1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

Product identifier: Lithium Carbonate

Product Number: This SDS encompasses all the product numbers in relation to Lithium Carbonate.

REACH registration number: 01-2119516034-53-XXXX

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

Identified uses: (ES 1) Formulation [mixing] of preparations and/or re-packaging (excluding alloys) (PROCs: 1, 2, 3, 4, 5, 6, 8a, 8b, 9, 10, 14, 15)
(ES 2) Industrial use (PROCs: 1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 12, 13, 14, 15, 19, 22, 23, 25, 26)
(ES 3) Professional use (PROCs: 5, 8a, 8b, 9, 10, 11, 13, 19, 20)
(ES 4) Consumer end-use (PC 1, PC 9a, PC 9b, PC 15)

Uses advised against: None

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2. HAZARDS IDENTIFICATION

Classification of the substance or mixture:

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]:

Hazard classes and Hazard categories Hazard statements:

Acute Tox. 4 H302
Eye Irrit. 2 H319

Classification according to Directive 67/548/EEC or 1999/45/EC:

Categories of danger R-Phrases:

Harmful: R22

Irritant: R36

Full text of R-, S-phrases: see section 16.

[cont…]

Label elements:

Hazard pictograms:

Signal word: Warning

Hazard Statements:
H302 Harmful if swallowed.
H319 Causes serious eye irritation.

Precautionary Statements:
IF SWALLOWED: Rinse mouth with water. Call a POISON CENTER or doctor/physician if you feel unwell.
Dispose of contents/container according to local/national regulations.
Wear protective gloves and eye protection. Do not eat, drink or smoke when using this product.
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.

Other hazards: PBT and vPvB assessment is not applicable to inorganic substance.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance name: Lithium Carbonate
CAS No.: 554-13-2
EC No.: 209-062-5
INDEX No.: Not indexed.

4. FIRST AID MEASURES

Description of first aid measures:

General information:
In case of persisting adverse effects consult a physician.
Never give anything by mouth to an unconscious person or a person with cramps.

In case of inhalation:
Remove to fresh air and keep at rest in a position comfortable for breathing.
Get medical attention for any breathing difficulty.

In case of skin contact:
Remove contaminated, saturated clothing immediately. Wash with plenty of soap and water.
If skin irritation occurs: Get medical advice/attention.

In case of eye contact:
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.

In case of ingestion:
Rinse mouth with water. Call a POISON CENTER or doctor/physician if you feel unwell.

[cont…]

Most important symptoms and effects, both acute and delayed:

The following symptoms may occur:

In case of inhalation May irritate the respiratory tract

In case of skin contact May cause redness or irritation

In case of eye contact Causes eye irritation

In case of ingestion Harmful if swallowed.

The following acute adverse effects have been described in patients receiving lithium therapy:

Gastrointestinal disturbances (nausea, vomiting, diarrhoea)

Long-term sequelae from acute lithium poisoning include adverse CNS effects.

Indication of any immediate medical attention and special treatment needed:

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Extinguishing media:

Suitable extinguishing media: Use any suitable mean for extinguishing surrounding fire.

Unsuitable material:

Special hazards arising from the substance or mixture:

Thermal decomposition can lead to the escape of toxic/irritating gases and vapours.

Thermal decomposition products: refer to section 10.

Advice for firefighters: Wear a self-contained breathing apparatus and chemical protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Provide adequate ventilation. Avoid dust generation. Wear personal protection equipment.

Environmental precautions: Do not allow to enter into surface water or drains. Ensure waste is collected and contained.

Methods and material for containment and cleaning up:

None, but attention should be paid to compatibility with chemicals surrounding.

Take up mechanically, placing in appropriate containers for disposal or recovery.

Unsuitable material for taking up: None specified

Reference to other sections: Personal protective equipment (exposure scenarios)

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid generation of dust. Provide adequate ventilation. Wear personal protective equipment. Avoid contact with skin and eyes. Do not breathe dust. Wash hands before breaks and at the end of workday.

Do not eat, drink or smoke when using this product.

Keep away from food, drink and animal feeding stuff. Good hygiene practices and housekeeping measures.

[cont…]

Conditions for safe storage, including any incompatibilities:

Reseal carefully any opened container and set upright to avoid leakages. Keep/store only in original container.

Keep away from acids and other substances incompatibles with bases. Keep the product dry in containers tightly closed in a dry, in well-ventilated and cool place.

Specific end uses: Further information concerning special risk management measures: see annex of this safety data sheet (exposure scenarios).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters:

Occupational exposure limits: No specific occupational exposure limit.

DNEL/DMEL and PNEC Values:

Workers (industrial/professional): DNEL Human, dermal, acute: 100 mg Li2CO3/kg bw/day (systemic)
DNEL Human, inhalation, acute: 7.02 mg Li+/m3 (systemic)
DNEL Human, dermal, long term: 26.61 mg Li2CO3/kg/day (systemic)
DNEL Human, inhalation, long term: 2.34 mg Li+/m3 (systemic)

Consumer: DNEL Human, oral, acute: 8.0 mg Li2CO3/kg/day (systemic)
DNEL Human, dermal, acute: 50 mg Li2CO3/kg/day (systemic)
DNEL Human, inhalation, acute: 3.03 mg Li2CO3/m3 (systemic)
DNEL Human, dermal, long term: 26.61 mg Li2CO3/kg/day (systemic)
DNEL Human, inhalation, long term: 1.01 mg Li2CO3/m3 (systemic)
DNEL Human, oral, long term: 2.66 mg Li2CO3/kg bw/day (systemic)
PNEC Environment, freshwater 1.05 mg Li2CO3/L
PNEC Environment, marine water 0.11 mg Li2CO3/L
PNEC Environment, aqua, intermittent releases 0.30 mg Li2CO3/L
PNEC Environment, sediment, freshwater 4.09 mg Li2CO3/L
PNEC Environment, sediment, marine water 0.41 mg Li2CO3/L
PNEC Environment, soil 0.8381 mg Li2CO3/kg dw
PNEC Environment, sewage treatment plant (stp) 122.2 mg Li2CO3/L

Exposure controls: Further information concerning special risk management measures: see annex of this safety data sheet (exposure scenarios).

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties:

Appearance: Solid
Colour: White
Odour: Odourless
pH value: ≈ 11 (1% aqueous slurry)
Melting point / melting range: 722 °C at 1013 hPa (EU A.1/OECD Guideline 102)
Boiling temperature / boiling range: Not applicable (decomposes)

[cont…]

Flash point: Not applicable
Vapourisation rate / Evaporation rate: Not applicable
Flammable solids: Non-flammable (EU A.10)
Explosion limits (LEL, UEL): Not applicable
Vapour pressure: Not applicable (technically not feasible)
Relative vapour density (air = 1): No data available
Density: 2.1 g/cm3 at 20°C (literature information)
Solubility: 8.4 g/L at 20 °C (water) (EU A.6/OECD Guideline 105)
Partition coefficient n-octanol /water: Not applicable
Auto Ignition temperature (AIT): Not applicable
Decomposition temperature (°C): 1300 °C (EU A.1/OECD Guideline 102)
Viscosity: Not applicable
Explosive properties: Not explosive
Oxidising properties: Not oxidising

Other information: None

10. STABILITY AND REACTIVITY

Reactivity: Stable under normal storage and temperature conditions.
Chemical stability: Stable under normal storage and temperature conditions.
Possibility of hazardous reactions: None identified
Conditions to avoid: None identified
Incompatible materials: Strong acids, strong oxidisers and other substances incompatible with bases
Hazardous decomposition products: Thermal decomposition products: Lithium oxides, carbon oxides

11. TOXICOLOGICAL INFORMATION

Toxicokinetics, metabolism and distribution:

Lithium carbonate is poorly absorbed through skin (10% is set as worst case), readily and completely absorbed from the gastrointestinal tract. Upon inhalation, resorption and bioavailability of lithium carbonate is expected to be low. Lithium is not bound to proteins, but is quickly distributed throughout the body water both intra- and extracellularly. Lithium is not metabolised to any appreciable extent in the human body. Excretion of Lithium is fast and takes place almost completely via urine unchanged.

Information on toxicological effects:

Acute toxicity:	**Species:**	**Method:**
Acute oral toxicity LD50: 525 mg/kg bw	Rat.	Unknown (literature information)
Acute dermal toxicity LD50: > 2000 mg/kg bw	Rat.	EU B.3/OECD Guideline 402
Acute inhalation toxicity LC50: > 2000 mg/m3 (4-h)	Rat.	OECD Guideline 403 (limit concentration)

Assessment / classification: Lithium carbonate is classified and labelled Xn, R22 under DSD and as Acute Tox. 4, H302 under CLP.

[cont…]

Irritant and corrosive effects:

Primary irritation to the skin Result:	**Species:**
Equivalent/similar to OECD guideline 404 non-irritant.	Rabbit.

Irritation to eyes Result:	**Species:**
Equivalent/similar to OECD guideline 405 Irritant	Rabbit.

Assessment / classification: Lithium carbonate is classified and labelled Xi, R36 under DSD and as Eye Irrit. 2, H319 under CLP.

Respiratory or skin sensitisation:	**Result:**	**Species:**
OECD Guideline 406/EU B.6/EPA OPP 81-6	Not sensitising.	Guinea pig.
Respiratory	Sensitisation.	No information available.

Assessment / classification: Based on available data, the classification criteria is not met

Germ cell mutagenicity / Genotoxicity:

In vitro genotoxicity:	**Method:**	**Result:**
Gene-mutations microorganisms	OECD Guideline 471/EU B.13/14	Negative
Data obtained by analogy conclusion		
Gene-mutations mammalian cells	OECD Guideline 476/EU B.17	Negative
Data obtained by analogy conclusion		
Chromosome aberrations mammalian cells	OECD Guideline 473/EU B.10	Negative
Data obtained by analogy conclusion		
In vivo genotoxicity:		
Evaluation of lithium compounds (literature information)	Lagerkvist, B.J., Lindell, B. (2002)	Negative

Assessment / classification: Overall assessment of data, indicates that lithium carbonate is not genotoxic in vitro and in vivo.
Based on all available data, the classification criteria is not met.

Carcinogenicity: No data suggest carcinogenic potential of lithium carbonate.
Assessment / classification: Based on available data, the classification criteria is not met.

Reproductive toxicity

Adverse effects on reproduction: Lithium carbonate is not considered to have effects on fertility. Limited and not clear evidence suggests reproductive effects in animals (not reliable supporting study). In humans, reports suggest reproductive impairment during lithium therapy, however, no conclusions can be drawn from reports as the number of cases is very low and confounding factors are not considered.

Adverse effects on developmental toxicity:

OECD guideline 414/EU B.31. NOAEL(C): 30 mg/kg bw/d (maternal toxicity)

NOAEL(C): 90 mg/kg bw/d (embryotoxicity)

[cont…]

Lithium carbonate effects on human development have been studied. Medical monitoring of patients has revealed no link between congenital malformations, physical or mental anomalies and lithium therapy. Reports indicating potential effects are of low cohort size and side effects were not excluded. Equivocal information on cardiovascular developmental effects is found.
Assessment / classification based on available data, the classification criteria is not met.

Specific target organ toxicity (single exposure):

Practical experience / human evidence.
No relevant effect have been observed after single exposure to the substance.
Assessment / classification: Based on available data, the classification criteria is not met.

Specific target organ toxicity (repeated exposure):

Non-human information
No studies on oral repeated dose toxicity of lithium carbonate were available. Data from Lithium chloride is included.

Equivalent/similar to OECD guideline 452 (chronic toxicity studies):

Effect dose:

NOAEL(C): 13.8 mg lithium/kg bw/day

Human information: Lithium carbonate is used as treatment in psychiatric therapy. Long term dose used in psychiatric therapy: 450-900 mg/d (corresponding to serum conc. 0.5-1.0 mmol). Assuming therapeutic range (long term) as without significant toxicological side effects a NOAEL could be derived.

NOAEL: 2.66 mg lithium carbonate/kg bw/day (0.50 mg lithium/kg bw/day)

Assessment/classification: Based on available data, the classification criteria is not met.

Aspiration hazard: Physicochemical and toxicological data does not indicate a potential aspiration hazard.

Assessment/classification: Based on available data, the classification criteria is not met.

12. ECOLOGICAL INFORMATION

Toxicity:

Aquatic toxicity Acute Toxicity: 96-h LC50 30.3 mg/L Oncorhynchus mykiss (rainbow trout) OECD guideline 203
48-h EC50 33.2 mg/L Daphnia magna (Big water flea). OECD guideline 202
72-h EC50 > 400 mg/L Pseudokirchneriella subcapitata. OECD guideline 201
72-h NOEC 50 mg/L Pseudokirchneriella subcapitata. OECD guideline 201

Long-term toxicity: 26-d NOEC 1.05 mg/L Pimephales promelas Equivalent or similar to US EPA OPPTS 850.1400
Data obtained by analogy conclusion
21-d NOEC 3.5 mg/L Daphnia magna (Big water flea). OECD guideline 211
Data obtained by analogy conclusion

Respiratory inhibition of municipal activated sludge.
3-h EC10 22.95 mg/L (Li+) Aquatic organisms OECD guideline 209/EU Method C.11

Assessment / classification: Based on available data, the classification criteria are not met

[cont…]

Persistence and degradability: Hydrolysis of lithium carbonate produces basic solutions of lithium hydroxide and lithium hydrogen carbonate. Further decay produces lithium ions, hydrogen carbonate and carbonate. Carbonate will finally be incorporated into the inorganic and organic carbon cycle. Lithium ions do no go further degradation.

Bioaccumulative potential: Lithium carbonate has a low potential for bioaccumulation based on physicochemical properties.

Mobility in soil: Lithium carbonate has a low potential for adsorption.

Results of PBT and vPvB assessment: PBT and vPvB assessment is not applicable to inorganic substances

Other adverse effects: None specified.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods: Any suitable waste treatment method.

14. TRANSPORT INFORMATION

Land transport (ADR/RID)/Inland waterway transport (ADN)/Sea transport (IMDG)/Air transport (ICAO-TI / IATA-DGR):
Non dangerous good in sense of this transport regulation.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

Remark: None

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture:
None identified.

Chemical Safety Assessment: For this substance a chemical safety assessment has been carried out.

Note: The regulatory information given above only indicates the principal regulations specifically Applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

16. OTHER INFORMATION

This Safety Data Sheet complies with Commission Regulation (EU) No 453/2010:

Classification according to Directive 67/548/EEC or 1999/45/EC:

Categories of danger: Harmful R22 Harmful if swallowed.
R36 Irritating to eyes

S-phrases: S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37 Wear suitable protective clothing and gloves.

[cont…]

Data source: Lithium carbonate REACH Registration Dossier
This information is based upon the present state of our knowledge
This SDS has been compiled and is solely intended for this product

Legal disclaimer: The information contained in this SDS does not constitute a risk assessment, and should not replace the user's own assessment of risks as required by other health and safety legislation. This advice is given by Nexchem Ltd who accept no legal liability for it except otherwise provided by law. The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. It should not therefore be construed as guaranteeing specific properties.