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Technical Data Sheet (TDS)

- Calcium Lactate (Food Grade)
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1. Product Overview

- **Product Name**: Calcium Lactate (Food Grade)
- **CAS Number**: 814-80-2
- **EINECS/EC Number**: 212-406-7
- **Chemical Formula**: $C_6H_{10}CaO_6 \cdot xH_2O$ (Hydrated)
- **Molecular Weight**: 218.22 Da (Anhydrous basis); 236.24 Da (Monohydrate)
- **Chemical Name**: Calcium DL-2-hydroxypropanoate hydrate
- **Product Characteristics**: High-purity food-grade Calcium Lactate prepared by neutralization of lactic acid (fermentation-derived) and calcium carbonate, followed by refined purification (non-GMO, no chemical synthesis). White free-flowing crystalline powder, odorless, good water solubility, high calcium bioavailability (easily absorbed by the human body), and highly stable under normal food processing and storage conditions. As a multi-functional food additive, it acts as **calcium fortifier, texture modifier, stabilizer and sequestrant**; it supplements dietary calcium, improves food texture/mouthfeel, stabilizes food emulsification system, and chelates minor metal ions to prevent food oxidation. Non-toxic, environmentally friendly, fully biodegradable, compliant with GB 2760/FDA/EC/CAC/FCC/USP standards, suitable for various food production and processing (especially infant food, dairy and nutritional supplements).

2. Technical Specifications (Compliant with GB 2760 & FCC/USP)

Item	Standard Requirement
Appearance	White crystalline powder; free-flowing, no caking
Odor	Odorless or slight mild lactic acid odor
Assay (Calcium Lactate, anhydrous basis)	≥ 98.0%
Calcium (Ca) Content	11.0-13.0%
Loss on Drying	≤ 5.0%
pH Value (5% aqueous, 25℃)	6.0-8.0
Heavy Metals (as Pb)	≤ 1 ppm
Arsenic (As)	≤ 0.5 ppm
Cadmium (Cd)	≤ 0.05 ppm
Mercury (Hg)	≤ 0.01 ppm
Chloride (Cl^-)	≤ 0.01%
Sulfate (SO_4^{2-})	≤ 0.01%
Total Bacterial Count	≤ 100 CFU/g
E. coli	Negative
Salmonella	Negative in 25g
Water Solubility (25℃)	≥ 40 g/L (clear aqueous solution)
Bulk Density	0.80-1.00 g/cm³
Temperature Stability	Stable at 0-121℃ (short-time high temp sterilization; ≥98% activity retention)
pH Stability	Stable at pH 5.0-9.0 (≥98% activity retention)
Calcium Bioavailability	High (easily absorbed by human gastrointestinal tract)
Storage Stability	36 months unopened (≤25℃, ≤60% RH)

3. Product Advantages

1. **High Calcium Bioavailability**: Organic calcium salt, dissolves well in weak acid environment of human stomach, easily absorbed by intestinal tract (higher bioavailability than inorganic calcium

such as calcium carbonate); suitable for all population groups including infants, the elderly and people with weak stomach.

4. Application Fields & Recommended Dosage

(Adjust dosage according to food type, calcium fortification requirement, national nutrient standards and product formulation; all dosages are **w/w** based on food raw materials, calcium content reference: 12.1% of this product)

Application Field	Typical Products	Recommended Dosage	Core Effect
Dairy Products	Milk, yogurt, cheese, milk powder, flavored dairy	0.5-3.0%	Calcium fortification, stabilize emulsification, improve mouthfeel
Beverage	Fruit juice, sports drink, soy milk, nutritional drink	0.3-2.0%	Calcium fortification, no precipitation, improve nutritional value
Bakery & Pastry	Bread, cake, biscuit, steamed bun, cereal	0.2-1.5%	Calcium fortification, improve dough texture, enhance shelf life
Infant Food	Infant formula, rice flour, complementary food	0.1-0.8%	Calcium fortification (complies with infant nutrient standards), mild taste
Candy & Confectionery	Hard candy, soft candy, jelly, milk tablet	1.0-4.0%	Calcium fortification, improve texture and chewiness
Processed Meat	Sausage, ham, meatball, canned meat	0.3-1.0%	Stabilize meat structure, improve juiciness, minor calcium fortification
Frozen Food	Ice cream, frozen yogurt, frozen dumplings	0.2-1.0%	Improve freeze-thaw stability, prevent ice crystal growth, calcium fortification
Health Food	Calcium tablets, nutritional supplements, meal replacement	5.0-30.0%	High-dose calcium fortification, balanced mineral nutrition

5. Usage Methods & Formulation Guidelines

1. **Premixing Recommended**: For **solid food systems** (milk powder, bakery flour, seasoning powder, meal replacement powder), premix Calcium Lactate with other dry ingredients (sugar, starch, milk powder) at a ratio of 1:10-1:20 to ensure uniform dispersion; avoid direct mixing with high-concentration strong acid ingredients.

6. Packaging, Storage & Transportation

- Small Packaging: 1 kg/5 kg food-grade aluminum foil bags (inner PE liner, vacuum sealed; for small food factories/laboratory use)
- Standard Packaging: 25 kg food-grade HDPE plastic drums (sealed, with inner PE bag; for industrial batch production)
- Bulk Packaging: 500 kg/1000 kg food-grade jumbo bags (sealed, dust-proof, moisture-proof; for large food factories/bulk purchase)

7. Quality Assurance & Technical Support

1. **Production Standards**: Manufactured in a GMP/HACCP-compliant food-grade production workshop; comply with ISO 9001 (Quality Management System) and ISO 22000 (Food Safety Management System); raw materials (lactic acid) are microbial fermentation-derived (non-GMO), no chemical synthesis, meet infant food raw material requirements.
2. **Batch Testing**: Every batch of Calcium Lactate is subject to **strict multi-index testing** (physical, chemical, microbiological, purity, calcium content); a detailed Certificate of Analysis (COA) is provided with each shipment to ensure compliance with GB 2760/FCC/USP/EC standards and infant food safety requirements.