

Technical Data Sheet (TDS)

1. Product Overview

- **Product Name:** Thiamine (Vitamin B1)
- **CAS Number:** 59-43-8
- **Formula:** C₁₂H₁₇ ClN₄OS · HCl
- **Formula Weight:** 337.27 g/mol
- **Product Characteristics:** High-purity vitamin B1 crystalline powder, essential nutritional factor for humans and animals. Soluble in water, stable under dry/cool conditions, non-toxic, biodegradable. Acts as a coenzyme in carbohydrate metabolism, widely used in food, feed, pharmaceutical and nutraceutical industries.

2. Technical Specifications (Complies with USP/FCC/Industrial Standard)

Item	Specification
Appearance	White to off-white crystalline powder, odorless
Assay (Purity)	≥ 98.0% (HPLC)
Loss on Drying	≤ 1.0% (105°C, 2h)
Residue on Ignition	≤ 0.1% (600°C±50°C)
Heavy Metals (Pb)	≤ 10 ppm
Heavy Metals (As)	≤ 2 ppm
Chloride Content	19.0-20.5%
pH Value (1% aq. solution, 25°C)	2.7-3.4
Melting Point	248-250°C (decomposition)
Solubility in Water (25°C)	≥ 10 g/100mL
Particle Size	80-120 mesh (standard); customizable on request
Stereochemistry	DL-Thiamine hydrochloride (standard grade)
Temperature Stability	Stable at 0-40°C (purity retention ≥98%)
Moisture Stability	Stable at relative humidity ≤60%

3. Product Advantages

1. **High Purity:** ≥98.0% assay, meets USP/FCC international standards, low impurity content
2. **Excellent Solubility:** Soluble in water, easy to formulate into solutions/suspensions for various applications
3. **Safety & Non-toxicity:** Essential nutrient, no toxic side effects at recommended dosages, safe for humans/animals
4. **Stability:** Good stability under dry/cool storage conditions, long shelf life (24 months)
5. **Versatility:** Widely applicable in food, feed, pharmaceutical, and nutraceutical industries with customizable particle size
6. **Eco-friendly:** Fully biodegradable, no environmental pollution, compliant with global green standards

4. Application Fields

- **Food Additive:** Fortified foods (cereals, dairy, beverages, baked goods); nutritional supplements
- **Feed Additive:** Livestock, poultry, aquaculture feed fortification to improve growth performance and feed conversion rate
- **Pharmaceutical Raw Material:** Production of vitamin B1 tablets, injections, oral solutions for nutritional deficiency treatment



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- **Nutraceuticals:** Dietary supplements, multivitamin formulations, functional foods
- **Cosmetics:** Skin care products (anti-aging, moisturizing) as a nutritional additive

5. Usage Methods

- **Food Industry:** 5-50 mg/100g food (adjust according to national food fortification standards)
- **Feed Industry:** 10-200 mg/kg feed (livestock/poultry); 50-300 mg/kg feed (aquaculture)
- **Pharmaceutical Industry:** Formulate into 5mg/10mg/50mg tablets; 100mg/mL injections (per pharmacopoeia)
- **Nutraceuticals:** 1-10 mg per serving (dietary supplements)
- **Dosage Note:** Avoid excessive addition; comply with local industry regulations and dosage limits

6. Packaging & Storage

Packaging Specifications

- 1 kg/bottle (food/pharmaceutical grade, HDPE bottle)
- 5 kg/drum (food/feed grade, HDPE drum)
- 25 kg/drum (industrial/feed grade, paper drum with PE liner)
- Custom packaging (10g/50g/100g) available for small-batch orders

Storage Conditions

- Store in a **cool, dry, dark** warehouse with relative humidity $\leq 60\%$ and temperature $\leq 25^{\circ}\text{C}$
- Keep container tightly sealed to prevent moisture absorption and contamination
- Store separately from strong oxidizing agents, strong alkalis, and high-humidity materials
- Avoid direct sunlight and high temperature ($>60^{\circ}\text{C}$) to prevent decomposition

Shelf Life

- 24 months (unopened, under the specified storage conditions)
- 6 months after opening (if sealed and stored properly)

Transportation

- Non-hazardous goods; transport by ordinary dry cargo vehicles
- Avoid moisture, rain, direct sunlight, and collision during transport
- No mixing with strong oxidizing agents/alkalis in transport

7. Safety & Protection

- The product is non-toxic and non-hazardous; mild eye irritation may occur in sensitive individuals
- Wear **safety glasses** and **nitrile rubber gloves** during large-scale handling; wear a **dust mask** for dust-generating operations
- In case of eye contact, rinse with plenty of water for 5-10 minutes; consult a doctor if irritation persists
- No special disposal required for small amounts of waste; comply with local regulations for large-scale waste

8. Quality Assurance

- Manufactured in accordance with **ISO 9001 (Quality)** and **ISO 14001 (Environment)** management system standards
- Each batch is tested and accompanied by a **Certificate of Analysis (COA)** to ensure compliance with standards
- USP/FCC/EP grade available on request; customized production supported for special specifications
- Provide professional technical support for product application, formulation design, and dosage adjustment