

## Technical Data Sheet (TDS)

**Issue Date:** 24 FEB 2026 **Product Name:** L-Cysteine Monohydrochloride (Food Grade) **CAS Number:** 7048-4-6

### 1. Product Overview

- **English Name:** L-Cysteine Monohydrochloride (Food Grade)
- **Chinese Name:** L - 半胱氨酸一盐酸盐
- **CAS No.:** 7048-4-6
- **Molecular Formula:** C<sub>3</sub>H<sub>8</sub> CINO<sub>2</sub>S
- **Molecular Weight:** 157.62 g/mol
- **Source:** Synthesized by food-grade microbial fermentation and chemical refinement process; complies with food safety production standards and infant food raw material requirements.
- **Product Characteristics:** White free-flowing crystalline powder, odorless, food-grade essential sulfur-containing amino acid; freely soluble in water, weak acidic aqueous solution, mild reducing property; serves as nutritional fortifier, dough improver, antioxidant and flavor enhancer for food; participates in human protein synthesis, antioxidant defense and detoxification metabolism; meets national/international food safety standards, suitable for various food production.

### 2. Technical Specifications (Complies with Food Industry Standard GB 2760-2021)

Item	Specification (Food Grade)
Appearance	White to off-white free-flowing crystalline powder
Assay (L-Cysteine Monohydrochloride, HPLC)	≥ 98.5%
Specific Rotation [α] <sub>20</sub> <sup>D</sup>	+5.0° ~ +8.0°
pH Value (25°C, 5% aqueous solution)	1.5-2.5
Loss on Drying (105°C, 2h)	≤ 0.5%
Ash Content	≤ 0.1%
Density (25°C)	1.54 g/cm <sup>3</sup>
Bulk Density	0.6-0.9 g/cm <sup>3</sup>
Heavy Metals (Pb)	≤ 1 ppm
Arsenic (As)	≤ 0.5 ppm
Cadmium (Cd)	≤ 0.1 ppm
Mercury (Hg)	≤ 0.01 ppm
Total Bacterial Count	≤ 100 CFU/g
Yeast & Mold	≤ 10 CFU/g
E. coli/Salmonella	Negative
Water Solubility	Freely soluble in water (≈270 g/L at 25°C)
Temperature Stability	Stable at 0-80°C (acidic system, assay retention ≥ 95%)
pH Stability	Stable at pH 1.0-6.0 (assay retention ≥ 98%)
Hygroscopy	Slightly hygroscopic
Reducing Property	Mild (contains sulfhydryl group)

### 3. Product Advantages

1. **Food Grade High Purity:** Assay ≥98.5%, specific rotation meets standard, all impurities/heavy metals meet national/international food safety and infant food raw material limits; no harmful residues, compliant with GB 2760-2021 food additive standards.
2. **Essential Amino Acid:** Human body cannot synthesize independently, core sulfur-containing amino acid for protein synthesis, antioxidant defense (synthesis of glutathione) and liver detoxification; essential for fetal/infant growth and development, critical for elderly nutritional supplementation.



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3. **Multi-Functional Application:** Integrates **nutritional fortification, dough improvement, antioxidation and flavor enhancement**; one product for multiple food processing needs, widely used in bakery, meat, dairy and beverage industries.
4. **Good Processability:** Freely soluble in water, uniform dispersion in liquid/solid food; compatible with most food raw materials in acidic system, easy to add and operate in food production; mild reducing property can inhibit food oxidation and extend shelf life.
5. **Green & Safe:** Microbial fermentation + chemical refinement process, food-grade, non-toxic; GRAS certified by FDA, approved by FAO/WHO/Codex Alimentarius; no toxic side effects at standard use dosages, compliant with green food, organic food and infant food additive requirements; fully biodegradable, environmentally friendly.
6. **Stable Performance:** No caking, slightly hygroscopic; stable in acidic food system and low temperature; long shelf life (24 months) under specified conditions; consistent product quality between batches.

## 4. Application Fields

L-Cysteine Monohydrochloride is a multi-functional food-grade essential amino acid additive, suitable for various bakery, dairy, meat products, beverage, infant food and nutritional food:

- **Bakery Industry:** Bread, cake, biscuit, pastry, steamed bun; acts as dough improver, softener and antioxidant, improves dough extensibility and product taste, extends shelf life.
- **Meat & Aquatic Products:** Sausage, ham, bacon, frozen meat, fish products; acts as antioxidant and color fixative, inhibits fat oxidation, maintains meat color and flavor, extends product shelf life.
- **Dairy Products:** Milk, yogurt, cheese, milk beverage, infant formula milk powder; acts as nutritional fortifier and antioxidant, supplements essential amino acid, prevents dairy oxidation.
- **Beverage Industry:** Functional beverage, amino acid beverage, sports drink, fruit juice; acts as nutritional fortifier and flavor enhancer, supplements amino acid, improves beverage taste.
- **Infant & Nutritional Food:** Infant formula milk powder, follow-up formula, children's nutritional food, elderly nutritional food, protein powder; acts as essential amino acid fortifier, meets human nutritional needs.
- **Other Fields:** Condiments, candy, health food, food additive composite, pharmaceutical intermediate for amino acid preparations.

## 5. Usage Methods

Food Type	Recommended Addition Dosage
Bakery (Bread/Cake/Biscuit)	0.05-0.20%
Meat/Aquatic Products (Sausage/Ham)	0.02-0.10%
Dairy Products/Infant Formula Milk Powder	0.01-0.05%
Functional Beverage/Amino Acid Beverage	0.05-0.15%
Nutritional Food/Protein Powder/Elderly Food	0.10-0.30%
Health Food (Amino Acid Supplements)	1.0-5.0% per serving

## 6. Packaging & Storage

- **Small Batch:** 1 kg / 5 kg / 10 kg: Food-grade aluminum foil bags (sealed, moisture-proof, oxygen-free) – for small-scale food production, health food, infant food and laboratory use.
- **Standard Batch:** 25 kg: Food-grade HDPE plastic drums with inner aluminum foil liner (sealed, dust-proof, moisture-proof) – for medium/large-scale food production and industrial use.

## 7. Safety & Protection

- The product is food-grade, non-toxic and non-hazardous; essential amino acid for human body, no toxic side effects at standard use dosages, safe for humans (including infants/elderly), animals and the environment; its weak acidic nature may cause mild irritation to sensitive eyes/skin upon direct contact.
- Wear food-grade PPE (safety goggles, nitrile rubber gloves, FFP1 dust mask, non-slip food-grade safety shoes) during bulk handling and mixing; operate in low-light environment to avoid oxidation; handling infant food raw material should wear disposable sterile protective equipment.