

Technical Data Sheet (TDS)

Issue Date: February 27, 2026 **Product Name:** Thiamine Hydrochloride (Vitamin B1 Hydrochloride, Food Grade) **CAS Number:** 67-03-8

1. Product Overview

- **English Name:** Thiamine Hydrochloride (Food Grade Vitamin B1)
- **Synonyms:** Vitamin B1 Hydrochloride; 3-[[4-Amino-2-methylpyrimidin-5-yl)methyl]-5-(2-hydroxyethyl)-4-methylthiazolium chloride hydrochloride
- **CAS No.:** 67-03-8
- **Molecular Formula:** C₁₂H₁₇ CIN₄OS·HCl
- **Molecular Weight:** 337.27 g/mol
- **Source:** Synthesized by food-grade chemical synthesis process with high purity refinement; complies with food safety production standards and infant food raw material requirements.
- **Product Characteristics:** White crystalline free-flowing powder, odorless, food-grade essential water-soluble vitamin with weak acidic aqueous solution; freely soluble in water, sensitive to light, high temperature and alkaline environment. As a core food additive vitamin fortifier, it participates in human carbohydrate metabolism, nervous system function maintenance and energy synthesis; meets national/international food safety standards, especially suitable for infant, adolescent and elderly nutritional food fortification.

2. Technical Specifications (Complies with Food Industry Standard GB 14750-2010)

Item	Specification (Food Grade)
Appearance	White to off-white free-flowing crystalline powder, no caking
Assay (Thiamine Hydrochloride, HPLC)	≥ 98.5%
Loss on Drying (105°C, 2h)	≤ 5.0%
Ash Content	≤ 0.1%
pH Value (1% aqueous solution, 25°C)	2.7-3.4
Chloride (as Cl ⁻)	19.8-21.2%
Sulfate (as SO ₄ ²⁻)	≤ 0.02%
Heavy Metals (Pb)	≤ 1 ppm
Arsenic (As)	≤ 0.5 ppm
Cadmium (Cd)	≤ 0.1 ppm
Mercury (Hg)	≤ 0.01 ppm
Total Bacterial Count	≤ 100 CFU/g
Yeast & Mold	≤ 10 CFU/g
E. coli/Salmonella	Negative
Solubility	Freely soluble in water, slightly soluble in ethanol
Bulk Density	0.5-0.8 g/cm ³
Temperature Stability	Stable at 0-80°C (acidic/neutral, assay retention ≥ 95%)
pH Stability	Stable at pH 2.0-7.0 (assay retention ≥ 95%)
Light Stability	Stable under dark condition (assay retention ≥ 98% for 12 months)

3. Product Advantages

1. **Food Grade High Purity:** Assay ≥98.5%, chloride content meets standard, all impurities/heavy metals meet national/international food safety and infant food raw material limits; no harmful residues, compliant with GB 14750-2010 food additive vitamin B1 standard.
2. **Essential Water-Soluble Vitamin:** Human body cannot synthesize independently, core nutrient for carbohydrate metabolism, energy synthesis and nervous system health; essential for fetal/infant nervous system development and adolescent growth, critical for elderly nutritional supplementation to prevent vitamin B1 deficiency.



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3. **Good Processability:** Freely soluble in water, uniform dispersion in liquid/solid food; compatible with most food raw materials in acidic/neutral system, easy to add and operate in food production.
4. **Green & Safe:** GRAS certified by FDA, approved by FAO/WHO/Codex Alimentarius; no toxic side effects at standard use dosages, compliant with green food, organic food and infant food additive requirements; excessive intake is excreted with urine, no accumulation risk.
5. **Standardized Production:** Manufactured in accordance with food grade GMP standards, full process quality control; each batch with COA test report, stable product quality and consistent performance.
6. **Regulatory Compliance:** Meets China GB 14750-2010/GB 2760-2021/GB 10765/10767, EU EC 1333/2008, US FDA 21 CFR and Codex Alimentarius standards; can be used for domestic and export food production, with complete certification documents.

4. Application Fields

Thiamine Hydrochloride is a food-grade essential vitamin B1 fortifier, suitable for various food, beverage, health food, infant food, dairy products and special medical purpose food, especially for vitamin B1-fortified food and infant formula:

- **Infant & Child Food:** Infant formula milk powder, follow-up formula, children's milk powder, nutritional rice flour, baby cereal, children's beverage.
- **Dairy Products:** Milk, yogurt, cheese, milk beverage, soy milk, plant-based dairy alternative products.
- **Solid Food:** Cereal, bakery, candy, protein powder, nutritional biscuits, breakfast cereal, elderly nutritional food, student fortified food.
- **Liquid Food/Beverage:** Functional beverage, sports drink, fruit juice, vegetable juice, nutritional supplement liquid, carbonated beverage (low pH).

5. Usage Methods

Food Type	Recommended Addition Dosage
Infant Formula Milk Powder/Nutritional Rice Flour	0.4-1.2
Children/Student Fortified Food/Cereal	0.3-0.8
Milk/Yogurt/Dairy Beverage	0.1-0.3
Functional Beverage/Sports Drink/Fruit Juice	0.05-0.2
Bakery/Candy/Breakfast Cereal	0.2-0.6
Elderly Nutritional Food/Protein Powder	0.3-1.0
Health Food (B-group Vitamin Supplements)	5-15 per serving

6. Packaging & Storage

- **Small Batch:** 1 kg / 5 kg / 10 kg: Food-grade aluminum foil bags (light-proof, sealed, moisture-proof, oxygen-free) – for small-scale food production, health food, infant food and laboratory use.
- **Standard Batch:** 25 kg: Food-grade HDPE plastic drums with inner aluminum foil liner (light-proof, dust-proof, moisture-proof) – for medium/large-scale food production and industrial use.
- **Bulk Batch:** 500 kg / 1000 kg: Food-grade FIBC bulk bags with light-proof PE liner (food-grade, sealed, moisture-proof valve) – for large-scale industrial production and export.

7. Safety & Protection

- The product is food-grade, non-toxic and non-hazardous; it is an essential water-soluble vitamin for the human body, with no toxic side effects at standard use dosages, safe for humans (including infants/elderly), animals and the environment; its weak acidic nature may cause mild irritation to sensitive eyes/skin upon direct contact.
- Wear food-grade PPE (safety goggles, nitrile rubber gloves, FFP1 dust mask, non-slip food-grade safety shoes) during bulk handling and mixing; operate in low-light environment to avoid light-induced decomposition; handling infant food raw material should wear disposable sterile protective equipment.