

## Technical Data Sheet (TDS)

### - Food Grade L-Asparagine (70-47-3)

Issue Date: 25 FEB 2026 | Version: V1.0

#### 1. Product Overview

- **Product Name:** L-Asparagine (Food Grade)
- **CAS Number:** 70-47-3
- **Molecular Formula:** C<sub>4</sub>H<sub>8</sub> N<sub>2</sub>O<sub>3</sub> | **Molecular Weight:** 132.12 g/mol
- **Chemical Classification:** Non-essential amino acid, food grade nutrient fortifier, fermentation nutrient & flavor improver
- **Core Characteristics:** High purity (≥98.5%), white crystalline powder, slightly hygroscopic, water-soluble, extremely stable under normal food processing and storage conditions. Naturally present in grains, beans and animal products, complies with GB, EU, FDA and CAC food safety standards, non-toxic at all application levels. Participates in human protein synthesis, nitrogen metabolism and immune regulation; has the functions of nutritional fortification, flavor improvement and promoting microbial fermentation, suitable for various food processing and fermentation industries.

#### 2. Technical Specifications (Food Grade, Compliant with GB 1886.238-2016 & CAC)

Item	Standard Requirement	Test Method
Appearance	White crystalline powder, free-flowing, odorless	Visual & Olfactory Inspection
Assay (L-Asparagine)	≥98.5%	High Performance Liquid Chromatography (HPLC)
Specific Rotation [α] <sub>20</sub> <sup>D</sup>	+33.0° ~ +35.0° (H <sub>2</sub> O)	Polarimetry
Moisture Content	≤0.5%	Karl Fischer Titration
pH Value (1% aqueous, 25°C)	5.0~6.5	Digital pH Meter
Residue on Ignition	≤0.1%	Gravimetric Method (600±50°C)
Chloride (as Cl <sup>-</sup> )	≤0.02%	Volumetric Method (AgNO <sub>3</sub> )
Sulfate (as SO <sub>4</sub> <sup>2-</sup> )	≤0.02%	Turbidimetric Method
Heavy Metals (as Pb)	≤5 ppm	Atomic Absorption Spectrometry (AAS)
Arsenic (As)	≤1 ppm	Atomic Fluorescence Spectrometry (AFS)
Cadmium (Cd)	≤0.1 ppm	AAS
Mercury (Hg)	≤0.01 ppm	Cold Vapor Atomic Absorption
Total Bacterial Count	≤100 CFU/g	Plate Count Method
E. coli	Negative	Food Microbial Detection Method
Salmonella	Negative in 25g	Food Microbial Detection Method
Bulk Density	0.75-0.90 g/cm <sup>3</sup>	Volumetric Method
Water Solubility	≥2.8 g/100 mL (25°C)	Visual/Volumetric Method

#### 3. Product Advantages (Food Grade Focus)

1. **High Food Safety:** ≥98.5% high purity, no harmful impurities, naturally present in common foods; non-toxic at all application levels, suitable for all food categories including infant food and special medical food.
2. **Multi-Functional Value:** Integrates **nutritional fortification, flavor improvement and fermentation promotion**; one product for multiple uses, improves food nutritional value and processing performance simultaneously, reduces the use of other food additives.

3. **Excellent Stability:** Extremely stable under normal food processing conditions ( $\leq 120^{\circ}\text{C}$ ); no decomposition, no loss of activity, no harmful by-products generated; stable in acidic, neutral and weak alkaline food systems.

#### 4. Application & Dosage Guide (Food Formulation, Compliant with GB 2760)

##### 4.1 Target Food & Core Benefits

- **Nutritional/Health Food:** Amino acid fortifier and balance agent, supplements non-essential amino acids, improves product nutritional value; suitable for protein powder, amino acid oral liquid, meal replacement powder and health food.
- **Infant & Child Food:** Essential amino acid supplementary fortifier, meets the growth and development needs of infants and children, improves food protein utilization rate; used in milk powder, rice flour, baby cereal.
- **Sports Nutrition Food:** Amino acid supplement, participates in muscle protein synthesis and nitrogen metabolism, relieves exercise fatigue; suitable for sports drinks, protein bars, fitness supplements.

##### 4.2 Recommended Addition Levels (w/w, based on food raw materials)

Food Category	Recommended Dosage	Core Effect
Nutritional/Health Food	1.0~6.0%	Amino acid fortification/balance
Infant & Child Food	0.05~0.3%	Nutrient fortification/growth support
Sports Nutrition Food	2.0~7.0%	Amino acid supplement/anti-fatigue
Dairy Products	0.03~0.2%	Fermentation promotion/flavor improvement
Bakery & Cereal	0.02~0.15%	Fermentation promotion/nutrient fortification
Condiments & Fermented Food	0.1~0.8%	Fermentation nutrient/flavor improvement
Beverages	0.01~0.08%	Nutrient fortification/flavor improvement

#### 5. Handling & Formulation Guidelines

1. **Premixing is Recommended:** Premix with food-grade inert carrier (sucrose, maltodextrin, corn starch) at a ratio of 1:10 to 1:20 to create a premix; ensures uniform distribution in food raw materials and prevents hygroscopic caking.
2. **Dry Handling First:** The product is slightly hygroscopic; use dry food-grade equipment/tools for weighing and mixing. Avoid contact with water and air for a long time during processing to prevent caking and moisture absorption.

#### 6. Packaging, Storage & Shelf Life

- **Small Packaging:** 1 kg/5 kg food-grade moisture-proof aluminum foil bags (for small food factories, laboratory use and small-batch production)
- **Standard Packaging:** 25 kg food-grade moisture-proof HDPE drums with inner PE liners (industrial use, regular batch production)

#### 7. Quality Assurance & Control

1. **Production Standards:** Produced in a GMP-compliant food-grade production workshop; comply with ISO 9001 (Quality Management System) and ISO 22000 (Food Safety Management System) standards. Adopt closed fermentation, crystallization and low-temperature drying process to ensure high purity, food hygiene and no contamination.
2. **Batch Testing:** Every batch of product undergoes rigorous testing for purity, specific rotation, moisture, heavy metals, microbiology and physical-chemical properties; a detailed English COA is provided with each shipment, including all test data and compliance results.