

## Technical Data Sheet (TDS)

### - L-Carnitine

**Revision Date:** 23 February 2026 **Product Number:** LCN-20260223 **CAS Number:** 541-15-1 **EINECS Number:** 208-768-0 **Chemical Formula:** C<sub>7</sub> H<sub>15</sub> NO<sub>3</sub> **Molecular Weight:** 161.20 g/mol

### 1. Product Overview

L-Carnitine ( $\beta$ -hydroxy- $\gamma$ -trimethylammonium butyrate) is a quaternary ammonium compound biosynthesized from the amino acids lysine and methionine. It is a white, odorless, highly water-soluble crystalline powder. As a vital physiological cofactor, it facilitates the transport of long-chain fatty acids into the mitochondrial matrix for  $\beta$ -oxidation and energy production. Produced via advanced chemical synthesis or fermentation, our L-Carnitine meets the strictest international purity standards, making it ideal for pharmaceuticals, sports nutrition, weight management products, and infant formula.

### 2. Technical Specifications

Item	Specification
<b>Physical State</b>	Crystalline powder (25°C)
<b>Color</b>	White
<b>Assay (Dry Basis)</b>	≥ 98.0%
<b>Specific Rotation</b>	-29.0° ~ -32.0° (5% in H <sub>2</sub> O)
<b>pH (10% Solution)</b>	5.5 ~ 9.5
<b>Solubility</b>	Freely soluble in water (>50 g/100 mL); soluble in ethanol; slightly soluble in acetone
<b>Melting Point</b>	197 ~ 200°C (decomposes)
<b>Loss on Drying</b>	≤ 0.5%
<b>Residue on Ignition</b>	≤ 0.1%
<b>Optical Purity</b>	≥ 99.0% (L-isomer)

### 3. Product Advantages

1. **High Bioavailability:** Pure L-isomer, identical to the carnitine found in the human body.
2. **Excellent Solubility:** Dissolves rapidly and completely in water, ideal for liquid formulations.
3. **Stable Quality:** Low moisture content and high purity ensure a long shelf life.
4. **Regulatory Compliance:** Meets USP, FCC, and Chinese National Standards for food and pharmaceutical use.
5. **Versatile Functionality:** Supports fat metabolism, energy production, and cognitive function.

### 4. Application Fields

- **Sports Nutrition:** Pre-workout supplements, energy drinks, and recovery products to enhance endurance and reduce fatigue.
- **Weight Management:** Fat burners and meal replacements to support metabolic rate.
- **Pharmaceuticals:** Treatment of primary and secondary carnitine deficiency; adjuvant therapy for cardiovascular diseases.
- **Infant Formula:** Essential additive for premature and full-term infant nutrition (per GB 14880).
- **Functional Foods:** Fortified beverages, yogurts, and bars targeting active lifestyles.

### 5. Usage Methods

#### 5.1 Recommended Dosage



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- **Sports Nutrition:** 500 mg ~ 2000 mg per serving (pre or post-workout).
- **Weight Management:** 1000 mg ~ 3000 mg daily, often taken before meals.
- **Infant Formula:** 1.2 mg ~ 3.0 mg per 100 kcal of formula.
- **Pharmaceuticals:** As prescribed by a physician (typically 1 g ~ 3 g daily).

### 5.2 Processing Guidelines

1. **Dissolution:** Add directly to the aqueous phase; stirring is recommended but not required for rapid dissolution.
2. **Compatibility:** Compatible with most vitamins, minerals, amino acids, and sweeteners. Avoid mixing with strong oxidizing agents.
3. **pH Adjustment:** May require buffering agents in acidic beverages to maintain stability and taste.

### 6. Packaging & Storage

- **Packaging:** 1 kg/aluminum foil bag; 25 kg/fiber drum with PE liner; bulk bags available.
- **Storage:** Store in a **cool, dry, well-ventilated warehouse** ( $\leq 25^{\circ}\text{C}$ ,  $< 60\% \text{RH}$ ). Keep containers tightly closed to prevent hygroscopic caking.
- **Shelf Life:** 36 months from manufacture (unopened, proper storage).
- **Transport:** Classified as **Non-Hazardous Goods**. Protect from moisture and direct sunlight during transit.

### 7. Quality Assurance

- Manufactured in ISO 9001, ISO 22000, and GMP certified facilities.
- Each batch is tested for identity, purity, potency, and microbiology.
- Full documentation package (COA, MSDS, DMF available upon request) ensures traceability and compliance.

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