as low.

Mobility : Low

Section 12. Ecological information

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : Waste packaging should be recycled. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	UN	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.

Special precautions for user : Not applicable.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

The recipient should verify the possible existence of local regulations applicable to the chemical product.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : All components are listed or exempted.

Section 15. Regulatory information

Canada : All components are listed or exempted.

China : All components are listed or exempted.

Eurasian Economic Union : **Russian Federation inventory**: All components are listed or exempted.

Japan : **Japan inventory (CSCL)**: All components are listed or exempted.
Japan inventory (ISHL): Not determined.

New Zealand : All components are listed or exempted.

Philippines : All components are listed or exempted.

Republic of Korea : All components are listed or exempted.

Taiwan : All components are listed or exempted.

Thailand : All components are listed or exempted.

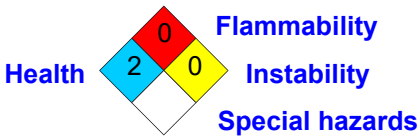
Turkey : All components are listed or exempted.

United States : All components are active or exempted.

Viet Nam : All components are listed or exempted.

Section 16. Other information

Safety signs according to NCh1411/4



History

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Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
UN = United Nations

Procedure used to derive the classification

Classification	Justification
ACUTE TOXICITY (oral) - Category 4 EYE IRRITATION - Category 2	Expert judgment Expert judgment

Additional information : Keep out of reach of children.
Do not ingest.
Not for use in pharmaceutical applications (except where expressly authorized by the relevant regulator).
Refer to safety data sheet.

References : Not available.

Indicates information that has changed from previously issued version.

Chile / 4.14 / EN-US

Notice to reader

Section 16. Other information

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.