

## Technical Data Sheet (TDS)

**Revision Date:** 05 FEB 2026

### 1. Product Overview

- Product Name: Cyanocobalamin
- English Name: Cyanocobalamin (Vitamin B12)
- CAS Number: 68-19-9
- MDL Number: MFCD00082077
- Formula:  $C_{63}H_{88}CoN_{14}O_{14}P$
- Molecular Weight: 1355.37 g/mol
- Product Characteristics:** High-purity Vitamin B12, a water-soluble cobalt-containing essential vitamin, the only vitamin with metal element. It is critical for nucleic acid synthesis, red blood cell formation and neurological function in humans/animals. Non-toxic, non-irritating, stable under cool/dry/dark conditions, degrades rapidly in light/heat. Widely used in food, pharmaceutical, cosmetic and feed industries as a nutrient fortifier.

### 2. Technical Specifications (Complies with USP/FCC/GB Standards)

| Item                             | Specification   |
|----------------------------------|---|
| Appearance                       | Dark red to dark purple crystalline powder                        |
| Assay (Purity)                   | ≥ 98.0% (HPLC)  |
| Loss on Drying                   | ≤ 12.0%   |
| Residue on Ignition              | ≤ 0.5%  |
| Heavy Metals (Pb)                | ≤ 5 ppm   |
| Heavy Metals (As)                | ≤ 1 ppm   |
| Total Bacterial Count            | ≤ 10 CFU/g  |
| E. coli                          | Negative  |
| Solubility                       | Sparingly soluble in water; slightly soluble in ethanol           |
| pH (1% aqueous suspension, 25°C) | 4.0-6.0   |
| Cobalt Content                   | 4.3-4.8% (w/w)  |
| Bulk Density                     | 1.2-1.4 g/cm <sup>3</sup>   |
| Temperature Stability            | Stable at 0-30°C (purity retention ≥ 98%); degrades at >50°C      |
| Light Stability                  | Degrades rapidly in direct sunlight (strictly protect from light) |

### 3. Product Advantages

- High Purity:** ≥98% assay, meets USP/FCC international standards, low impurity and heavy metal content.
- Essential Nutrient:** The only cobalt-containing vitamin, critical for human/animal health, no substitute for neurological/hematopoietic function.
- Ultra-safe:** Non-toxic, non-irritating, no side effects for normal/high-dose ingestion, approved as food/feed/pharmaceutical additive worldwide.
- Stable under Proper Storage:** Long shelf life (36 months) under cool/dry/dark conditions.
- Trace Dosage:** Effective at microgram level, low usage cost for fortification.
- Eco-friendly:** Fully biodegradable, trace cobalt causes no environmental harm, meets global environmental standards.

### 4. Application Fields

- Food Industry:** Fortification of dairy, cereals, beverages, nutritional bars, infant food; dosage in microgram level (µg/100g).
- Pharmaceutical Industry:** Raw material for multivitamin preparations, Vitamin B12 tablets/capsules/injections; treatment for pernicious anemia and neurological disorders caused by B12 deficiency.
- Cosmetic Industry:** Skin care/hair care products (promotes cell metabolism, improves skin barrier, strengthens hair roots); concentration 0.0001-0.01% (w/w).



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- **Feed Industry:** Feed additive for poultry, livestock, aquaculture and pets (prevents anemia, improves immunity and reproductive performance); dosage 0.01-0.1 mg/kg feed.

## 5. Usage Methods

- **Food Fortification:** 0.5-5 µg/100g (dairy/cereals/beverages); 10-50 µg/unit (nutritional bars/supplements).
- **Pharmaceuticals:** 10-1000 µg per tablet/capsule; 0.5 mg/1 mL for injection (cyanocobalamin injection).
- **Cosmetics:** 0.0001-0.01% (w/w) in formulations; add at low temperature (<40°C) and avoid light during formulation.
- **Feed Additive:** 0.01-0.1 mg/kg (poultry/livestock feed); 0.05-0.2 mg/kg (aquaculture/pet feed).
- **Formulation Tip:** Use water as solvent and add a small amount of solubilizer (e.g., glycerol) for aqueous formulations; strictly avoid light/heat during production and storage; do not mix with concentrated strong acids/alkalis.

## 6. Packaging & Storage

### Packaging Specifications

- 1 g/bottle, 5 g/bottle, 10 g/bottle (laboratory/small batch use, light-proof bottle)
- 50 g/drum, 250 g/drum (industrial use, light-proof sealed drum)
- 1 kg/IBC tote (bulk use, light-proof container)
- Custom packaging available upon request (**all packaging must be light-proof**).

### Storage Conditions

- Store in a cool, dry, dark warehouse at ≤25°C; use **light-proof sealed containers**; strictly protect from moisture, light and heat (light is the main factor for degradation).
- Separate from concentrated strong acids, strong alkalis and strong oxidizing agents; no other special incompatibility requirements.
- **Shelf Life:** 36 months (unopened, specified light-proof conditions); 6 months after opening (re-sealed, refrigerated, light-proof).

### Transportation

- Non-hazardous goods; transport by ordinary vehicles with **light-proof packaging**.
- Avoid direct sunlight, high temperature (>30°C), moisture and collision during transport; cover the packaging with a light-proof cloth if necessary.
- No special transport requirements; comply with general cargo transport regulations (focus on light/heat protection).

## 7. Safety & Protection

- The product is non-toxic, non-irritating; wear dust mask for large-scale handling to avoid dust inhalation (no skin/eye protection needed).
- Operate in a well-ventilated area; avoid dust generation/inhalation; wash hands after handling (no special cleaning requirements).
- No irritation to skin/eyes for direct contact; no special first aid measures needed for accidental contact/ingestion.
- No special disposal requirements; comply with local solid waste disposal regulations; small amount can be discarded as ordinary solid waste.

## 8. Quality Assurance

- Manufactured in accordance with ISO 9001 quality management system and GMP standards; all production processes are light-proof.
- Each batch of product is tested and accompanied by a Certificate of Analysis (COA) to ensure compliance with USP/FCC/GB standards.
- Provide professional technical support for product application, including formulation optimization, solubilization method and micro-dosage control.
- Food/pharmaceutical/feed grade products are available, all with light-proof packaging to ensure product stability.