纳维盈医化科技
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Technical Data Sheet (TDS)

Issue Date: February 27, 2026**Product Name:** L-Cystine (Food Grade)**CAS Number:** 7048-46-6

1. Product Overview

- **English Name**: L-Cystine (Food Grade)
- **Synonyms**: (R,R)-3,3'-Dithiobis(2-aminopropanoic acid); L-Cystinum; Food grade sulfur-containing amino acid
- **CAS No.**: 7048-46-6
- **Molecular Formula**: $C_6H_{12}N_2O_4S_2$
- **Molecular Weight**: 240.30 g/mol
- **Source**: Produced by microbial fermentation and enzymatic refinement (food-grade production process); no chemical synthesis, no heavy metal residue, high optical purity.
- **Product Characteristics**: White crystalline free-flowing powder, odorless, food-grade essential sulfur-containing amino acid; sparingly soluble in water, soluble in dilute acid/alkali, stable under normal food processing conditions. As a food additive, it is used as an amino acid fortifier and nutritional supplement, participating in human protein synthesis, antioxidant defense and keratin formation; meets national/international food safety standards, suitable for various food, beverage and health food products.

2. Technical Specifications (Complies with Food Industry Standards)

Item	Specification (Food Grade)
Appearance	White to off-white free-flowing crystalline powder, no caking
Assay (L-Cystine, HPLC)	≥ 99.0%
Loss on Drying (105℃, 2h)	≤ 0.5%
Ash Content	≤ 0.1%
pH Value (1% aqueous suspension, 25℃)	5.0-6.5
Specific Rotation $[\alpha]_{20}^{D}$	-215° ~ -225°
Chloride (as Cl^-)	≤ 0.02%
Sulfate (as SO_4^{2-})	≤ 0.02%
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
Solubility	Sparingly soluble in water, soluble in dilute acid/alkali
Bulk Density	0.7-1.0 g/cm³
Temperature Stability	Stable at 0-120℃ (assay retention ≥ 98%)
pH Stability	Stable at pH 3.0-8.0 (assay retention ≥ 98%)
Optical Purity	≥ 99% (L-isomer)

3. Product Advantages

1. **Food Grade High Purity**: Assay ≥99.0%, optical purity ≥99% (L-isomer), all impurities/heavy metals meet national/international food safety limits; no chemical residue.
2. **Essential Nutrient**: Sulfur-containing essential amino acid, irreplaceable for human body; participates in protein synthesis, glutathione formation and keratin synthesis (hair/nails/skin).
3. **Excellent Stability**: Stable under normal food processing (≤120℃) and storage conditions; no degradation in acidic/neutral/basic food systems (pH 3.0-8.0); long shelf life.

4. **Green & Safe**: Microbial fermentation production, no chemical synthesis; GRAS certified by FDA, approved by FAO/WHO/Codex Alimentarius; no toxic side effects at standard use dosages.
5. **Good Compatibility**: Compatible with all food raw materials/additives (sugars, vitamins, minerals, proteins, plant extracts); no adverse reactions, no nutrient loss.
6. **Wide Application**: Suitable for solid/liquid food, beverage and health food; can be used for dry mixing/dissolution in dilute acid/alkali, easy to process.
7. **Regulatory Compliance**: Meets China GB 2760-2021, EU EC 1333/2008, US FDA 21 CFR and Codex Alimentarius standards; can be used for domestic and export food production.

4. Application Fields

L-Cystine is a food-grade essential sulfur-containing amino acid fortifier, suitable for various food, beverage, health food and nutritional supplement products, especially for protein/nutritional fortified food:

- **Solid Food**: Cereal, bakery, candy, milk powder, protein powder, nutritional rice flour, baby food (follow age-specific addition limits).
- **Liquid Food/Beverage**: Functional beverage, sports drink, amino acid beverage, yogurt, milk, fruit juice (dissolve in dilute acid/alkali first).
- **Health Food**: Nutritional supplements, amino acid tablets/capsules, beauty and skin care health food (keratin synthesis promotion).
- **Special Food**: Medical food, dietary food for special medical purposes, low-protein food fortification (follow national special food standards).
- **Other Fields**: Feed additive auxiliary material (food grade, can be used for high-end pet food); pharmaceutical raw material (food grade as basic material).

5. Usage Methods

5.1 Recommended Dosage (Follow GB 2760-2021 and international food additive standards, adjust according to product type)

Food Type	Recommended Addition Dosage
Cereal/Bakery	0.05-0.2 g/100 g
Milk Powder/Protein Powder	0.1-0.5 g/100 g
Functional Beverage/Sports Drink	0.02-0.1 g/100 mL
Yogurt/Milk	0.01-0.05 g/100 mL
Health Food (Tablets/Capsules)	0.5-2 g per serving
Baby Food (Over 6 months)	0.01-0.03 g/100 g (follow GB 10765/10767)
High-end Pet Food	0.05-0.3 g/100 g

6. Packaging & Storage

- **Small Batch**: 1 kg / 5 kg / 10 kg: Food-grade aluminum foil bags (sealed, moisture-proof, light-proof) – for small-scale food production, health food and laboratory use.
- **Standard Batch**: 25 kg: Food-grade HDPE plastic drums with inner PE liner (sealed, dust-proof, moisture-proof) – for medium/large-scale food production.
- **Bulk Batch**: 500 kg / 1000 kg: Food-grade FIBC bulk bags with PE liner (food-grade, sealed, moisture-proof valve) – for large-scale industrial production.
- **Custom Packaging**: Food-grade customized packaging (500 g/2 kg) available upon request for health food/pet food production.

7. Safety & Protection

- The product is food-grade, non-toxic and non-hazardous; it is an essential amino acid for the human body, with no toxic side effects at standard use dosages.
- Wear food-grade PPE (safety goggles, nitrile rubber gloves, FFP1 dust mask, non-slip food-grade safety shoes) during bulk handling and mixing to avoid fine powder inhalation, eye contact and slipping.
- Follow food hygiene operation standards: wash hands thoroughly with food-grade hand sanitizer/pure water after handling; do not eat/drink/smoke while operating the product; use dedicated food-grade equipment for handling.