Calcium Carbonate Product Specification Sheet

1. Basic Product Information

Product Name: Calcium Carbonate

Product Grade: Food Nutrient Fortifier (Food Grade, including Light Calcium Carbonate and Heavy Calcium Carbonate)

Executive Standard: GB 1886.214-2016 National Food Safety Standard - Food Additive Calcium Carbonate (Including Light and Heavy Calcium Carbonate)

CAS Number: 471-34-1

Chemical Name: Calcium Carbonate

Molecular Formula: $CaCO_3$

Relative Molecular Mass: 100.09 (Based on 2013 International Relative Atomic Mass)

Appearance and Properties: White or off-white fine crystalline powder, odorless and tasteless; stable in air with no moisture absorption or caking

Solubility: Practically insoluble in water and ethanol; slightly soluble in aqueous solutions containing ammonium salts or carbon dioxide; freely soluble in dilute acids (hydrochloric acid, acetic acid, nitric acid) with bubble generation

Product Characteristics:

- Extremely high calcium content with a theoretical calcium proportion of approximately **40%**, ranking the highest among common calcium sources and featuring optimal fortification efficiency
- Stable physicochemical properties with high and low temperature resistance as well as acid and alkali resistance; no antagonistic reaction with proteins, vitamins and lipids in food
- Strong processing adaptability with uniform particle size and good fluidity; easy to disperse in various food matrices without affecting product color and flavor
- Remarkable cost advantage with extensive raw material sources (limestone, calcite, oyster shell); higher cost performance than organic calcium such as calcium citrate and calcium lactate
- High safety level; dissolves rapidly in gastric acid environment with absorption efficiency close to milk calcium, suitable for daily calcium supplementation of general population

2. Technical Specification Indexes (Physicochemical Indexes)

Item	Standard Index
Calcium Carbonate Content (as $CaCO_3$, dry basis)	98.0% ~ 100.5%
Calcium Content (as Ca, dry basis)	39.5% ~ 40.1%
Loss on Drying	≤2.0%
Insoluble Matter in Hydrochloric Acid	≤0.20%
Free Alkali	Pass the test (no alkaline reaction)
Magnesium and Alkali Metals (as Sulfates)	≤1.0%
Fluoride (as F)	≤30 mg/kg
Lead (Pb)	≤3.0 mg/kg
Arsenic (As)	≤3.0 mg/kg
Cadmium (Cd)	≤0.1 mg/kg
Total Mercury (Hg)	≤0.3 mg/kg
Barium (Ba)	≤300 mg/kg

3. Microbial Limits (Food Grade)

- Total Aerobic Plate Count: ≤1000 CFU/g
- Molds and Yeasts: ≤100 CFU/g
- Coliforms: ≤30 MPN/100g
- Salmonella: 0/25g
- Staphylococcus Aureus: 0/25g

4. Production Process

● **Light Calcium Carbonate:**

Made from high-quality limestone as raw material. Limestone is calcined to generate calcium oxide, which is then digested to form calcium hydroxide emulsion. Carbon dioxide is introduced for carbonation reaction, followed by filter pressing, drying, crushing, sieving and air classification. It features fine particle size (2000–6000 mesh) and excellent dispersibility.

● **Heavy Calcium Carbonate:**

Refined from high-purity calcite, limestone or oyster shell through cleaning, coarse crushing, ultrafine grinding, classification, impurity removal and sterilization. It retains natural crystal structure with high purity and low impurity content.

The whole production process complies with food hygiene specifications without harmful additives or heavy metal residues. Online detection is set in key processes to ensure stable quality.

5. Packaging and Storage

● **Packaging:**

25kg per drum (cardboard drum / kraft paper bag / plastic woven bag); lined with double-layer food-grade PE bags

for sealed moisture-proof protection; waterproof label attached outside marked with product information and batch number

● **Storage Conditions**:

Store in cool, dry and ventilated place with sealed package; keep away from light, moisture and dust pollution; avoid mixed storage with strong acids, strong alkalis and oxidizing substances; warehouse temperature ≤37℃

● **Shelf Life:**

24 months (unopened original package under specified storage conditions)

6. Main Applications

●**Core Functions**:

Food Nutrient Fortifier (High-efficiency Calcium Supplement), Acidity Regulator, Leavening Agent, Anticaking Agent, Stabilizer, Filler

●**Application Scenarios**:

- **Dairy Products:** Modified milk powder, infant formula food, fermented milk, cheese, milk beverage, milk tablet
- **Grain Products:** Wheat flour, biscuit, bread, pastry, oatmeal, energy bar, meal replacement powder
- **Beverages:** Solid beverage, fruit juice, carbonated drink, sports drink, oral liquid, calcium-fortified water
- **Snack Foods:** Candy, jelly, chocolate, chewing gum, puffed food
- **Condiments:** Edible salt, soy sauce, chicken essence, compound seasoning (anticaking and anti-caking)
- **Health Food:** Calcium tablet, calcium capsule, multi-vitamin and mineral preparation, calcium supplement products for middle-aged, elderly and children
- Pharmaceutical Field: Oral calcium supplement preparation, antacid, pharmaceutical excipient (filler, disintegrant)

7. Compliance Statement

This product fully complies with the national standard **GB 1886.214-2016**, and also meets the standards for use of food nutrient fortifiers **GB 14880**, standards for use of food additives **GB 2760**, as well as international specifications such as CAC, FCC, JECFA and EFSA (E 170) issued by the National Health Commission of the People's Republic of China. All physicochemical, heavy metal and microbial indexes of the product meet the market access requirements of China and global markets. The production process strictly implements the general hygienic specification for food production **GB 14881**, with full traceability and high safety and reliability.

Calcium Carbonate Nutritional Facts Table

Product Name: Calcium Carbonate (Food Nutrient Fortifier)

Usage Recommendation: Added in accordance with **GB 14880**, **GB 2760** and relevant standards for nutrient fortifiers; the addition amount for cereal products is 4–8g/kg, and for liquid beverages and milk beverages is 1–3g/kg (calculated as elemental calcium: 1.6–3.2g/kg and 0.4–1.2g/kg respectively)

Daily Recommended Calcium Intake: 800mg ~ 1000mg for adults

Nutritional Component	Content per 100g	Nutrient Reference Value Percentage (NRV%)
Energy	≤90 kJ	1%
Protein	≤0.1 g	0%
Fat	≤0.1 g	0%
Carbohydrates	≤1.0 g	0%
Calcium (Ca)	39.5g ~ 40.1g	4938% ~ 5013%

Remarks

1. This nutritional facts table is calculated based on the index of **GB 1886.214-2016**, and the actual data shall be subject to the third-party authoritative inspection report.
2. This product is a high-purity calcium fortifier, not for direct consumption; only used for formula addition in food, health food and pharmaceutical industry.
3. NRV% refers to China's **Administrative Specifications for Food Nutrition Labeling** (NRV benchmark: Calcium 800mg).
4. When used as leavening agent and anticaking agent, it shall be added appropriately according to production requirements in accordance with **GB 2760**.