

Technical Data Sheet (TDS)

Date of Issue: February 27, 2026 **Document No.:** TDS-TRY-260227-01 **Product:** L-Tryptophan (Feed Grade) **CAS No.:** 73-22-3

1. Product Description

L-Tryptophan is an essential α -amino acid containing an indole side chain. Chemically known as (2S)-2-amino-3-(1H-indol-3-yl)propanoic acid, it is produced by microbial fermentation. As the fourth limiting amino acid in swine and poultry diets, it plays a critical role in protein synthesis, nitrogen balance, and the production of key biomolecules such as serotonin and niacin (Vitamin B3) in animals. It is a vital component for optimizing animal health, growth, and feed efficiency.

2. Chemical and Physical Properties

Property	Typical Value
Chemical Name	(2S)-2-Amino-3-(1H-indol-3-yl)propanoic acid
Synonyms	L-2-Amino-3-indolepropionic acid
CAS No.	73-22-3
EC No.	200-795-6
Molecular Formula	$C_{11}H_{12}N_2O_2$
Molecular Weight	204.23 g/mol
Structural Formula	$C_8H_6N-CH_2-CH(NH_2)-COOH$
Appearance	White to slightly yellowish crystalline powder
Odor	Faint, characteristic
pH (1% w/v in H_2O)	5.5 – 7.0
Specific Rotation $[\alpha]_D^{20}$	-30.0° to -33.0° (1% in 1mol/L HCl)
Melting Point	289°C (decomposes)
Solubility	Slightly soluble in water; Insoluble in ethanol, ether, and chloroform.
Bulk Density	0.6 – 0.8 g/cm ³

3. Quality Specifications (Feed Grade)

Test Item	Specification
Assay (on dry basis)	$\geq 98.5\%$
Loss on Drying	$\leq 0.5\%$
Residue on Ignition	$\leq 0.2\%$
Heavy Metals (as Pb)	≤ 10.0 mg/kg
Arsenic (As)	≤ 2.0 mg/kg
Other Amino Acids	$\leq 1.0\%$
Specific Rotation	-30.0° to -33.0°
Microbial Limits	Total Aerobic Count $\leq 10^4$ CFU/g; Yeast & Mold $\leq 10^2$ CFU/g; E. coli/Salmonella: Absent

4. Applications

L-Tryptophan is a high-value feed additive used to balance amino acid profiles in monogastric animal diets:



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1. **Swine Feed:** Improves feed conversion efficiency, reduces fat deposition, and enhances immune function. Critical for nursery and grow-finish pigs.
2. **Poultry Feed:** Promotes growth, improves egg production and quality in layers, and enhances feather development. Aids in stress reduction.
3. **Aquaculture:** Used in high-protein fish and shrimp feeds to support growth and reduce nitrogen waste excretion.
4. **Premixes & Supplements:** A key component of vitamin-mineral premixes and specialty nutritional supplements for livestock.

5. Manufacturing Process

Feed Grade L-Tryptophan is manufactured via advanced microbial fermentation technology:

1. **Fermentation:** A selected strain (e.g., *Corynebacterium glutamicum*) is cultured in a controlled bioreactor using glucose or molasses as the carbon source.
2. **Separation:** The fermentation broth is filtered to remove microbial biomass.
3. **Purification:** The filtrate is purified using ion exchange chromatography and activated carbon treatment.
4. **Crystallization & Drying:** The purified solution is concentrated, crystallized, and dried to produce the final high-purity powder.

6. Handling and Storage

- **Handling:** Avoid inhalation of dust. Use in a well-ventilated area. Due to slight solubility, dust may be persistent; clean up promptly. Wear standard PPE (gloves, safety glasses).
- **Storage:** Store in the original sealed packaging in a cool, dry place, protected from light and moisture.
- **Shelf Life:** 24 months from the date of manufacture when stored under recommended conditions.

7. Packaging

- **Standard Packaging:** 25 kg net weight in multi-ply paper bags with an inner polyethylene (PE) liner, or 500 kg / 1000 kg bulk bags (FIBC) with PE liners.
- **Custom Packaging:** 1 kg and 5 kg foil bags are available for laboratory trials or small-batch applications.

8. Transportation

- **Classification:** Non-hazardous chemical substance.
- **Modes of Transport:** May be transported by truck, rail, sea, or air freight.
- **Precautions:** Protect packages from rain, snow, and direct sunlight during transit. Do not ship with strong oxidizers or incompatible materials. Comply with all local and international transportation regulations.