

Technical Data Sheet (TDS)

Date of Issue: February 25, 2026 **Document No.:** TDS-THR-260225-01 **Product:** L-Threonine (Feed Grade) **CAS No.:** 72-19-5

1. Product Description

L-Threonine is a naturally occurring essential amino acid with the chemical name (2S,3R)-2-amino-3-hydroxybutanoic acid. It is a white, crystalline powder produced by microbial fermentation. As an essential amino acid, it cannot be synthesized de novo by animals and must be supplied via the diet. L-Threonine is the second limiting amino acid in swine diets and the third in poultry diets, making it a critical feed additive for optimizing growth performance and feed efficiency.

2. Chemical and Physical Properties

Property	Typical Value
Chemical Name	(2S,3R)-2-Amino-3-hydroxybutanoic acid
Synonyms	L-α-Amino-β-hydroxybutyric acid
CAS No.	72-19-5
EC No.	200-774-1
Molecular Formula	C ₄ H ₉ NO ₃
Molecular Weight	119.12 g/mol
Structural Formula	CH ₃ CH(OH)CH(NH ₂)COOH
Appearance	White to off-white crystalline powder
Odor	Odorless
pH (5% w/v in H ₂ O)	5.0 – 6.5
Specific Rotation [α] _D ²⁰	-26.0° to -29.0°
Melting Point	255 – 257°C (decomposes)
Solubility	Soluble in water (approx. 90 g/L at 20°C); Slightly soluble in ethanol; Insoluble in ether.
Bulk Density	0.7 – 0.9 g/cm ³

3. Quality Specifications (Feed Grade)

Test Item	Specification
Assay (on dry basis)	≥ 98.5%
Loss on Drying	≤ 0.5%
Residue on Ignition	≤ 0.3%
Heavy Metals (as Pb)	≤ 10.0 mg/kg
Arsenic (As)	≤ 2.0 mg/kg
Other Amino Acids	≤ 1.0%
Specific Rotation	-26.0° to -29.0°
Microbial Limits	Total Aerobic Count ≤ 10 ⁴ CFU/g; Yeast & Mold ≤ 10 ² CFU/g; E. coli/Salmonella: Absent

4. Applications

L-Threonine is primarily used as a nutritional supplement in animal feed to balance amino acid profiles:



NEWAY SINOPHC TECH. LIMITED

ADD:RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI) PILOT FREE TRADE ZONE.
Email:marketing01@newayphc.com; Phone:+86-021-50350029 <https://www.newayphc.com>

1. **Swine Feed:** Reduces the need for expensive protein-rich ingredients (e.g., soybean meal). Improves feed conversion ratio (FCR) and lean meat percentage.
2. **Poultry Feed:** Enhances growth rate and egg production in layers. Improves feather quality.
3. **Aquaculture:** Used in fish and shrimp feeds to promote healthy growth and reduce nitrogen excretion.
4. **Premixes:** A key component of vitamin and mineral premixes for livestock.

5. Manufacturing Process

Feed Grade L-Threonine is produced by high-yield microbial fermentation. The process involves:

1. **Fermentation:** Using a genetically modified strain (e.g., *E. coli*) in a nutrient-rich broth containing glucose, nitrogen, and minerals.
2. **Separation:** Filtration and centrifugation to remove biomass.
3. **Purification:** Ion exchange chromatography to isolate L-Threonine.
4. **Crystallization & Drying:** Evaporation, crystallization, and drying to obtain the final crystalline powder.

6. Handling and Storage

- **Handling:** Avoid inhalation of dust. Use in a well-ventilated area. Wear appropriate personal protective equipment (gloves, safety glasses) as a precaution.
- **Storage:** Store in the original sealed packaging in a cool, dry, and well-ventilated warehouse. Protect from moisture and direct sunlight.
- **Shelf Life:** 24 months from the date of manufacture when stored under the recommended conditions.

7. Packaging

- **Standard Packaging:** 25 kg net weight in multi-ply paper bags with an inner polyethylene (PE) liner, or bulk bags (500 kg / 1000 kg).
- **Custom Packaging:** 1 kg, 5 kg, and 10 kg bags are available upon request for trial or small-volume orders.

8. Transportation

- **Classification:** Non-hazardous chemical.
- **Modes of Transport:** May be transported by truck, rail, sea, or air.
- **Precautions:** Protect packages from rain, snow, and moisture during transit. Avoid mixing with strong oxidizers or hazardous materials. Comply with all local and international transportation regulations.

9. Regulatory Compliance

- **EU:** Registered under REACH. Approved for use in animal nutrition under Regulation (EC) No 1831/2003.
- **US:** Listed in the FDA Orange Book for animal feed use.
- **China:** Complies with national standard GB/T 21970-2008.
- **Codex Alimentarius:** Meets the specifications of the Codex Alimentarius Commission for feed additives.