

Technical Data Sheet (TDS)

- Sodium Nitrite (Food Grade)

Issue Date: 25 FEB 2026 | Version: 1.0

1. Product Overview

- **Product Name:** Sodium Nitrite (Food Grade)
- **CAS Number:** 7632-00-0
- **EINECS/EC Number:** 231-555-9
- **Chemical Formula:** NaNO₂
- **Molecular Weight:** 69.00
- **Product Characteristics:** High-purity food-grade sodium nitrite is a white crystalline powder with high water solubility and mild alkaline properties. As a **special food additive for processed meat products**, it has three core functions: (1) Color fixative: Stabilizes the myoglobin in meat to maintain the bright red color of cured meat (no fading during storage); (2) Preservative: Inhibits the growth of harmful bacteria (especially *Clostridium botulinum*, the pathogen of botulism) to prevent meat spoilage; (3) Antimicrobial agent: Inhibits the reproduction of spoilage microorganisms and extends the shelf life of meat products. It is a strictly controlled food additive with **mandatory dosage limits**; safe for human consumption when used in accordance with national food safety standards, and is an indispensable additive for the cured meat industry.
- **Core Application:** Exclusive for processed meat products (cured meat, sausage, ham, bacon, preserved meat, meat sauce); used as color fixative, preservative and antimicrobial agent; **not allowed for use in other food categories** (infant food, dairy, bakery, beverage, etc.).

2. Technical Specifications (Compliant with GB 19079-2003 & FCC/USP)

Item	Standard Requirement (Food Grade)
Appearance	White to slightly yellow crystalline powder, free-flowing, no caking
Odor/Taste	Odorless, slightly salty, no off-taste
Assay (NaNO ₂ , dry basis)	≥99.0%
Loss on Drying (105°C, 2h)	≤0.5%
pH Value (5% aqueous solution, 25°C)	8.0-9.5
Chloride (as Cl ⁻)	≤0.01%
Sulfate (as SO ₄ ²⁻)	≤0.005%
Heavy Metals (as Pb)	≤1 ppm
Arsenic (As)	≤0.5 ppm
Iron (Fe)	≤5 ppm
Insoluble Matter in Water	≤0.01%
Nitrate (as NO ₃ ⁻)	≤0.1%
Water Solubility (25°C)	≥80 g/100mL
Total Bacterial Count	≤100 CFU/g
Yeast & Mold	≤10 CFU/g
E. coli	Negative in 1g
Salmonella	Negative in 25g
Temperature Stability	Stable at 0-120°C (food processing temperature); decomposes >320°C
pH Stability	Stable at pH 7.0-10.0 (no decomposition)
Storage Stability	24 months (unopened), 6 months after opening

3. Product Advantages

1. **High-Efficiency Color Fixation:** Stabilizes meat color at low dosage, maintains bright red for 3-6 months of storage (no fading or discoloration), improves product sensory quality.

2. **Reliable Antimicrobial Effect:** Inhibits *Clostridium botulinum* and other harmful bacteria, completely prevents botulism (a fatal food poisoning), and ensures the safety of cured meat products.
3. **Extends Shelf Life:** Inhibits the growth of spoilage microorganisms (bacteria, mold), extends the shelf life of processed meat products by 2-4 times (at room temperature), reduces food spoilage and waste.

4. Application Fields & Strict Dosage Limits

Exclusive for processed meat products only; strictly comply with **GB 2760-2021 (China)**, EC 1333/2008 (EU) and FDA 21 CFR 172.175 (US) dosage limits; **no overuse is allowed** (residual limit ≤ 30 mg/kg for finished meat products).

Application Field	Typical Products	Maximum Usage (on raw meat)	Residual Limit (finished product)	Core Effect
Cured Meat	Bacon, ham, salami, cured pork	≤ 0.15 g/kg	≤ 30 mg/kg	Color fixative, botulism prevention
Sausage	Pork sausage, beef sausage, lunch meat	≤ 0.15 g/kg	≤ 30 mg/kg	Color stabilization, antimicrobial
Preserved Meat	Preserved beef, dried pork, meat jerky	≤ 0.10 g/kg	≤ 20 mg/kg	Antimicrobial, shelf life extension
Meat Sauce/Canned Meat	Meat sauce, canned ham, canned bacon	≤ 0.08 g/kg	≤ 15 mg/kg	Preservative, color maintenance

Forbidden Use: Infant food, dairy products, bakery, beverage, cereal, fruit/vegetable products, candy and all other non-meat food categories.

5. Usage Methods & Key Operation Norms

Key Tip: Must be prepared into aqueous solution for use (no direct addition of powder); strictly control dosage (use electronic scale with high precision); avoid contact with organic amines/strong acids in meat processing to prevent nitrosamine formation.

1. **Aqueous Solution Preparation:** Weigh the required amount of sodium nitrite (strictly follow dosage limit), dissolve in **food-grade deionized water** to prepare a 5% aqueous solution (1:19 powder:water); stir until completely dissolved (no undissolved particles).
2. **Addition Method:**
 - o **Brine marination:** Add the prepared 5% aqueous solution to the meat brine (salt, sugar, spices), stir evenly, and marinate the meat at 0-4°C for 12-24 hours (ensures uniform absorption).

6. Packaging, Storage & Transportation

- **Small Packaging:** 1 kg/5 kg UN-certified food-grade HDPE plastic drums (sealed, with inner PE bag); marked with hazard warning and dosage limit.
- **Standard Packaging:** 25 kg UN-certified food-grade HDPE plastic drums (sealed, dust-proof); exclusive for industrial food production use.
- **Custom Packaging:** No custom packaging for bulk use (in accordance with hazardous chemical transport regulations); only the above specifications are provided.
- **Labeling Requirements:** Each package is marked with product name, CAS number, UN number, hazard class (6.1), dosage limit, "Toxic Food Additive", "Strictly Follow Dosage" and "For Meat Products Only".

7. Safety Operation & Protection

1. **Operation Personnel:** Only trained professional personnel (familiar with dosage limits and hazard prevention) can operate; conduct regular occupational health examinations (focus on blood system).
2. **Personal Protection:** Wear N95 dust mask, safety goggles with side shields, nitrile rubber gloves and dust-proof overalls during operation; no bare hand contact or dust inhalation.