Zinc Citrate Specification Sheet

Product Name: **Zinc Citrate (Food Nutrient Fortifier)**

English Name: Zinc Citrate

CAS No.: 546-46-3

Executive Standard: GB 1903.49-2020 *National Food Safety Standard Food Nutrient Fortifier Zinc Citrate*

Chemical Name: Zinc Citrate

Molecular Formula: $C_{12}H_{10}O_{14}Zn_3 \cdot nH_2O$ （n=0, 2 or 3）

Relative Molecular Mass:

- Anhydrous: 574.34
- Dihydrate: 610.37
- Trihydrate: 628.38

1. Sensory Requirements

- Color: White
- Odor: Odorless
- Character: Crystals or crystalline powder, no visible impurities to the naked eye

2. Physical and Chemical Indexes

Item	Anhydrous / Dihydrate	Trihydrate
Zinc Citrate Content (w/%)	-	99.0~103.0
Zinc (Zn) Content (on dry basis, w/%) ≥	31.3	31.3
Solubility (25℃, g/100mL) ≥	-	3.60
Insoluble Matter in Hydrochloric Acid (w/%) ≤	0.1	0.1
Loss on Drying (w/%) ≤	1.0	1.0
Chloride (as Cl, w/%) ≤	0.05	0.05
Sulfate (as SO_4, w/%) ≤	0.05	0.05
Solution Clarity	Compliant	Compliant
Iron (Fe, mg/kg) ≤	50	50
Lead (Pb, mg/kg) ≤	5.0	5.0
Total Arsenic (As, mg/kg) ≤	2.0	2.0
Cadmium (Cd, mg/kg) ≤	5.0	5.0

3. Microbial Limits

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

4. Properties and Characteristics

- Appearance: White crystalline powder, odorless and tasteless
- Solubility: Slightly soluble in water (trihydrate soluble); soluble in dilute acids and alkali solutions
- Stability: Stable at room temperature; loses crystal water at 100℃ and decomposes at high temperature
- Zinc Element Content: 31.3%~34.0% (on dry basis)

5. Usage and Application Scope

Used as a **food nutrient fortifier** for zinc supplementation.

Applicable Food Categories (In accordance with GB 14880-2012):

- Modified milk, modified milk powder, infant formula food
- Dairy products, soybean powder / soymilk powder, cereal products
- Solid beverages, edible salt, health food, chewable tablets, etc.

6. Recommended Dosage (Calculated as Zn)

- Modified milk: 16~32 mg/kg
- Modified milk powder: 96~192 mg/kg
- Children's milk powder: 160~560 mg/kg
- Pregnant and lactating women's milk powder: 96~448 mg/kg
- Soybean powder / soymilk powder: 93~177 mg/kg
- Rice products: 32~128 mg/kg

7. Packaging, Storage and Transportation

- Packaging: Lined with polyethylene bag, outer composite bag / fiber drum, 25kg per bag/drum
- Storage: Store in cool, dry and ventilated place; keep sealed and moisture-proof, avoid heat and light
- Transportation: Handle with care to prevent damage; prohibited to transport together with toxic, harmful and peculiar-smelling substances
- Shelf Life: 24 months (under sealed and dry conditions)

Zinc Citrate Nutrition Facts Table

Product Name: **Zinc Citrate (Food Grade, Trihydrate)**

Recommended Dosage: Added according to product formula (calculated as Zn, complying with GB 14880-2012 provisions)

Nutrition Facts Table (Per 100 grams)

Nutrient Composition	Content per 100g	Unit	Nutrient Reference Value (NRV%)
Energy	≈120	kcal	6%
Carbohydrates	≈65	g	22%
Zinc (Zn)	31.3~34.0	g	3130%~3400%
Protein	0	g	0%
Fat	0	g	0%
Dietary Fiber	0	g	0%
Sodium	0	mg	0%

Impurity Limits (Per 100g)

Item	Limit per 100g	Unit
Zinc Citrate (Trihydrate)	99.0~103.0	g
Moisture (Loss on Drying)	≤1.0	g
Insoluble Matter in Hydrochloric Acid	≤0.1	g
Chloride (as Cl)	≤0.05	g
Sulfate (as SO_4)	≤0.05	g
Iron (Fe)	≤50	mg
Lead (Pb)	≤5.0	mg
Total Arsenic (As)	≤2.0	mg
Cadmium (Cd)	≤5.0	mg

Applicable Crowd

- All groups (infants, children, adults, pregnant women, lactating women)
- Zinc-deficient population, people with low immunity and growth and development period crowd
- Diabetics and gastrointestinal sensitive population (organic zinc with low irritation)

Safety Instructions

- Compliant with national standards **GB 1903.49-2020** and **GB 14880-2012**
- Safe under normal dosage with no obvious toxic and side effects
- Excessive intake may cause nausea, vomiting and zinc-copper antagonism; dosage shall be added in accordance with relevant standards