Safety Data Sheet (MSDS)

According to GB/T 16483 and GB/T 17519; Adapts to GHS, IMDG, IATA Standards

Revision Date: 25 FEB 2026

Product Name: Lithium Carbonate CAS:554-13-2

SECTION 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Identifiers

- Product Name: Lithium Carbonate
- Product Number: LTC-20260225
- Brand: SIGALD
- CAS-No.: 554-13-2
- Synonyms: Carbonic acid dilithium salt; Lithia carbonate

1.2 Details of the supplier of the safety data sheet

- Company: NEWAY SINOPHC TECH. LIMITED
- RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI)PILOT FREE TRADE ZONE.
- Telephone: +86-021-50350029
- Fax: +86-021-50350029

1.3 Emergency telephone

- Emergency Phone #: +86-021-50350029 (CHEMTREC)

1.4 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

- Identified Uses: Pharmaceutical raw material for anti-manic and bipolar disorder drug production; small amount for industrial ceramic/glass manufacturing (industrial grade).
- Uses Advised Against: Direct human consumption; unauthorized pharmaceutical formulation; excessive industrial use without lithium ion control.

SECTION 2: Hazards Identification

Summary of Emergency Measures	**White crystalline powder. Moderate acute toxicity. After inhalation: Move to fresh air and rest; consult a doctor if cough or chest tightness persists. In case of skin contact: Rinse skin with plenty of water for 10 minutes. After eye contact: Rinse with plenty of water for 10-15 minutes; consult a doctor immediately if irritation occurs. After swallowing: Rinse mouth with water; do not induce vomiting; call a poison center/doctor immediately. Non-combustible. No risk of explosion.**

2.1 GHS Classification

- Acute toxicity, oral (Category 4); Eye irritation (Category 2); Specific target organ toxicity (repeated exposure), kidney (Category 2); Specific target organ toxicity (single exposure), central nervous system (Category 3)2.2 GHS Label Elements
- Hazard Pictograms: (Exclamation mark)
- Signal Word: **Warning**
- Hazard Statements:

- H302: Harmful if swallowed
- H319: Causes serious eye irritation
- H335: May cause respiratory irritation; affects central nervous system
- H373: May cause damage to the kidney through prolonged or repeated exposure
- Precautionary Statements:
- P261: Avoid breathing dust/fume/gas/mist/vapors/spray
- P264: Wash hands thoroughly after handling
- P270: Do not eat, drink or smoke when using this product
- P280: Wear protective gloves/eye protection/face protection
- P301+P312: If swallowed: Call a POISON CENTER/doctor if you feel unwell
- P305+P351+P338: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
- P314: Get medical advice/attention if you feel unwell.

2.3 Physical and Chemical Hazards

- Based on current information: No physical or chemical hazards; non-combustible, no explosive properties; decomposes at high temperature to release non-toxic carbon dioxide.2.4 Health Hazards
- Based on current information: Acute toxicity (gastrointestinal discomfort, CNS effects) if swallowed; serious eye irritation; respiratory irritation from dust inhalation; chronic kidney damage from prolonged/repeated exposure; CNS effects (dizziness, tremor) at high doses.2.5 Environmental Hazards
- Based on current information: Moderate aquatic toxicity; lithium ion accumulation may affect aquatic organism osmoregulation; non-biodegradable but low mobility in soil.2.6 Other Hazards
- No additional hazards identified.

SECTION 3: Composition/Information on Ingredients

- Substance / Mixture: Pure chemical compound (100% Lithium Carbonate) | 3.1 Main Components | Lithium Carbonate (100% w/w) | | --- | --- | | Formula | Li_2CO_3 | | Molecular Weight | 73.89 g/mol | | CAS-No.: | 554-13-2 | | EC-No.: | 209-062-5 |

Hazardous Ingredients

Component	Classification	Concentration (w/w)
Lithium Carbonate	Acute toxicity oral Cat 4; Eye irritation Cat 2; Kidney toxicity Cat 2	100%

SECTION 4: First Aid Measures

4.1 Description of First-Aid Measures

- If Inhaled: Move victim to fresh air and place in a semi-upright position. Provide oxygen if breathing is difficult. Consult a doctor if cough, chest tightness or dizziness persists.

- In Case of Skin Contact: Remove contaminated clothing and shoes. Rinse skin with plenty of running water for 10 minutes. Wash clothing before reuse; discard contaminated shoes if necessary.
- In Case of Eye Contact: Rinse eyes thoroughly with plenty of running water for 10-15 minutes (hold eyelids open). Remove contact lenses if present. **Immediate medical attention required** even if no irritation is felt.
- If Swallowed: Rinse mouth with water. Do not induce vomiting (risk of esophageal damage). Call a poison center or doctor immediately and provide the product label.4.2 Most Important Symptoms and Effects, Both Acute and Delayed
- Acute Effects: Nausea, vomiting, diarrhea (gastrointestinal); dizziness, tremor, confusion (CNS); serious eye irritation; cough from dust inhalation.
- Delayed Effects: Kidney damage (tubular injury) from prolonged exposure; persistent CNS effects (tremor) at high acute doses.4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed
- Symptomatic treatment required; monitor kidney function and lithium ion concentration in blood for acute ingestion; no specific antidote (supportive care only).4.4 Notes to Physician
- Inform the physician of lithium carbonate exposure; monitor blood lithium levels, renal function (creatinine, urea) and electrolyte balance.

SECTION 5: Firefighting Measures

5.1 Extinguishing Media

- Suitable Extinguishing Media: Water spray, foam, carbon dioxide (CO_2), dry powder.
- Unsuitable Extinguishing Media: No limitations of extinguishing agents.5.2 Special Hazards Arising from the Substance or Mixture
- Non-combustible; decomposes at high temperature (>700℃) to release lithium oxide and carbon dioxide (no toxic combustion gases); no explosion risk.5.3 Advice for Firefighters
- Wear standard fire-fighting gear (helmet, fire coat, gloves) and a dust mask; avoid inhalation of high-temperature decomposition dust; keep containers cool with water spray if exposed to fire.

SECTION 6: Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

- Wear full PPE (nitrile rubber gloves, chemical safety goggles, N95 dust mask, lab coat); ensure good ventilation; evacuate non-essential personnel from the spill area.6.2 Environmental Precautions
- Prevent spillage from entering drains, sewers, rivers or groundwater (lithium ion is toxic to aquatic life); contain spilled material with plastic barriers; do not wash spill into water bodies.6.3 Methods and Materials for Containment and Cleaning Up
- Small Spill: Sweep up with a clean brush and transfer to a sealed HDPE container for professional disposal; do not reuse the spilled material.

- Large Spill: Contain with dikes or plastic barriers; transfer to sealed HDPE drums with a clean shovel; clean the spill area with a small amount of water and collect the wash water for disposal.6.4 Reference to Other Sections
- For disposal, see Section 13.

SECTION 7: Handling and Storage

7.1 Precautions for Safe Handling

- Operate in a well-ventilated, dust-free fume hood/area; use closed handling systems (e.g., vacuum transfer) for large-scale production to avoid dust generation and inhalation.
- Avoid contact with strong acids (reacts to release carbon dioxide gas), strong bases and water (moisture absorption).
- Hygiene Measures: Wash hands and face thoroughly with soap and water after handling; do not eat, drink or smoke in the work area; conduct regular medical check-ups (kidney function) for personnel with prolonged exposure.7.2 Conditions for Safe Storage, Including Any Incompatibilities
- Storage Conditions: Store in a **dry, cool, well-ventilated** warehouse at ≤25℃. Keep container tightly sealed (moisture-proof) to prevent hygroscopy and caking. Avoid direct sunlight and high humidity (>60%).
- Incompatibilities: Strong acids (HCl, H_2SO_4), strong oxidizing agents, water (excessive), acidic salts.
- Storage Class (TRGS 510): 9 (Hazardous Solids, low risk)
- Shelf Life: 24 months (unopened, under specified storage conditions).
- Segregation: Store separately from food, feed, pharmaceutical raw materials (unrelated), strong acids and oxidizing agents; keep away from children and unauthorized personnel.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control Parameters

Component	CAS-No.	Value	Control Parameters	Basis
Lithium Carbonate	554-13-2	TWA: 0.1 mg/m³ (lithium ion)	Respirable dust	China Occupational Exposure Limit; EU OEL

8.2 Exposure Controls

- Engineering Controls: Local exhaust ventilation (LEV) with high-efficiency dust collection; positive pressure ventilation; dust-free workbench (Class 10000) for pharmaceutical grade handling.
- Personal Protective Equipment (PPE):
  - Eye/Face Protection: Chemical safety goggles + face shield (mandatory for all handling) to avoid dust contact with eyes.
  - Skin Protection: Nitrile rubber gloves (thickness ≥ 0.11 mm) + chemical-resistant lab coat + disposable arm covers for prolonged contact.

- Respiratory Protection: N95 dust mask (normal handling); powered air-purifying respirator (PAPR) for high-dust environments.
- Hand: No bare hand contact; replace gloves immediately if damaged or contaminated.
- Control of Environmental Exposure: Install dust collection systems to prevent environmental release; treat wastewater containing lithium ions before discharge.

SECTION 9: Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Propertiesa) Physical State: Solid (crystalline powder/granules)b) Color: Whitec) Odor: Practically odorlessd) Melting Point/Freezing Point: 723℃ (decomposition)e) Initial Boiling Point and Boiling Range: Decomposes before boiling (>700℃)f) Flammability (Solid): Non-combustibleg) Upper/Lower Flammability or Explosive Limits: Not applicableh) Flash Point: Not applicablei) Autoignition Temperature: >800℃j) Decomposition Temperature: ≥700℃ (decomposes to Li_2O and CO_2)k) pH Value (25℃): 6.0-8.0 (1% aqueous suspension)l) Viscosity (25℃): N/A (solid)m) Water Solubility: Sparingly soluble (1.3 g/100 mL at 25℃); solubility increases with temperature decrease.n) Partition Coefficient (n-octanol/water): Log P = -2.5 (inorganic salt)o) Vapor Pressure (25℃): <0.0001 hPa (negligible)p) Density (25℃): 2.11 g/cm³ (solid)q) Relative Vapor Density: N/Ar) Particle Characteristics: Crystalline powder/granules; 90% passing 100 mesh (pharmaceutical grade)s) Explosive Properties: Not explosivet) Oxidizing Properties: None

9.2 Other Safety Information

- Hygroscopic: Mild hygroscopic; caking occurs in high humidity environments (>60%).
- Reactivity with acid: Reacts with strong acids to release CO_2 gas (no explosion risk, but may cause splashing).

SECTION 10: Stability and Reactivity

10.1 Chemical Stability: Stable under recommended storage conditions (≤25℃, dry, sealed); mild hygroscopic but no chemical degradation.10.2 Possibility of Hazardous Reactions: No hazardous reactions under normal use and handling; reacts with strong acids to release carbon dioxide gas (may cause splashing at high concentration).10.3 Conditions to Avoid: High temperature (>700℃), high humidity (>60%), contact with strong acids, excessive water, strong oxidizing agents.10.4 Incompatible Materials: Concentrated hydrochloric acid/sulfuric acid, hydrogen peroxide (30%+), nitric acid, acidic salts (e.g., ammonium chloride).10.5 Hazardous Decomposition Products: No hazardous decomposition products; decomposes to lithium oxide (Li_2O) and carbon dioxide (CO_2) at high temperature (>700℃); Li_2O reacts with water to form lithium hydroxide (mildly alkaline).

SECTION 11: Toxicological Information

11.1 Information on Toxicological Effects

- Acute Toxicity:
  - Oral (Rat, LD_{50}): 730 mg/kg
  - Dermal (Rabbit, LD_{50}): >2000 mg/kg

- Inhalation (Rat, LC_{50}): >5 mg/m³ (4-hour exposure, dust)
- Skin Corrosion/Irritation: No irritation (Rabbit, 4-hour exposure).
- Serious Eye Damage/Eye Irritation: Category 2 (severe irritation, redness and tearing; reversible in 48-72h; Rabbit, 24-hour exposure).
- Respiratory or Skin Sensitization: No sensitizing effects (human and animal studies).
- Germ Cell Mutagenicity: Negative (Ames test, chromosome aberration test).
- Carcinogenicity: Not classified as carcinogenic by IARC, EPA, or NTP.
- Reproductive Toxicity: No reproductive toxicity at normal occupational exposure; high doses may cause fetal lithium ion accumulation (animal studies).
- Specific Target Organ Toxicity (Single/Repeated Exposure):
- Single exposure: CNS effects (dizziness, tremor, confusion) at high doses; respiratory irritation from dust inhalation.
- Repeated exposure: Kidney damage (tubular reabsorption dysfunction); electrolyte imbalance (sodium/potassium).
- Aspiration Hazard: Low (solid powder, low dustiness for pharmaceutical grade).

11.2 Additional Information

- Lithium ion is a central nervous system modulator; excessive exposure causes electrolyte imbalance and organ damage; occupational exposure limit is strictly controlled.

SECTION 12: Ecological Information

12.1 Toxicity:

- Fish (Zebrafish, LC_{50}): 250 mg/L (96-hour exposure, lithium ion)
- Daphnia (EC_{50}): 150 mg/L (48-hour exposure, lithium ion)
- Algae (EC_{50}): 300 mg/L (72-hour exposure, lithium ion)12.2 Persistence and Degradability: Non-biodegradable (inorganic salt); lithium ion exists stably in the environment.12.3 Bioaccumulative Potential: No bioaccumulation potential (inorganic ion); does not accumulate in aquatic organisms or soil fauna.12.4 Mobility in Soil: Low mobility; lithium ion binds to soil clay and organic matter; no leaching to groundwater under normal conditions.12.5 Results of PBT and vPvB Assessment: Not classified as PBT/vPvB (no bioaccumulation and persistence in organisms).12.6 Endocrine Disrupting Properties: No data available; no endocrine disruption reported in ecological studies.12.7 Other Adverse Effects: Lithium ion accumulation in aquatic environments affects osmoregulation of fish and invertebrates; low environmental risk at normal release levels.

SECTION 13: Disposal Considerations

13.1 Waste Treatment Methods

- Product Waste: Classified as hazardous inorganic waste; incinerate at licensed hazardous waste treatment facilities (high temperature incineration) or solidify with cement for landfilling (in accordance with local regulations).

- Packaging Waste: Rinse packaging with a small amount of water; collect the wash water for hazardous waste treatment; dispose of packaging as hazardous waste (do not recycle).
- Lithium Ion-Containing Wastewater: Treat with ion exchange resin to remove lithium ions before discharge; comply with local wastewater discharge standards.13.2 Disposal Regulations: Comply with China Hazardous Waste List (HW09) and Basel Convention for international transport; do not dispose of with municipal solid waste.

SECTION 14: Transport Information

14.1 UN Number: ADR/RID: 3288; IMDG: 3288; IATA-DGR: 328814.2 UN Proper Shipping Name: ADR/RID: Lithium carbonate, solid; IMDG: Lithium carbonate, solid; IATA-DGR: Lithium carbonate, solid14.3 Transport Hazard Class(es): ADR/RID: 9; IMDG: 9; IATA-DGR: 9 (Miscellaneous hazardous material)14.4 Packaging Group: ADR/RID: III; IMDG: III; IATA-DGR: III14.5 Environmental Hazards: ADR/RID: Yes; IMDG Marine Pollutant: No; IATA-DGR: Yes14.6 Special Precautions for User: Transport at ≤25℃; use moisture-proof, sealed HDPE/fiber packaging; mark with GHS hazard labels and UN number 3288; avoid contact with strong acids during transport.14.7 Incompatible Materials: Avoid transport with strong acids, oxidizing agents, and acidic salts.

Further Information: Classified as Class 9 miscellaneous hazardous material under international transport regulations.

SECTION 15: Regulatory Information

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

- National Regulations (China):
  - Hazardous Chemical Safety Management Regulation (Class 9 hazardous chemical)
  - Pharmacopoeia of the People's Republic of China (2020) (pharmaceutical grade)
  - Occupational Exposure Limit for Hazardous Factors in the Workplace
- International Regulations:
  - GHS Classification (Rev. 9): Acute toxicity oral Cat 4; Eye irritation Cat 2; Kidney toxicity Cat 2
  - REACH (EU): Registered; not listed in SVHC Candidate List
  - TSCA (US): Listed on the TSCA Inventory; FDA-regulated pharmaceutical raw material

SECTION 16: Other Information

- This MSDS complies with GB/T 16483, GB/T 17519 and GHS Rev.9; based on current scientific/regulatory knowledge
- Supplier is not liable for damage caused by improper handling/storage/use or non-compliance with safety precautions
- For additional technical/regulatory info, contact supplier's pharmaceutical technical department
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