

## Technical Data Sheet (TDS)

**Issue Date:** February 25, 2026 **Product Name:** L-Leucine (Food Grade) **CAS Number:** 61-90-5

### 1. Product Overview

- **English Name:** L-Leucine (Food Grade)
- **Synonyms:** (S)-2-Amino-4-methylpentanoic acid; L-2-Amino-4-methylvaleric acid; Food grade essential branched-chain amino acid
- **CAS No.:** 61-90-5
- **Molecular Formula:** C<sub>6</sub> H<sub>13</sub>NO<sub>2</sub>
- **Molecular Weight:** 131.17 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 essential branched-chain amino acid (BCAA); 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 muscle protein synthesis, energy metabolism and immune function regulation; 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-Leucine, HPLC)	≥ 99.0%
Loss on Drying (105°C, 2h)	≤ 0.5%
Ash Content	≤ 0.1%
pH Value (1% aqueous solution, 25°C)	5.5-7.0
Specific Rotation [α] <sub>20</sub> <sup>D</sup>	+14.5° ~ +16.5°
Chloride (as Cl <sup>-</sup> )	≤ 0.02%
Sulfate (as SO <sub>4</sub> <sup>2-</sup> )	≤ 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 <sup>3</sup>
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. **Essential Branched-Chain Amino Acid:** Core BCAA, irreplaceable for human body; participates in muscle protein synthesis, energy metabolism, immune function regulation and anti-fatigue, suitable for sports nutrition and nutritional fortified food.



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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-Leucine is a food-grade essential branched-chain amino acid fortifier, suitable for various food, beverage, health food, sports nutrition products and special food, especially for protein/nutritional fortified food and anti-fatigue functional food:

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

## 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/Amino Acid Beverage	0.05-0.2 g/100 mL
Yogurt/Milk/Plant-based Beverage	0.02-0.08 g/100 mL
Health Food (Tablets/Capsules/BCAA 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	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 an 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.