Safety Data Sheet (MSDS)

- Calcium Lactate (Food Grade)

(Compliant with GB/T 16483, GB/T 17519; Adapts to GHS Rev.9, IMDG, IATA Standards)**Revision Date: 27 FEB 2026**

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

1.1 Product Identifiers

- Product Name: Calcium Lactate (Food Grade)
- Product Number: CL-20260227
- Brand: SIGALD
- CAS-No.: 814-80-2
- EINECS/EC-No.: 212-406-7
- MDL Number: MFCD00010967
- Synonyms: Calcium DL-lactate; Lactate calcium salt; Food Grade Calcium Fortifier

1.2 Details of the supplier of the safety data sheet

- Company: NEWAY SINOPHC TECH. LIMITED
- Address: 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 and Uses Advised Against

- Identified Uses: Food additive (calcium fortifier, texture modifier, stabilizer, sequestrant) for dairy, beverage, bakery, candy, infant food, nutritional supplements and processed food industries; also used as a mineral supplement in health food.
- Uses Advised Against: Not for pharmaceutical injection use; avoid excessive inhalation of dust for asthmatic individuals; no use in high-temperature strong acid systems (>200℃, pH <2.0).

SECTION 2: Hazards Identification

2.1 GHS ClassificationNot a hazardous substance or mixture (GHS 0 category); mild respiratory/eye irritation may occur from bulk dust inhalation (no formal GHS classification).

2.2 GHS Label Elements

- Hazard Pictogram: None
- Signal Word: None
- Hazard Statements: None
- Precautionary Statements: P261 (Avoid breathing dust), P304+P340 (If inhaled: Move person to fresh air and keep comfortable for breathing), P337+P313 (If eye irritation persists: Get medical advice/attention)

2.3 Physical and Chemical HazardsNo physical or chemical hazards; non-combustible, no explosion risk, no oxidative properties, slightly hygroscopic; stable under normal food

processing and storage conditions. Reacts with strong acids to form lactic acid and calcium salts (no hazardous reaction).

2.4 Health HazardsNo acute/chronic systemic toxicity; mild temporary respiratory/eye irritation may occur in sensitive individuals from bulk dust contact; no skin irritation/sensitization; no known allergenicity (food-grade calcium supplement, natural metabolite component). Overconsumption may cause mild gastrointestinal discomfort (constipation) in humans, no toxic effect.

2.5 Environmental HazardsEnvironmentally friendly; fully biodegradable (lactate moiety microbial degradation); calcium ion is a natural mineral element, no adverse effects on aquatic/terrestrial organisms; no bioaccumulation potential; no soil/water pollution risk; acts as a calcium nutrient for plants.

2.6 Other HazardsNo additional hazards identified for food grade application.

SECTION 3: Composition/Information on Ingredients

- Substance / Mixture: Pure substance (≥98.0% Calcium Lactate, food grade, hydrated)
- Chemical Name: Calcium DL-2-hydroxypropanoate hydrate
- Formula: $C_6H_{10}CaO_6 \cdot xH_2O$
- Molecular Weight: 218.22 Da (Anhydrous); 236.24 Da (monohydrate)
- CAS-No.: 814-80-2
- EINECS/EC-No.: 212-406-7

Hazardous Ingredients: None (100% food-grade Calcium Lactate, complies with GB 2760, FDA GRAS and EU 1333/2008 standards)

Component	Classification	Concentration (w/w)	CAS No.
Calcium Lactate (Hydrated)	Non-hazardous (food grade)	≥98.0%	814-80-2

SECTION 4: First Aid Measures

4.1 Description of First-Aid Measures

- If Inhaled: Move victim to fresh air. Rest and maintain comfortable breathing. Rinse mouth with water. No special treatment required if no discomfort; consult a doctor if coughing/respiratory irritation persists for more than 2 hours.
- In Case of Skin Contact: Brush off residual powder and rinse skin with running water for 3-5 minutes. No further treatment needed (no skin irritation or absorption).
- In Case of Eye Contact: Rinse eyes thoroughly with plenty of running water for 5-10 minutes (hold eyelids open). Remove contact lenses if present. Consult a doctor only if mild irritation persists for more than 1 hour.
- If Swallowed: Rinse mouth with water. Drink plenty of water or fruit juice (do not induce vomiting). The product is food-grade and non-toxic; mild gastrointestinal discomfort (constipation) may occur with large ingestion; consult a doctor only if discomfort persists.

4.2 Most Important Symptoms and Effects

- Acute Effects: Mild transient respiratory/eye irritation from bulk dust (sensitive individuals only); mild gastrointestinal discomfort with excessive oral ingestion; no other acute toxic effects.
- Delayed Effects: No known delayed toxic effects based on comprehensive toxicological testing and industrial application data.

4.3 Indication of Immediate Medical AttentionNo specific medical treatment required; treat symptomatically if mild irritation persists (no antidote needed). Inform the physician of the product name (Calcium Lactate) if medical consultation is required.

SECTION 5: Firefighting Measures

5.1 Extinguishing Media

- Suitable Extinguishing Media: Water spray, foam, carbon dioxide (CO_2), dry chemical powder (all common fire-extinguishing agents).
- Unsuitable Extinguishing Media: None (no limitations for this product).

5.2 Special Hazards Arising from the Substance or MixtureNon-combustible; decomposes at high temperature (>300℃) to produce non-toxic calcium oxide, carbon dioxide and water; no hazardous combustion gases/smoke; no explosion risk under any fire conditions.

5.3 Advice for FirefightersWear standard fire-fighting gear (disposable dust mask recommended for heavy smoke from high-temperature decomposition); cool surrounding containers with water spray to prevent thermal expansion. No special fire-fighting precautions needed.

SECTION 6: Accidental Release Measures

6.1 Personal PrecautionsWear N95 dust mask and disposable food-grade nitrile gloves for large spills to avoid dust inhalation/skin contact; ensure good ventilation in the spill area; evacuate non-essential personnel only if a large dust cloud forms.

6.2 Environmental PrecautionsNo special environmental precautions; the product is fully biodegradable and non-polluting; calcium ion is a natural mineral, no risk to soil/water/aquatic life even for large accidental spills (serves as a microbial/plant nutrient).

6.3 Methods and Materials for Containment and Cleaning Up

- Small Spill: Sweep into a sealed HDPE container for reuse; wipe the area with a dry cloth (dispose as general waste).
- Large Spill: Collect with a dust-free vacuum cleaner into sealed food-grade drums for reuse; avoid contact with excessive water (prevents temporary clumping, no loss of activity).

6.4 Reference to Other SectionsFor disposal of uncontaminated waste, see Section 13.

SECTION 7: Handling and Storage

7.1 Precautions for Safe Handling

- Operate in a well-ventilated area with local exhaust ventilation (for bulk handling) to prevent dust accumulation and inhalation.
- Avoid generating dust during weighing/mixing; use dry food-grade equipment/tools (slightly hygroscopic); add slowly to water for dissolution (no splashing).

- Avoid contact with strong acids (pH <2.0) and high-temperature oxidizing agents (>200℃) for prolonged periods (prevents decomposition).
- Hygiene Measures: Wash hands with soap and water after handling; comply with food GMP hygiene standards; no eating/drinking/smoking in the processing area.

7.2 Conditions for Safe Storage

- Storage Conditions: Store in a cool, dry, well-ventilated food-grade warehouse; temperature ≤25℃, relative humidity ≤60%; keep container tightly sealed; avoid direct sunlight and moisture.
- Incompatibilities: Concentrated strong acids (HCl, H_2SO_4), strong oxidizing agents (H_2O_2, $KMnO_4$), high-temperature heat sources (>300℃).
- Storage Class (TRGS 510): 13 (Non-Hazardous Solids)
- **Shelf Life**: 36 months (unopened, under specified storage conditions); 6 months after opening (if resealed with food-grade moisture-proof tape and stored properly).

SECTION 8: Exposure Controls/Personal Protection

8.1 Control ParametersNo official occupational exposure limits for food-grade Calcium Lactate (CAS 814-80-2); follow general industrial dust limit (10 mg/m³ TWA, respirable fraction) for bulk handling (national occupational health standards).

8.2 Exposure Controls

- Engineering Controls: Local exhaust ventilation (air exchange rate ≥6 times/hour) for bulk handling/loading/unloading; closed mixing systems for food production (minimizes dust release and ensures hygiene).
- Personal Protective Equipment (PPE):
  - Respiratory Protection: N95 dust mask (**only** for bulk handling/loading/unloading; not required for routine small-scale use).
  - Eye/Face Protection: Food-grade safety glasses (recommended for large-scale handling to prevent dust from entering eyes).
  - Skin Protection: Disposable food-grade nitrile gloves (optional; no skin irritation/absorption risk).
  - Other: Dust-proof food-grade overalls and non-slip shoes (for food production environment).
- Environmental Exposure Controls: No special controls (biodegradable, non-polluting, natural mineral component).

SECTION 9: Physical and Chemical Properties

Property	Details (25℃, 1 atm)
Physical State	White crystalline powder; free-flowing
Color	Pure white
Odor	Odorless or slight mild lactic acid odor
Melting Point	140℃ (loses water); decomposes >300℃
Boiling Point	N/A (solid, decomposes before boiling)
Flammability	Non-combustible (solid powder)
Flash Point	Not applicable
Autoignition Temperature	>350℃

Property	Details (25℃, 1 atm)
Decomposition Temperature	>300℃ (forms CaO, CO_2, H_2O)
pH Value (5% aqueous)	6.0-8.0
Water Solubility	Soluble in water (40 g/L at 25℃); insoluble in ethanol/ether
Bulk Density	0.80-1.00 g/cm³
True Density	1.54 g/cm³
Hygroscopy	Slightly hygroscopic (seal required for humid environment)
Vapor Pressure	<0.0001 kPa
Viscosity	N/A (solid; 5% aqueous solution: 3-5 mPa·s)
Refractive Index	N/A (solid)
Explosive Properties	Not explosive (no dust explosion risk under normal handling)
Oxidizing Properties	None
Sequestering Capacity	Moderate (chelates minor metal ions in food systems)

SECTION 10: Stability and Reactivity

10.1 Chemical Stability: **Highly stable** under recommended storage/use conditions (≤25℃, dry, sealed); no chemical degradation or activity loss for 36 months (unopened). Slightly hygroscopic, absorbs moisture to form clumps (no loss of activity, can be dried and reused).10.2 Possibility of Hazardous Reactions: No hazardous reactions under normal food processing/use conditions; no polymerization, no decomposition, no toxic byproduct formation. Reacts with strong acids to form non-toxic lactic acid and calcium salts (no gas/heat release).10.3 Conditions to Avoid: High temperature (>300℃), high humidity (>60%), direct contact with strong acids/strong oxidizing agents, prolonged exposure to open air (moisture absorption).10.4 Incompatible Materials: Concentrated strong acids (HCl, H_2SO_4), strong oxidizing agents (H_2O_2, $KMnO_4$), heavy metal ions (Ag^+ , Hg^{2+}) in high concentration.10.5 Hazardous Decomposition Products: No hazardous decomposition products; decomposes at >300℃ to produce non-toxic CaO, CO_2 and H_2O (no toxic fumes/residues).10.6 Hazardous Polymerization: Will not occur under any conditions.

SECTION 11: Toxicological Information

11.1 Information on Toxicological Effects

- **Acute Toxicity**: Oral (Rat, LD_{50}) >10,000 mg/kg; Dermal (Rabbit, LD_{50}) >50,000 mg/kg; Inhalation (Rat, LC_{50}) >100 mg/m³ (4h) – **Absolutely non-toxic (food grade calcium supplement)**.
- **Skin Corrosion/Irritation**: No skin irritation (Rabbit, 24h exposure; GHS 0 category).
- **Serious Eye Damage/Irritation**: Mild transient irritation from bulk dust (Rabbit, 24h exposure; fully reversible within 30min; no eye damage).
- **Respiratory/Skin Sensitization**: No sensitizing effects (no known allergic reactions in humans/animals; calcium is an essential human mineral, lactate is a natural metabolite).
- **Germ Cell Mutagenicity**: No mutagenic effects (Ames test, chromosome aberration test negative).

- **Carcinogenicity**: Not classified as carcinogenic (IARC Group 3; no carcinogenic risk in humans/animals; essential dietary mineral).
- **Reproductive Toxicity**: No reproductive/developmental toxicity (rat feeding test at 5000 mg/kg/day negative; calcium supports fetal bone development).
- **Specific Target Organ Toxicity**: No single/repeated exposure target organ toxicity (even at ultra-high dosage; excess calcium is excreted by the human body, no organ accumulation).
- **Aspiration Hazard**: Low (crystalline powder, high bulk density; no aspiration risk under normal handling conditions).

11.2 Additional InformationCalcium Lactate (CAS 814-80-2) is an organic calcium salt with high bioavailability; calcium is an essential mineral for human bone/teeth formation, lactate is a natural product of glucose metabolism. No cumulative toxicity, genotoxicity or organ toxicity; safe for long-term food application and high-dose nutritional supplementation (suitable for all population groups including infants, the elderly and pregnant women).

SECTION 12: Ecological Information

12.1 Toxicity: Zebrafish (LC_{50}, 96h) >20,000 mg/L; Daphnia (EC_{50}, 48h) >20,000 mg/L; Algae (EC_{50}, 72h) >10,000 mg/L – **Non-toxic to all aquatic organisms** (calcium is an essential aquatic mineral).12.2 Persistence and Degradability: Fully biodegradable (BOD_5/COD >0.95) in soil/aquatic environments; lactate moiety is degraded by microorganisms into CO_2 and H_2O within 2-5 days, calcium ion remains as a natural mineral nutrient, no residual.12.3 Bioaccumulative Potential: No bioaccumulation potential (water-soluble calcium salt; calcium is an essential mineral for organisms, no tissue accumulation; lactate is rapidly metabolized).12.4 Mobility in Soil: Low to moderate mobility; binds weakly to soil organic matter; no leaching risk; calcium ion acts as a soil conditioner and plant nutrient (promotes plant cell wall formation), improves soil fertility.12.5 PBT/vPvB Assessment: Not classified as PBT/vPvB (biodegradable, non-toxic, no bioaccumulation, no persistence).12.6 Other Adverse Effects: No known adverse ecological impacts; the product is an environmentally friendly food additive that improves soil microbial activity and plant growth, no soil/water pollution risk.

SECTION 13: Disposal Considerations

13.1 Waste Treatment Methods

- **Product Waste**: Uncontaminated waste can be fully reused (even if clumped by moisture, dry at ≤60℃ and reuse; no loss of activity); expired waste is non-hazardous and can be disposed of as general solid waste, or mixed with organic fertilizer (calcium serves as a high-quality plant nutrient). Contaminated waste shall be disposed of through licensed waste treatment facilities in accordance with local regulations.
- **Packaging Waste**: Rinse packaging thoroughly with water (meet food hygiene standards); recycle as non-hazardous plastic waste or dispose of as general waste (no special treatment required).

13.2 Disposal Compliance: Comply with China General Solid Waste Pollution Control Law, Food Safety Law and local environmental protection regulations; no hazardous waste treatment procedures needed (non-hazardous solid).

SECTION 14: Transport Information

14.1 UN Number: ADR/RID: -; IMDG: -; IATA-DGR: -14.2 UN Proper Shipping Name: ADR/RID: Not dangerous goods; IMDG: Not dangerous goods; IATA-DGR: Not dangerous goods14.3 Transport Hazard Class(es): None14.4 Packaging Group: None14.5 Environmental Hazards: ADR/RID: No; IMDG Marine Pollutant: No; IATA-DGR: No14.6 Special Precautions for User

- Transport in covered, dry food-grade ordinary cargo vehicles; avoid rain, snow, moisture and direct sunlight during transport.
- Secure packaging with pallets; avoid collision/damage (prevents dust leakage and moisture absorption).
- Transport temperature ≤30℃; avoid mixing with strong acids, strong oxidizing agents, heavy metal compounds and non-food grade chemicals in the same vehicle.14.7 Further Information: Not classified as dangerous goods under all international transport regulations (ADR/RID, IMDG, IATA); no special transport documentation required.

SECTION 15: Regulatory Information

15.1 National/International Regulations

- **China**: Compliant with GB 2760 (National Food Safety Standard for Food Additives), GB 1886.21 -2016 (Food Additive Calcium Lactate); classified as non-hazardous chemical (Hazardous Chemical Safety Management Regulation); approved for use in infant food, dairy and nutritional supplements.
- **EU**: Compliant with EC 1333/2008 (Food Additive Regulation); listed in EU Food Additive Catalogue (E327); not listed in SVHC Candidate List (REACH); approved for all food categories including infant formula.
- **US**: TSCA listed (CAS 814-80-2); meets FDA GRAS standards (21 CFR Part 184.1207); approved for food use as calcium fortifier/stabilizer; compliant with FDA infant food nutrient requirements.
- **International**: Complies with Codex Alimentarius Commission (CAC) standards for food-grade calcium salts; FCC/USP certified; accepted globally for food additive application in all food industries, especially nutritional food.

15.2 Other Regulations: Comply with local food safety and environmental protection regulations; food production application must meet GMP and HACCP standards; infant food application complies with national infant formula nutrient standards.

SECTION 16: Other Information

- **Further Information**: This MSDS is based on current scientific knowledge, industrial application data and official standard specifications for Calcium Lactate (CAS 814-80-2). It complies with GB/T 16483, GB/T 17519 and GHS Rev.9 standards, and is intended for safe handling, storage, transport and disposal of food-grade Calcium Lactate. The supplier is not liable for damage

caused by improper use, non-compliance with safety precautions or storage/transport outside specified conditions.

- **Revision Date**: 27 FEB 2026
- **Version**: V1.0