

Technical Data Sheet (TDS)

- Feed Grade L-Valine Amino Acid

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1. Product Overview

- **Product Name:** L-Valine Amino Acid (Feed Grade)
- **CAS Number:** 72-18-4 | **Molecular Formula:** C₅ H₁₁NO₂ | **Molecular Weight:** 117.15 g/mol
- **Chemical Nature:** L-valine is a **natural branched-chain essential amino acid (BCAA)**. It cannot be synthesized by livestock and poultry themselves and must be supplemented through feed. It is one of the three major branched-chain amino acids, together with leucine and isoleucine.
- **Core Characteristics:** High bioavailability (100% direct absorption and utilization), ultra-low impurity content, excellent thermal stability, and full compliance with global feed safety regulations.
- **Core Application:** As a key feed additive, it is widely used in the feed formulation of broilers, layers, pigs, aquaculture (fish, shrimp) and ruminants to balance the amino acid profile of feed and improve breeding efficiency.

2. Technical Specifications (Feed Grade)

Item	Standard Requirement	Test Method
Assay (L-Valine)	≥99.0%	High Performance Liquid Chromatography (HPLC)
Specific Rotation [α] _D ²⁵	+26.0° ~ +30.0°	Polarimetry
Appearance	White crystalline powder, odorless	Visual Inspection
Melting Point	315-317°C (decomposition)	Melting Point Apparatus
pH Value (2% Aqueous, 25°C)	5.5-6.5	Digital pH Meter
Loss on Drying	≤0.3%	105°C Constant Weight Method
Residue on Ignition	≤0.1%	600±50°C Ignition Method
Heavy Metals (as Pb)	≤1 ppm	Atomic Absorption Spectrometry (AAS)
Arsenic (As)	≤0.5 ppm	Atomic Fluorescence Spectrometry (AFS)
Total Bacterial Count	≤10 CFU/g	Plate Count Method
E. coli	Negative	Microbiological Detection
Salmonella	Negative in 25g	GB 13078.1 Method
Particle Size (Typical)	80-120 mesh (customizable 60-200 mesh)	Sieve Analysis

3. Product Advantages (Feed Grade Focus)

1. **100% Bioavailability:** The natural L-isomer can be directly absorbed and utilized by animal intestines, with no isomer conversion loss (unlike DL-valine). It effectively reduces the feed cost per unit of animal product.
2. **Key Growth Promoter:** As a branched-chain amino acid, it is the main energy source for muscle cells of livestock and poultry, which can significantly promote muscle growth, improve lean meat percentage and reduce fat deposition.
3. **Stress Resistance Enhancement:** Effectively improves the anti-stress ability of animals (such as weaning stress, transportation stress, heat stress), reduces the mortality rate of young animals and improves the survival rate of aquaculture.
4. **Reproductive Performance Improvement:** For sows and dairy cows, it can improve the quality of semen, increase the litter size, and promote the secretion of milk protein, thereby improving the survival rate and growth performance of offspring.
5. **Strict Safety Compliance:** Meets the highest feed hygiene standards, with ultra-low heavy metals and zero pathogenic bacteria (Salmonella/E. coli), ensuring the safety of animal products and compliance with export inspection requirements.

4. Application & Dosage Guide (Feed Formulation)

4.1 Target Species & Core Benefits

- **Poultry (Broilers/Layers):** Improves growth rate, feed conversion ratio (FCR), and egg production rate; enhances eggshell quality and reduces the rate of broken eggs.
- **Pigs (Weaners/Growers/Sows):** Alleviates weaning stress, promotes lean muscle growth, improves sow fertility and lactation performance.
- **Aquaculture (Fish/Shrimp):** Accelerates growth speed, improves stress resistance (such as hypoxia resistance), and reduces the incidence of diseases.
- **Ruminants (Dairy Cows/Beef Cattle):** Increases milk protein content and milk yield; promotes beef cattle muscle growth.

4.2 Recommended Inclusion Levels (w/w, based on total compound feed)

Species	Growth/Production Stage	Recommended Dosage of L-Valine
Broilers	Starter (0-21 days)	0.08% - 0.15%
Broilers	Finisher (22-42 days)	0.05% - 0.10%
Layers	Peak Production (25-45 weeks)	0.04% - 0.08%
Pigs	Weaners (7-30 kg)	0.10% - 0.20%
Pigs	Sows (Lactation Period)	0.15% - 0.25%
Aquaculture	Fish/Shrimp (Grow-out Stage)	0.12% - 0.25%
<i>Note: The specific dosage should be adjusted according to the basal diet formula, amino acid balance and actual breeding effects.</i>		

5. Handling & Formulation Guidelines

1. **Premixing Recommended:** Due to the small addition amount, it is recommended to premix L-valine with a carrier (such as corn starch, defatted rice bran) at a ratio of 1:10 to 1:20 first, and then add it to the main feed batch to ensure uniform distribution.
2. **Processing Stability:** Excellent thermal stability, no degradation at the conventional feed pelleting temperature (<85°C), and can adapt to the high-temperature pelleting process of aquatic feed.
3. **Compatibility:** Fully compatible with all common feed ingredients (soybean meal, corn, wheat, vitamins, minerals, probiotics, etc.), no chemical reaction occurs under normal conditions.
4. **Avoid High Temperature Oxidation:** Do not mix with strong oxidizing agents (such as potassium permanganate) and place in a high-temperature environment (>300°C) for a long time, to prevent decomposition.

6. Packaging, Storage & Shelf Life

- **Packaging Specifications:**
 - **Standard Packaging:** 25 kg moisture-proof paper drum, with double food-grade PE inner liners (sealed and moisture-proof).
 - **Bulk Packaging:** 500 kg / 1000 kg jumbo bags (for large-scale feed mills, with inner PE liners and nitrogen-filled packaging optional).
 - **Sample Packaging:** 10 g / 50 g / 100 g HDPE plastic bottles (sealed, for quality testing).

7. Quality Assurance & Control

1. **Production Standards:** Produced in a GMP-compliant production workshop, with ISO 9001 (Quality Management System) and ISO 22000 (Food Safety Management System) certifications. The entire production process is closed and dust-free to ensure product purity.
2. **Batch Testing:** Every batch of products undergoes full-item quality testing in an internal professional laboratory, including assay, specific rotation, heavy metals, microbiology and other indicators. Only products that pass all tests can be released, and a detailed English COA is provided with each shipment.