

Technical Data Sheet (TDS)

Issue Date: February 26, 2026 **Product Name:** L-Glutamine (Food Grade) **CAS Number:** 56-85-9

1. Product Overview

- **English Name:** L-Glutamine (Food Grade)
- **Synonyms:** (S)-2-Amino-4-carbamoylbutanoic acid; L-2-Amino-glutaric acid amide; Food grade conditionally essential amino acid
- **CAS No.:** 56-85-9
- **Molecular Formula:** C₅ H₁₀ N₂O₃
- **Molecular Weight:** 146.14 g/mol
- **Source:** Produced by microbial fermentation and food-grade enzymatic refinement; no chemical synthesis, no heavy metal residue, high optical purity, compliant with food safety production standards.
- **Product Characteristics:** White crystalline free-flowing powder, odorless, food-grade conditionally essential amino acid; freely soluble in water, stable under normal food processing and storage conditions. As a core food additive, it is used as an amino acid fortifier and nutritional supplement, participating in human intestinal mucosal repair, immune function regulation and muscle protein synthesis; meets national/international food safety standards, suitable for various food, beverage, health food and sports nutrition 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-Glutamine, HPLC)	≥ 99.0%
Loss on Drying (105°C, 2h)	≤ 0.5%
Ash Content	≤ 0.1%
pH Value (1% aqueous solution, 25°C)	5.0-6.5
Specific Rotation [α] ₂₀ ^D	+31.5° ~ +33.5°
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	Freely soluble in water, slightly soluble in ethanol
Bulk Density	0.6-0.9 g/cm ³
Temperature Stability	Stable at 0-120°C (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, microbial fermentation source is green and safe.
2. **Conditionally Essential Amino Acid:** Core nutrient for human body, irreplaceable for intestinal mucosal repair and immune function regulation; also participates in muscle protein synthesis, suitable for intestinal health, sports nutrition and nutritional fortified food.

3. **Excellent Stability:** Stable under normal food processing ($\leq 120^{\circ}\text{C}$) and storage conditions; no degradation in acidic/neutral/basic food systems (pH 3.0-8.0); slightly hygroscopic with good anti-caking performance, long shelf life.
4. **Green & Safe:** GRAS certified by FDA, approved by FAO/WHO/Codex Alimentarius; no toxic side effects at standard use dosages, compliant with green food and organic food additive requirements.
5. **Good Compatibility:** Compatible with all food raw materials/additives (sugars, vitamins, minerals, proteins, plant extracts, probiotics); no adverse reactions, no nutrient loss, suitable for all food processing technologies.
6. **Easy to Process:** Freely soluble in water, can be used for dry mixing of solid food or dissolution of liquid food/beverage; uniform dispersion, no affecting product taste and texture.

4. Application Fields

L-Glutamine is a food-grade conditionally essential amino acid fortifier, suitable for various food, beverage, health food, sports nutrition products and special food, especially for intestinal health food, protein/nutritional fortified food and sports nutrition products:

- **Solid Food:** Cereal, bakery, candy, milk powder, protein powder, nutritional rice flour, baby food (follow age-specific addition limits), sports nutrition bars, intestinal health food.
- **Liquid Food/Beverage:** Functional beverage, sports drink, amino acid beverage, yogurt, milk, fruit juice, soy milk, plant-based beverage, intestinal care beverage.
- **Health Food:** Nutritional supplements, amino acid tablets/capsules, intestinal health supplements, muscle-building nutrition products, immune regulation health food.

5. Usage Methods

Food Type	Recommended Addition Dosage
Cereal/Bakery/Nutritional Rice Flour	0.05-0.3 g/100 g
Milk Powder/Protein Powder/Sports Nutrition Bar	0.2-1.0 g/100 g
Functional Beverage/Sports Drink/Intestinal Care Beverage	0.05-0.2 g/100 mL
Yogurt/Milk/Plant-based Beverage	0.02-0.08 g/100 mL
Health Food (Tablets/Capsules/Supplements)	1.0-3.0 g per serving
Baby Food (Over 6 months)/Elderly Nutritional Food	0.02-0.05 g/100 g (follow national special standards)
High-end Pet Food (Intestinal Health)	0.08-0.5 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, sports nutrition products 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 and industrial use.
- **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 and export.
- **Custom Packaging:** Food-grade customized packaging (500 g/2 kg) available upon request for health food, sports nutrition products and pet food production.

7. Safety & Protection

- The product is food-grade, non-toxic and non-hazardous; it is a conditionally essential amino acid for the human body, with no toxic side effects at standard use dosages, safe for humans, animals and the environment.
- 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 on floors.
- 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 and containers for handling to avoid cross-contamination.