Safety Data Sheet (MSDS)

- Food Grade L-Asparagine(Compliant with GB/T 16483, GB 1886.238-2016, GHS Rev.9, IMDG, IATA)**Revision Date: 25 FEB 2026**

SECTION 1: Identification

1.1 Product Identifiers

- Name: L-Asparagine (Food Grade)
- Product Number: LAN-FOOD-20260225
- Brand: SIGALD
- CAS No.: 70-47-3
- Synonyms: (S)-2-Amino-3-carbamoylpropanoic acid; L-Asparaginic acid amide
- Molecular Formula: $C_4H_8N_2O_3$
- Molecular Weight: 132.12 g/mol

1.2 Supplier Details

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

1.3 Emergency Contact: +86-021-50350029 (24h)

1.4 Uses & Restrictions

- **Identified Uses**: Food additive (nutrient fortifier, flavor improver, fermentation nutrient); used in nutritional food, dairy, bakery, beverage, condiments and infant food industries.
- **Uses Advised Against**: Not for pharmaceutical injection use; no excessive direct oral consumption in undiluted form.

SECTION 2: Hazards Identification

2.1 GHS Classification

- No hazardous classification (GHS 0 category)

2.2 GHS Label Elements

- Pictogram: None
- Signal Word: None
- Hazard Statements: None
- Precautionary Statements: None

2.3 SummaryWhite odorless crystalline powder, slightly hygroscopic, soluble in water. Non-flammable, non-explosive, non-toxic at all food additive dosages. No acute/chronic health hazards; mild dust irritation may occur in sensitive individuals during bulk handling. As a non-essential amino acid for humans, it is a safe food additive compliant with international standards, participates in human protein synthesis and nitrogen metabolism. Environmentally friendly, fully biodegradable, no adverse effects on aquatic/terrestrial organisms.

SECTION 3: Composition/Information on Ingredients

- **Substance/Mixture**: Pure substance (≥98.5%)

- **Active Component**: L-Asparagine (CAS 70-47-3), 98.5-99.5% (w/w)
- **Impurities**: Trace water and inorganic salts (≤1.5%), no hazardous ingredients
- **Hazardous Components**: None (at any food grade application concentration)

SECTION 4: First Aid Measures

4.1 First-Aid Measures

- **Inhalation**: Move victim to fresh air if dust inhalation causes coughing. No special treatment required; symptoms subside spontaneously. Seek medical advice only if irritation persists for more than 2 hours.
- **Skin Contact**: Rinse contaminated skin with running water for 5 minutes if powder adheres. No skin irritation; no further treatment needed.
- **Eye Contact**: Rinse eyes with clean running water for 5-10 minutes if dust enters, hold eyelids open. Remove contact lenses if present. Mild irritation (if any) resolves spontaneously; consult an ophthalmologist only if discomfort persists.
- **Ingestion (Human)**: Rinse mouth with water. The product is non-toxic; accidental ingestion (even in large amounts) causes no adverse effects. No medical treatment required.

4.2 Key Symptoms & Effects: Mild transient respiratory/eye irritation from bulk dust in sensitive individuals; no systemic toxic effects.4.3 Antidote: No specific antidote required; all symptoms resolve without treatment.

SECTION 5: Firefighting Measures

5.1 Extinguishing Media: Water spray, carbon dioxide (CO_2), dry chemical powder, foam. All common fire-extinguishing agents are suitable.5.2 Hazards in Fire: Non-combustible. Decomposes at high temperatures (>300℃) to produce non-toxic ammonia, carbon dioxide and water; no hazardous combustion gases, smoke or residual toxins. No explosion risk under any fire conditions.5.3 Firefighter Advice: Wear standard fire-fighting gear and a disposable dust mask to avoid inhalation of combustion powder. Cool surrounding containers with water spray to prevent thermal expansion and powder scattering. No special fire-fighting precautions needed.

SECTION 6: Accidental Release Measures

6.1 Personal Precautions: Wear N95 dust mask and disposable food-grade gloves for large spills to avoid dust inhalation. Ensure basic ventilation in the spill area; no other protective equipment required.6.2 Environmental Precautions: No special environmental precautions; the product is fully biodegradable. No toxic impact on soil, water or air even if large amounts are released accidentally.6.3 Cleanup Methods:

- **Small Spill**: Sweep into a sealed HDPE container for reuse. Wipe the area with a dry cloth and dispose of the cloth as general waste.
- **Large Spill**: Collect with a dust-free vacuum cleaner into sealed food-grade drums. Avoid contact with excessive water to prevent hygroscopic caking and slippery surfaces.6.4 Disposal Reference: See Section 13.

SECTION 7: Handling and Storage

7.1 Handling Precautions

- Operate in a well-ventilated area for bulk handling; avoid generating dust during weighing and mixing.
- Use dry food-grade equipment/tools (slightly hygroscopic); avoid contact with strong oxidizers, strong acids and high-temperature environments (>60℃) for long periods.
- Hygiene Measures: Wash hands with soap and water after handling; comply with food hygiene GMP standards; no special restrictions on eating/drinking in the workplace (with basic hygiene).

7.2 Storage Conditions

- **Temperature**: ≤25℃; store in a cool, dry, well-ventilated food-grade warehouse
- **Humidity**: ≤60% (prevent hygroscopic caking)
- **Packaging**: Keep tightly sealed in original food-grade moisture-proof aluminum foil bags/HDPE drums with inner PE liners
- **Shelf Life**: **36 months (unopened, under specified storage conditions)**
- **Incompatibilities**: Strong oxidizing agents (e.g., $KMnO_4$, H_2O_2), concentrated strong acids (e.g., H_2SO_4, HCl)
- **Segregation**: Store separately from oxidizers, strong acids and non-food grade chemicals. Mark "FOOD GRADE" clearly on all packages.

SECTION 8: Exposure Controls/Personal Protection

8.1 Occupational Exposure Limit (OEL)

- No specific OEL for L-Asparagine; follow general industrial dust limit (10 mg/m³ TWA, respirable fraction) and national food hygiene standards.

8.2 Engineering Controls

- Local exhaust ventilation in bulk handling/loading areas to control dust concentration (air exchange rate ≥6 times/hour).
- Closed mixing systems for food production to minimize dust release and ensure food hygiene.

8.3 Personal Protective Equipment (PPE)

- **Respiratory**: N95 dust mask (only for bulk handling/loading/unloading; not required for routine small-scale use)
- **Eye/Face**: Food-grade safety glasses (recommended for large-scale handling to prevent dust from entering eyes)
- **Skin**: Food-grade nitrile rubber gloves (optional; no skin irritation risk)
- **Other**: Dust-proof food-grade overalls and non-slip shoes (for food production environment)

SECTION 9: Physical and Chemical Properties

Property	Details (25℃, 1 atm)
Physical State	White crystalline powder
Odor	Odorless
Taste	Slightly sweet taste
pH Value (1% aqueous)	5.0~6.5
Melting Point	305℃ (decomposes)
Boiling Point	N/A (decomposes before boiling)
Flash Point	Not applicable (non-combustible)
Flammability	Non-combustible
Hygroscopy	Slightly hygroscopic
Water Solubility	Soluble (2.9 g/100 mL at 25℃)
Ethanol Solubility	Slightly soluble
Methanol Solubility	Sparingly soluble
Bulk Density	0.75-0.90 g/cm³
True Density	1.543 g/cm³
Vapor Pressure	<0.0001 kPa
Specific Rotation	+33.0° ~ +35.0° ($[\alpha]_{20}^{D}$, H_2O)
Decomposition Temperature	>300℃

SECTION 10: Stability and Reactivity

10.1 Chemical Stability: Extremely stable under recommended storage/use conditions (cool, dry, sealed). Slightly hygroscopic in humid air; no chemical degradation under normal food processing and storage conditions.10.2 Hazardous Reactions: No hazardous reactions under any normal use and storage conditions. Reacts with strong oxidizers/ concentrated acids only at ultra-high temperatures (>300℃) to produce non-toxic decomposition products.10.3 Conditions to Avoid: High humidity, high temperature (>60℃), direct contact with strong oxidizers/concentrated strong acids, prolonged exposure to open air.10.4 Incompatible Materials: Potassium permanganate, hydrogen peroxide, concentrated sulfuric acid, concentrated hydrochloric acid.10.5 Hazardous Decomposition Products: Ammonia, carbon dioxide, water (no toxic fumes, gases or residues).10.6 Hazardous Polymerization: Will not occur under any conditions.

SECTION 11: Toxicological Information

11.1 Toxicological Effects

- **Acute Toxicity**: Oral (Rat) LD_{50} >50,000 mg/kg; Dermal (Rabbit) LD_{50} >50,000 mg/kg; Inhalation (Rat) LC_{50} >100 mg/m³ (4h) (Absolutely non-toxic)
- **Skin Corrosion/Irritation**: No skin irritation (Rabbit, 24-hour exposure; GHS Category 0)
- **Serious Eye Damage/Irritation**: No eye damage; mild transient irritation from bulk dust (fully reversible within 30 minutes)
- **Respiratory/Skin Sensitization**: No sensitizing effects (no known allergic reactions in humans/animals)
- **Carcinogenicity**: IARC Classification - Group 3 (not classifiable); no carcinogenic risk in humans/animals

- **Reproductive Toxicity**: No reproductive toxicity; essential for fetal protein synthesis and normal development
- **Target Organ Toxicity**: No single/repeated exposure target organ toxicity at any dosage (including excessive dosage)
- **Mutagenicity**: No mutagenic effects detected in all standard genetic toxicity tests
- **Aspiration Hazard**: Low (crystalline powder, no aspiration risk under normal handling conditions)

11.2 Additional Information: L-Asparagine is a non-essential amino acid widely present in natural foods (grains, beans, meat), involved in human protein synthesis, nitrogen metabolism and immune system regulation. It is a safe food additive with no cumulative toxicity, genotoxicity or reproductive toxicity at any application level.

SECTION 12: Ecological Information

12.1 Aquatic Toxicity: LC_{50} (Zebrafish, 96h) >10000 mg/L; EC_{50} (Daphnia, 48h) >10000 mg/L (Non-toxic to all aquatic organisms)12.2 Persistence and Degradability: Fully biodegradable (BOD_5/COD >0.9) in soil and aquatic environments; degraded by microorganisms into amino acids and inorganic salts within 3-5 days12.3 Bioaccumulative Potential: No bioaccumulation potential (water-soluble, natural amino acid, rapidly metabolized by all organisms)12.4 Mobility in Soil: Low to moderate mobility (water-soluble); binds to soil organic matter, no leaching risk and no environmental pollution12.5 Environmental Impact: Environmentally friendly; food production discharge has no adverse effect on soil, water or air. Excretion in human/animal waste acts as a nutrient source for soil microorganisms, improving soil fertility and ecological environment. Large accidental spills cause no secondary pollution.

SECTION 13: Disposal Considerations

13.1 Product Waste: Expired/caked L-Asparagine is non-hazardous waste. Can be reused (if re-dried/crushed and qualified by retest) or disposed of as general solid waste. Mix with organic fertilizer for soil amendment (amino acid/nutrient supplement) is highly recommended.13.2 Packaging Waste: Rinse packaging thoroughly with water (meet food hygiene standards); recycle food-grade PP/HDPE packaging as non-hazardous plastic waste or dispose of as general waste. No special disposal requirements.13.3 Disposal Compliance: Comply with China General Solid Waste Pollution Control Law, Food Safety Law and local environmental protection regulations. No need for hazardous waste treatment procedures.

SECTION 14: Transport Information

- **UN Number**: None (Non-hazardous goods for transport)
- **UN Proper Shipping Name**: L-Asparagine (Food Grade), Not Dangerous Goods
- **Hazard Class**: None | **Packaging Group**: None | **Environmental Hazard**: No
- **Transport Precautions**:

1. Transport in covered, dry food-grade ordinary cargo vehicles; avoid rain, snow and humidity (prevent hygroscopic caking and contamination).

2. Secure packaging with pallets; avoid collision and damage to prevent dust leakage and packaging contamination.
3. Avoid mixing with strong oxidizers, concentrated strong acids and non-food grade chemicals in the same vehicle.
4. Protect from direct sunlight and high temperature (≤30℃) during summer transport; comply with national food additive transport hygiene standards.

SECTION 15: Regulatory Information

- **China**: Compliant with **GB 1886.238-2016 (National Food Safety Standard for L-Asparagine)**, **GB 2760 (Food Additive Use Standard)**, listed in the national food additive catalogue as nutrient fortifier and fermentation nutrient.
- **EU**: Compliant with EC 1333/2008 (Food Additive Regulation), REACH registered (70-47-3), not in SVHC List, approved for all food categories including infant food.
- **US**: TSCA listed (70-47-3), approved by FDA for food additive use (21 CFR Part 172.320), meets GRAS standards, widely used as nutritional fortifier and food fermentation nutrient.
- **International**: Complies with Codex Alimentarius Commission (CAC) food additive specifications; accepted globally for food additive use in nutritional fortification, flavor improvement and fermentation industry.

SECTION 16: Other Information

- **Disclaimer**: This MSDS is for food grade L-Asparagine (70-47-3) only. Misuse for non-food purposes is at the user's sole risk. The supplier is not liable for damages from improper handling, storage, transport or use of this product.
- **Key Note**: The product is slightly hygroscopic; ensure sealed storage and dry food-grade handling to prevent caking and maintain product quality.
- **Revision Date**: 25 FEB 2026