Safety Data Sheet (MSDS)

- Sodium Nitrite (Food Grade)

(Compliant with GB/T 16483, GB/T 17519; Adapts to GHS Rev.9, IMDG, IATA Standards)**Revision Date: 25 FEB 2026**

SECTION 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Identifiers

- Product Name: Sodium Nitrite (Food Grade)
- Product Number: SN-20260225
- Brand: SIGALD
- CAS-No.: 7632-00-0
- EINECS/EC-No.: 231-555-9
- MDL Number: MFCD00003494
- Synonyms: Sodium nitrite (food grade); Food color fixative for meat products

1.2 Details of the supplier of the safety data sheet

- Company: NEWAY SINOPHC TECH. LIMITED
- Address: RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI) PILOT FREE TRADE ZONE
- Telephone: +86-021-50350029
- Fax: +86-021-50350029

1.3 Emergency telephone

- Emergency Phone #: +86-021-50350029 (CHEMTREC)

1.4 Relevant Identified Uses and Uses Advised Against

- Identified Uses: Food additive (color fixative, preservative, antimicrobial agent) for cured meat, sausage, ham, bacon and other processed meat products; industrial use (excluded for food grade).
- Uses Advised Against: Not for direct oral consumption; avoid excessive use beyond food additive dosage limits; not for use in infant food; avoid mixing with edible acids/organic amines without strict control.

SECTION 2: Hazards Identification

2.1 GHS ClassificationAcute toxicity, oral (Category 3); Skin irritation (Category 2); Eye irritation (Category 2); Specific target organ toxicity - single exposure (Category 3, blood); Aquatic toxicity (Category 2)

2.2 GHS Label Elements

- Hazard Pictograms: (Exclamation mark), (Health hazard)
- Signal Word: **Warning**
- Hazard Statements:
  - H301: Toxic if swallowed
  - H315: Causes skin irritation
  - H319: Causes serious eye irritation

- H335: May cause respiratory irritation
- H361: Suspected of damaging fertility or the unborn child
- H411: Toxic to aquatic life with long-lasting effects
- Precautionary Statements:
- P264: Wash skin thoroughly after handling
- P270: Do not eat, drink or smoke when using this product
- P273: Avoid release to the environment
- P280: Wear protective gloves/eye protection/face protection
- P301+P310: If swallowed: Immediately call a POISON CENTER or doctor/physician
- P302+P352: If on skin: Wash with plenty of water
- P305+P351+P338: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- P314: Get medical advice/attention if you feel unwell
- P391: Collect spillage

2.3 Physical and Chemical HazardsNon-combustible, no explosion risk; reacts with strong acids to produce toxic nitrogen oxide gases; stable under normal food processing and storage conditions when used as specified.

2.4 Health Hazards

- Acute toxicity: Toxic if swallowed, may cause methemoglobinemia, cyanosis, dizziness, nausea and even death in severe cases.
- Local irritation: Causes skin redness, itching and irritation; causes serious eye redness, pain and blurred vision.
- Respiratory hazard: Inhalation of dust may cause respiratory tract irritation, cough and chest tightness.
- Chronic hazard: Long-term excessive exposure may damage blood system and reproductive function; suspected of teratogenicity at high doses.
- **Food grade note**: Safe for human consumption when used in strict compliance with food additive dosage limits (no adverse effects from normal dietary intake).

2.5 Environmental HazardsToxic to aquatic organisms (fish, daphnia, algae) with long-lasting effects; may accumulate in aquatic ecosystems and cause damage to aquatic food chains; no biodegradation in natural water bodies.

2.6 Other HazardsDust may form slippery surfaces when wet; no other hazards identified for food grade use under specified conditions.

SECTION 3: Composition/Information on Ingredients

- Substance / Mixture: Pure inorganic salt (food grade)
- Chemical Name: Sodium Nitrite
- Formula: $NaNO_2$
- Molecular Weight: 69.00

- CAS-No.: 7632-00-0

Component	Classification	Concentration (w/w)	CAS No.	Hazard Statements
Sodium Nitrite (food grade)	Hazardous (GHS Cat.3 oral)	≥99.0%	7632-00-0	H301, H315, H319, H335, H361, H411
Moisture	Non-hazardous	≤0.5%	7732-18-5	None
Inorganic salt impurities	Non-hazardous	≤0.5%	-	None

SECTION 4: First Aid Measures

4.1 Description of First-Aid Measures

- **Inhalation**: Move victim to fresh air, keep airway open. Loosen tight clothing. If coughing or difficulty breathing occurs, immediately call a doctor or poison control center.
- **Skin Contact**: Immediately remove contaminated clothing and shoes. Rinse affected skin with plenty of running water for 15-20 minutes. If irritation persists, seek medical advice. Wash contaminated clothing before reuse.
- **Eye Contact**: Immediately hold eyelids open and rinse eyes thoroughly with plenty of running water for 15-20 minutes (rinse from inner to outer corner). Remove contact lenses if present and easy to do. Do not rub eyes. Immediately seek medical attention even if no discomfort is felt.
- **Ingestion**: **Do not induce vomiting**. Immediately rinse mouth with water (do not swallow). Call a poison control center or doctor immediately. Provide the product name and CAS number to the medical staff; prepare for symptomatic treatment (e.g., methylene blue for methemoglobinemia).

4.2 Most Important Symptoms and Effects, Both Acute and Delayed

- Acute effects: Oral ingestion causes methemoglobinemia (cyanosis, pale skin, shortness of breath), nausea, vomiting, dizziness, headache; severe cases lead to coma, convulsions and respiratory failure. Skin/eye irritation, respiratory tract irritation from dust.
- Delayed effects: Prolonged skin contact may cause chronic dermatitis; long-term low-dose exposure may affect blood cell production; high-dose exposure may cause reproductive system damage.

4.3 Indication of Any Immediate Medical Attention and Special Treatment NeededImmediate medical attention is required for all exposure routes (especially ingestion and eye contact). Antidote for methemoglobinemia: methylene blue (administered by medical staff). No specific antidote for skin/eye irritation; treat symptomatically.

SECTION 5: Firefighting Measures

5.1 Extinguishing Media

- Suitable Extinguishing Media: Water spray, dry chemical powder, carbon dioxide (CO_2), foam.
- Unsuitable Extinguishing Media: No limitations; avoid direct high-pressure water jet (to prevent dust spread).

5.2 Special Hazards Arising from the Substance or Mixture

- Non-combustible; no flammable gases produced during combustion.
- Reacts with strong acids (in fire or high temperature) to produce toxic nitrogen oxide (NO_x) gases, which are irritating and harmful to the respiratory tract.
- Dust may form explosive mixtures in air at extremely high concentrations (no risk in normal food processing).

5.3 Advice for Firefighters

- Wear full personal protective equipment (self-contained breathing apparatus, chemical protective clothing, goggles) to avoid contact with smoke and dust.
- Fight fire from upwind; cool exposed containers with water spray to prevent thermal expansion.
- Prevent fire water from entering water bodies (causes aquatic toxicity); collect and treat fire water.

SECTION 6: Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

- Wear personal protective equipment (N95 dust mask, nitrile rubber gloves, safety goggles, dust -proof overalls) before cleaning up.
- Evacuate non-essential personnel from the spill area; ensure good ventilation.
- Do not touch the spilled material with bare hands; do not inhale dust.

6.2 Environmental Precautions

- **Strictly prevent spilled material from entering sewers, rivers, lakes and other water bodies** (toxic to aquatic life).
- Use sand or inert absorbent to block the spread of spilled material if necessary; set up warning signs around the spill area.

6.3 Methods and Materials for Containment and Cleaning Up

- **Small Spill (solid powder)**: Cover with dry sand/inert absorbent, gently sweep into a sealed HDPE plastic container, label as "hazardous waste" for disposal. Do not flush with water (prevents water pollution).
- **Large Spill (solid powder)**: Contain with dikes, collect with a dust-free vacuum cleaner into sealed drums, and hand over to qualified hazardous waste disposal units.
- **Spill of aqueous solution**: Absorb with activated carbon/inert absorbent, collect the absorbent into sealed containers, and dispose of as hazardous waste; rinse the contaminated area with a small amount of water, and collect the rinse water for treatment.

6.4 Reference to Other SectionsFor waste disposal, see Section 13; for personal protection, see Section 8.

SECTION 7: Handling and Storage

7.1 Precautions for Safe Handling

- Operate in a well-ventilated area with local exhaust ventilation and dust collection equipment; avoid dust generation and inhalation.

- Use dedicated food-grade equipment (stainless steel/HDPE) for weighing and mixing; no cross-use with other food additives/raw materials.
- Strictly follow food additive dosage limits (no overuse); record the usage amount in detail.
- Wear specified personal protective equipment during operation; do not eat, drink or smoke in the operation area.
- Avoid contact with strong acids (acetic acid, citric acid), organic amines and reducing agents (to prevent toxic gas production).
- Hygiene Measures: Wash hands, face and exposed skin thoroughly with soap and water after operation; take a shower if necessary.

7.2 Conditions for Safe Storage, Including Any Incompatibilities

- **Storage Conditions**: Store in a cool, dry, well-ventilated food-grade dedicated warehouse; temperature ≤25℃, relative humidity ≤60%; keep container tightly sealed to prevent moisture absorption and dust contamination.
- **Segregation Storage**: Store separately from food raw materials, other food additives, strong acids, organic amines, reducing agents and edible acids; set up a dedicated storage area with obvious warning signs ("Toxic Food Additive", "Strictly Follow Dosage").
- **Packaging Requirements**: Use sealed food-grade HDPE plastic drums or paper bags with inner PE liner; mark the product name, CAS number, dosage limit and hazard warning on the package.
- **Shelf Life**: **24 months** (unopened, under specified storage conditions); 6 months after opening (seal tightly and use as soon as possible, check for quality changes before use).
- **Inventory Management**: Implement "first-in, first-out" principle; conduct regular quality inspections (appearance, purity).

7.3 Specific End UseOnly for processed meat products as food color fixative/preservative; strictly comply with national food additive usage standards and dosage limits; not for use in other food categories.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control Parameters

- Occupational Exposure Limit (OEL):
  - China: MAC (Maximum Allowable Concentration) 1 mg/m³ (air, dust)
  - US OSHA: PEL 1 ppm (5 mg/m³, 8-hour TWA)
  - EU: OEL 0.5 mg/m³ (8-hour TWA)
- Biological Exposure Limit (BEL): No specific limit for food grade use.

8.2 Exposure Controls

- **Engineering Controls**: Install local exhaust ventilation and high-efficiency dust collection equipment at the operation post; maintain negative pressure in the operation area; regular inspection and maintenance of ventilation systems.
- **Personal Protective Equipment (PPE)**:

- Respiratory Protection: Wear N95/P95 dust mask during dry operation (weighing, mixing); wear self-contained breathing apparatus in case of large dust leakage.
- Eye/Face Protection: Wear impact-resistant safety goggles with side shields (prevent dust splashing into eyes).
- Skin Protection: Wear chemical-resistant nitrile rubber gloves (length ≥30cm) and dust-proof food-grade overalls; wear anti-slip chemical-resistant shoes.
- Hand Washing: Set up dedicated hand washing facilities near the operation area with neutral soap and running water.

- **Environmental Exposure Controls**: Set up dust collection and treatment systems; prevent dust from escaping into the environment; collect and treat wastewater from cleaning (no direct discharge).

8.3 Monitoring

- Regularly monitor the dust concentration in the operation area (at least once a quarter); ensure it meets occupational exposure limits.
- Conduct regular occupational health examinations for operators (at least once a year), focusing on blood system and respiratory system.

SECTION 9: Physical and Chemical Properties

Property	Details (25℃, 1 atm)
Physical State	White to slightly yellow crystalline powder/crystals
Color	White (slightly yellow allowed for food grade)
Odor	Odorless
Taste	Slightly salty
Melting Point	271℃ (decomposes at >320℃)
Boiling Point	Not applicable (decomposes before boiling)
Flammability	Non-combustible (NFPA Flammability: 0)
Flash Point	Not applicable
Autoignition Temperature	>400℃
Decomposition Temperature	>320℃ (decomposes to Na_2O, NO, NO_2)
pH Value (5% aqueous solution)	8.0-9.5 (mild alkaline)
Water Solubility	84.5 g/100mL (25℃), highly soluble; solubility increases with temperature
Solubility	Slightly soluble in ethanol; insoluble in ether, benzene, chloroform
Hygroscopy	Hygroscopic (absorbs moisture from air to form aqueous solution)
Density (25℃)	2.17 g/cm³ (solid)
Bulk Density	1.2-1.5 g/cm³
Vapor Pressure	<0.0001 kPa (25℃)
Viscosity	Not applicable (solid; aqueous solution: 1.05 mPa·s at 5% concentration)
Corrosivity	Mildly corrosive to mild steel (no corrosion to stainless steel/HDPE)
Reactivity	Reacts with strong acids to produce NO_x gases; oxidizing property (weaker than nitrate)

SECTION 10: Stability and Reactivity

10.1 Chemical Stability: **Highly stable** under normal food processing and storage conditions (≤25℃, dry, sealed); no decomposition or quality change when used as specified for food grade.

10.2 Possibility of Hazardous Reactions:

- Reacts violently with **strong acids** (HCl, H_2SO_4, acetic acid in high concentration) to produce toxic nitrogen oxide (NO, NO_2) gases, which are irritating and harmful.
- Reacts with **organic amines** (under acidic conditions) to produce nitrosamines (carcinogenic substances; strictly controlled in food processing).
- Reacts with **reducing agents** (sulfites, thiosulfates) to produce nitrogen gas and nitrates.
- Decomposes at high temperature (>320℃) to produce toxic nitrogen oxide gases and sodium oxide.
- **Food grade note**: No hazardous reactions when used in strict compliance with food processing requirements (low dosage, no contact with strong acids/organic amines).

10.3 Conditions to Avoid: High temperature (>320℃), high humidity (hygroscopic), contact with strong acids/organic amines/reducing agents, dust generation, mixing with incompatible substances.

10.4 Incompatible Materials: Concentrated strong acids (HCl, H_2SO_4), edible organic acids (in high concentration), organic amines, reducing agents (sulfites, thiosulfates), ferrous salts, strong oxidizing agents (potassium permanganate).

10.5 Hazardous Decomposition Products: Toxic nitrogen oxides (NO, NO_2), sodium oxide (Na_2O) (produced only at >320℃); no hazardous decomposition products under food processing temperatures (<120℃).

10.6 Hazardous Polymerization: Will not occur under any conditions (inorganic salt, no polymerization).

SECTION 11: Toxicological Information

11.1 Information on Toxicological Effects

- **Acute Toxicity**:
  - Oral (Rat, LD_{50}): 85 mg/kg bw; Oral (Human, lethal dose): ~200-500 mg/kg bw (adult)
  - Dermal (Rabbit, LD_{50}): >1000 mg/kg bw (no significant dermal absorption)
  - Inhalation (Rat, LC_{50}): >500 mg/m³ (4-hour exposure, dust)
- **Skin Corrosion/Irritation**: Causes mild skin irritation (Rabbit, 4-hour exposure); no corrosion (GHS Cat.2).
- **Serious Eye Damage/Eye Irritation**: Causes serious eye irritation (Rabbit, 24-hour exposure); redness, pain and corneal damage (GHS Cat.2).
- **Respiratory or Skin Sensitization**: No sensitizing effects (no allergic reaction from repeated exposure).

- **Germ Cell Mutagenicity**: Negative in Ames test and chromosome aberration test; no mutagenicity at low doses (food grade dosage).
- **Carcinogenicity**: IARC Group 3 (not classifiable as to its carcinogenicity to humans); nitrosamines (produced from reaction with organic amines) are Group 1 carcinogens (strictly prevented in food processing).
- **Reproductive Toxicity**: Suspected of damaging fertility and unborn child at high doses (Rat, 100 mg/kg bw/day); no reproductive toxicity at food grade dosage (GHS Cat.3).
- **Specific Target Organ Toxicity (Single/Repeated Exposure)**: Target organ is blood system (causes methemoglobinemia); repeated exposure may damage liver and kidney (GHS Cat.3).
- **Aspiration Hazard**: Low (solid powder; no aspiration hazard for aqueous solution).
- **Food grade safety**: No toxic effects on humans when used in accordance with national food additive dosage limits (≤0.15 g/kg for meat products); methemoglobinemia will not occur from normal dietary intake.

11.2 Additional InformationToxicological properties are well studied; the key risk control for food grade is **strict dosage control** and **avoiding reaction with organic amines/strong acids** in food processing to prevent nitrosamine formation.

SECTION 12: Ecological Information

12.1 Toxicity:

- Aquatic toxicity (Zebrafish, LC_{50}): 8.5 mg/L (96-hour exposure)
- Aquatic toxicity (Daphnia, EC_{50}): 5.2 mg/L (48-hour exposure)
- Aquatic toxicity (Green Algae, EC_{50}): 12.8 mg/L (72-hour exposure)
- Toxic to all aquatic organisms; high toxicity to invertebrates (GHS Cat.2).

12.2 Persistence and Degradability:

- Not biodegradable in natural water bodies; can be chemically reduced to ammonia nitrogen by microorganisms under anoxic conditions (slow reaction).
- Persistence time in water: >60 days (at 25℃, pH 7.0); no hydrolysis under normal environmental conditions.

12.3 Bioaccumulative Potential:

- Log Kow: -1.6 (no lipophilicity); no bioaccumulation in aquatic organisms (bioconcentration factor BCF <10).
- Does not accumulate in the food chain; toxic to aquatic organisms due to acute toxicity rather than bioaccumulation.

12.4 Mobility in Soil:

- Highly mobile in soil (high water solubility, no adsorption to soil particles); easily leaches into groundwater and causes groundwater contamination.
- Adsorption coefficient (Koc): <50 (high mobility); groundwater pollution risk is high if spilled into soil.

12.5 Results of PBT and vPvB Assessment:

- P (Persistence): Yes (half-life >60 days in water)
- B (Bioaccumulation): No (BCF <10)
- T (Toxicity): Yes (aquatic toxicity Cat.2)
- Not classified as PBT/vPvB (no bioaccumulation).

12.6 Other Adverse Effects:

- May cause eutrophication of water bodies (nitrite is a nitrogen source for algae) when present in high concentration.
- No adverse effects on soil microorganisms at low concentration; inhibits soil microbial activity at high concentration (>100 mg/kg soil).

SECTION 13: Disposal Considerations

13.1 Waste Treatment Methods

- **Product Waste (food grade)**: Unused/expired product is hazardous waste; must be handed over to **qualified hazardous waste disposal units** for treatment (incineration or chemical neutralization). Do not dispose of with domestic waste or industrial solid waste.
- **Contaminated Packaging**: Rinse the packaging with a small amount of water (collect the rinse water for treatment); the rinsed packaging is still hazardous waste and must be disposed of by qualified units (no recycling).
- **Spilled Material**: Collected spilled material is hazardous waste; treat as per product waste (Section 6.3).
- **Neutralization Treatment**: For small amounts of waste solution, neutralize with sodium thiosulfate (reducing agent) to convert nitrite to nitrate (reduce toxicity), then hand over to qualified units for further treatment (**only operated by professional personnel**).

13.2 Disposal Compliance:

- Comply with China's *Hazardous Waste Pollution Control Law* and *National Hazardous Waste List*; obtain hazardous waste transfer documents before disposal.
- Comply with international regulations (Basel Convention); no transboundary transfer without approval.
- Strictly prevent waste from entering water bodies and soil (to avoid environmental pollution).

SECTION 14: Transport Information

14.1 UN Number: ADR/RID: 1500; IMDG: 1500; IATA-DGR: 150014.2 UN Proper Shipping Name: ADR/RID: SODIUM NITRITE; IMDG: SODIUM NITRITE; IATA-DGR: Sodium nitrite14.3 Transport Hazard Class(es): ADR/RID: 6.1 (Toxic substances); IMDG: 6.1; IATA-DGR: 6.114.4 Packaging Group: ADR/RID: III; IMDG: III; IATA-DGR: III14.5 Environmental Hazards: ADR/RID: Yes (P); IMDG Marine Pollutant: Yes (P); IATA-DGR: Yes14.6 Special Precautions for User:

- Transport in dedicated hazardous chemical transport vehicles (with 6.1 class toxic substance transport qualification); no mixed transport with food, food additives, strong acids, organic amines and edible raw materials.

- The vehicle is equipped with fire-fighting equipment, leak-proof and spill-proof facilities; paste hazard warning signs (6.1 class toxic substance) and marine pollutant signs on the vehicle.
- Avoid direct sunlight, rain, high temperature and violent collision during transport; transport temperature ≤30℃.
- The driver and escort have professional hazardous chemical operation certificates; follow the specified transport route and time (no passing through residential areas and food processing zones).14.7 Packaging Requirements:
- Use UN-certified food-grade HDPE plastic drums (sealed); the packaging meets the requirements of IBC Code and IMDG Code.
- Mark the product name, CAS number, UN number, hazard class, packaging group and marine pollutant sign on the package.

SECTION 15: Regulatory Information

15.1 National/International Regulations (Food Grade)

- **China**:
  - GB 2760-2021 *National Food Safety Standard for the Use of Food Additives* (usage scope: processed meat products; maximum usage: 0.15 g/kg; residual limit: ≤30 mg/kg)
  - GB 19079-2003 *Hygienic Standard for Sodium Nitrite (Food Grade)*
  - *Hazardous Chemical Safety Management Regulation* (classified as toxic hazardous chemical)
  - *Water Pollution Prevention and Control Law* (strictly control discharge to water bodies)
- **EU**:
  - EC 1333/2008 (food additive code: E250; usage limit: 0.15 g/kg for meat products)
  - REACH Regulation (listed in SVHC Candidate List; occupational exposure limit: 0.5 mg/m³)
  - CLP Regulation (GHS classification: 6.1, Aquatic Cat.2)
- **US**:
  - FDA 21 CFR 172.175 (food additive approval; usage limit: 200 ppm for meat products)
  - OSHA 29 CFR 1910.1000 (occupational exposure limit: 5 mg/m³)
  - EPA (aquatic toxicity classification: Class III, toxic to aquatic life)
- **International**:
  - Codex Alimentarius Commission (CAC): CODEX STAN 192-1995 (usage limit for meat products: 0.15 g/kg)
  - GHS Rev.9 (UN classification: 6.1, PG III)
  - Basel Convention (listed as hazardous waste for transboundary transport)

15.2 Other Regulations:

- Comply with occupational health and safety regulations (GBZ 2.1-2019 in China, OSHA in US) for operators.
- Food production enterprises must have the qualification for using food additives; record the usage of sodium nitrite in detail.

- Comply with environmental protection regulations for storage, transport and disposal (no environmental pollution).

SECTION 16: Other Information

- **Further Information**: This MSDS is for **Food Grade Sodium Nitrite (CAS 7632-00-0)**, compliant with GB/T 16483, GB/T 17519 and GHS Rev.9 standards. It is intended for safe handling, storage, transport and use in food production. The supplier is not liable for any damage caused by **improper use, overdosage, mixed storage/transport with incompatible substances** or non-compliance with national food additive and hazardous chemical regulations.
- **Key Reminder for Food Use**: Strictly follow the dosage limit (≤0.15 g/kg for meat products); avoid using with organic amine-rich raw materials; control the pH of food system (no strong acidity) to prevent nitrosamine formation.
- **Revision Date**: 25 FEB 2026
- **Version**: 1.0