Safety Data Sheet (MSDS)

(According to GB/T 16483 and GB/T 17519; Adapts to GHS, IMDG, IATA Standards)

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

1.1 Product Identifiers

- Product Name: Folic Acid
- Product Number: FA-20260225
- Brand: SIGALD
- CAS-No.: 59-30-3
- Synonyms: Vitamin B9; Pteroylmonoglutamic acid
- Formula: $C_{19}H_{19}N_7O_6$
- Molecular Weight: 441.40 g/mol

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 of the Substance or Mixture and Uses Advised Against

- Identified Uses: Pharmaceutical raw material; food fortifier; cosmetic ingredient; feed additive.
- Uses Advised Against: Not for direct undiluted skin application in large amounts; not for use as a fuel or solvent; avoid use in strong oxidizing systems and high-temperature aqueous systems (>120℃).

SECTION 2: Hazards Identification

2.1 GHS Classification

- Eye irritation: Category 2 (mild irritation, reversible)
- No other hazardous classifications

2.2 GHS Label Elements

- Hazard Pictogram: Warning (exclamation mark)
- Signal Word: Warning
- Hazard Statements: H320 (Causes mild eye irritation)
- Precautionary Statements: P264 (Wash hands thoroughly after handling); P280 (Wear eye protection); P305+P351+P338 (If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing); P337+P313 (If eye irritation persists: Get medical advice/attention)

2.3 Physical and Chemical HazardsNo flammable, explosive, corrosive or oxidizing hazards under normal use conditions. Sensitive to strong light and high temperature (>100℃), easy to

decompose and lose biological activity, no toxic substances generated during decomposition; slightly soluble in water, no precipitation hazard in normal dosage.

2.4 Health Hazards

- Acute health hazards: Mild eye irritation in case of direct contact with dust or aqueous suspension; no skin irritation, oral toxicity or inhalation toxicity in normal dosage; excessive oral intake may cause mild yellow discoloration of urine (harmless).
- Chronic health hazards: No known chronic toxic effects with long-term use in compliance with dosage standards; no carcinogenic, mutagenic or reproductive toxic effects reported by authoritative organizations (IARC, EPA, NTP); it is an essential nutrient for fetal development.

2.5 Environmental HazardsLow environmental toxicity, fully biodegradable in natural environment; no adverse effects on aquatic organisms, soil microorganisms and plants at normal use and release concentration; no bioaccumulation potential in the food chain; the product is a water-soluble vitamin, easy to degrade in natural water bodies.

2.6 Other HazardsNo additional hazards identified under normal use and storage conditions.

SECTION 3: Composition/Information on Ingredients

- Substance / Mixture: Pure substance
- Active Ingredient: Folic Acid (100%, w/w)
- CAS-No.: 59-30-3
- No hazardous impurities contained (all impurities meet industrial standard limits)

SECTION 4: First Aid Measures

4.1 Description of First-Aid Measures

- If Inhaled: Move victim to fresh air if dust is inhaled and discomfort occurs. Rest and keep the respiratory tract unobstructed. Consult a doctor if cough or chest tightness persists for a long time.
- In Case of Skin Contact: Rinse skin with plenty of running water for 3~5 minutes if necessary. Wipe the skin with a clean dry cloth; no special treatment is needed for normal contact, no irritation reaction will occur generally.
- In Case of Eye Contact: Rinse eyes thoroughly with plenty of running water for 5~10 minutes, remove contact lenses if present and easy to do. Do not rub eyes hard. Consult a doctor immediately if redness, tearing, pain or blurred vision persists for more than 48 hours.
- If Swallowed: Rinse mouth with clean water. No need to induce vomiting for normal dosage ingestion; if large amount is accidentally swallowed and abdominal discomfort occurs, drink a small amount of warm water and consult a doctor if necessary (the yellow discoloration of urine caused by excessive intake is a normal phenomenon and does not require treatment).

4.2 Most Important Symptoms and Effects, Both Acute and Delayed

- Acute Effects: Mild redness, tearing and slight pain of eyes in case of direct contact; mild yellow discoloration of urine in case of excessive oral intake; no systemic toxic symptoms in normal use.

- Delayed Effects: No known delayed toxic effects reported at home and abroad.

4.3 Indication of Any Immediate Medical Attention and Special Treatment NeededNo specific antidote; treat symptomatically according to the actual condition of the injured person. Inform the doctor of the product name and CAS number if medical treatment is needed.

4.4 Notes to PhysicianNo special medical treatment measures required; symptomatic treatment for eye irritation is sufficient; the yellow urine caused by excessive intake is a physiological phenomenon and does not require drug treatment.

SECTION 5: Firefighting Measures

5.1 Extinguishing Media

- Suitable Extinguishing Media: Dry powder, carbon dioxide (CO_2), foam, water spray (for cooling fire containers and surrounding equipment).
- Unsuitable Extinguishing Media: No strict limitations; direct water flushing is not recommended for large amounts of solid powder (easy to spread dust and cause secondary pollution).

5.2 Special Hazards Arising from the Substance or MixtureNon-combustible under normal storage and use conditions; decomposes at high temperature (>250℃) to produce a small amount of non-hazardous nitrogen-containing organic compounds and carbon dioxide; no toxic, corrosive or explosive combustion/decomposition products generated.

5.3 Advice for FirefightersWear standard fire-fighting gear (fire helmet, fire suit, anti-smoke gas mask, protective gloves) when fighting fires. Cool the storage container with water spray to prevent thermal decomposition of the product. Keep a safe distance from the fire scene and avoid inhaling the product's dust and slight decomposition gas generated by high temperature.

SECTION 6: Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency ProceduresWear nitrile rubber gloves, safety glasses and dust mask when handling spills; wear protective clothing if necessary. Evacuate non-essential personnel from the spill area; ensure good ventilation and avoid strong light irradiation on the spill area.

6.2 Environmental PrecautionsPrevent the spilled powder and cleaning water from flowing into sewers, rivers, lakes and other water bodies; collect the spilled powder in time to avoid environmental pollution.

6.3 Methods and Materials for Containment and Cleaning Up

- Small Spill: Collect the spilled powder with a clean anti-static brush and shovel, put it into a sealed brown glass bottle for reuse or disposal. Wipe the spill area with a small amount of purified water and dry it thoroughly.
- Large Spill: Cover the spilled powder with anti-static plastic film to prevent flying, collect it in batches with a shovel and put it into sealed light-shielding containers. Clean the spill area with neutral detergent and purified water, and dry it completely; collect the cleaning water and treat it before discharge.

6.4 Reference to Other SectionsFor the disposal of spill waste, see Section 13; for personal protective equipment, see Section 8; for storage of recycled product, see Section 7.

SECTION 7: Handling and Storage

7.1 Precautions for Safe Handling

- Operate in a well-ventilated, dark and dry environment; avoid strong light and high temperature during operation.
- Wear personal protective equipment as required; wash hands thoroughly with soap and water after handling, and do not touch eyes and mucous membranes with unwashed hands.
- Avoid mixing with strong acids, strong bases, strong oxidants and high-temperature materials; use glass, stainless steel or food-grade plastic equipment for handling.
- Do not smoke, eat or drink during operation to avoid accidental ingestion; the operation site should be equipped with emergency eye wash and hand washing equipment.
- The prepared aqueous solution should be used up as soon as possible and avoid strong light irradiation.

7.2 Conditions for Safe Storage, Including Any Incompatibilities

- Storage Conditions: Store in a cool, dark, sealed brown glass or aluminum foil container; storage temperature ≤25℃, relative humidity ≤60%. Avoid direct strong light, high temperature (>100℃), moisture and freezing.
- Incompatibilities: Strong acids (pH < 3), strong bases (pH > 9), strong oxidants (e.g., hydrogen peroxide, potassium permanganate), strong light and high temperature.
- Storage Class (TRGS 510): 10 (Non-hazardous Organic Solids)
- Shelf Life: 36 months (unopened, under specified storage conditions); the product after opening should be used up within 1 month and sealed tightly.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control ParametersOccupational Exposure Limit (OEL): No national/international unified occupational exposure limit for folic acid; control the exposure concentration to avoid direct and large amount of contact with eyes.

8.2 Exposure Controls

- Engineering Controls: Install exhaust fans in the operation area to ensure good ventilation; use light-shielding operation equipment and blackout curtains; set up dust collection devices to reduce dust flying.
- Personal Protective Equipment (PPE):
  - Eye/Face Protection: Wear impact-resistant safety glasses with side shields for all operations; wear a face shield for large-scale handling, weighing and pouring operations to prevent splashing into eyes.
  - Skin Protection: Wear nitrile rubber gloves (thickness ≥0.1mm) and light-shielding protective clothing during operation; anti-slip shoes are recommended for on-site operation. No special skin protection is needed for short-term and small-quantity contact.

- Respiratory Protection: No respiratory protection required under normal use conditions; wear a dust/mist respirator if a large amount of dust is generated during handling.
- Hand Protection: Wash hands with mild soap and water after handling; do not use organic solvents to wash hands directly to avoid skin irritation.
- Control of Environmental Exposure: Collect and treat the waste powder and waste liquid generated during operation to avoid direct discharge into the environment; recycle the light-shielding packaging materials; clean up the spilled powder in time to avoid decomposition and environmental pollution.

SECTION 9: Physical and Chemical Properties

- Physical State: Crystalline solid
- Color: Yellow to orange
- Odor: Odorless
- Melting Point/Freezing Point: 250℃ (decomposes)
- Initial Boiling Point and Boiling Range: Not applicable (decomposes before boiling)
- Flammability (Solid): Non-combustible
- Upper/Lower Flammability or Explosive Limits: Not applicable
- Flash Point: Not applicable
- Autoignition Temperature: >380℃
- Decomposition Temperature: ≥100℃ (strong light/high temperature induced decomposition, loss of biological activity)
- pH Value (25℃): 4.0~6.0 (1% aqueous suspension)
- Solubility: Slightly soluble in water (≈1.6 mg/L, 25℃), insoluble in ethanol, chloroform, ether and benzene; soluble in dilute acids and dilute alkalis.
- Vapor Pressure (25℃): <0.0001 hPa
- Density (25℃): 1.66 g/cm³ (solid)
- Relative Vapor Density: >1 (air=1)
- Particle Characteristics: Fine crystalline powder, low dust flying tendency
- Explosive Properties: Not explosive
- Oxidizing Properties: None
- Hygroscopy: Slight hygroscopy
- Optical Activity: No optical activity

SECTION 10: Stability and Reactivity

10.1 Chemical Stability: Stable under recommended storage conditions (≤25℃, dark, sealed, dry); sensitive to strong light and high temperature, easy to decompose and lose biological activity, no toxic substances generated during decomposition.10.2 Possibility of Hazardous Reactions: No hazardous chemical reactions under normal use and storage conditions; no reaction with most organic and inorganic materials except strong acids, strong bases and strong oxidants.10.3 Conditions to Avoid: Direct strong light, high temperature (>100℃),

moisture, strong acids and strong bases.10.4 Incompatible Materials: Strong acids (HCl, H2SO4), strong bases (NaOH, KOH), strong oxidants (H2O2, KMnO4), strong light-sensitive materials and high-temperature materials.10.5 Hazardous Decomposition Products: No hazardous decomposition products; decomposes under strong light/high temperature to produce pteroic acid and glutamic acid (both non-toxic, no biological activity of folic acid); decomposes at >250℃ to produce non-hazardous carbon dioxide, water and nitrogen-containing small molecular compounds.

SECTION 11: Toxicological Information

11.1 Information on Toxicological Effects

- Acute Toxicity: Oral (Rat, LD_{50}): >10000 mg/kg; Dermal (Rabbit, LD_{50}): >10000 mg/kg; Inhalation (Rat, LC_{50}): >20 mg/m³ (4-hour exposure, dust)
- Skin Corrosion/Irritation: No irritation (Rabbit, 24-hour exposure: no redness, swelling or erosion)
- Serious Eye Damage/Eye Irritation: Category 2 (Rabbit, 24-hour exposure; mild redness and tearing, reversible within 48h)
- Respiratory or Skin Sensitization: No sensitizing effects (human patch test and animal sensitization test are negative)
- Germ Cell Mutagenicity: Negative (Ames test, mouse bone marrow chromosome aberration test, no mutagenic effect)
- Carcinogenicity: Not classified as carcinogenic by IARC, EPA, or NTP (Group 3: not classifiable as to its carcinogenicity to humans)
- Reproductive Toxicity: No reproductive and developmental toxic effects; on the contrary, it is an essential nutrient for fetal neural tube development (rat and rabbit teratogenicity tests, NOAEL: 1000 mg/kg/day)
- Specific Target Organ Toxicity (Single/Repeated Exposure): No target organ toxicity reported with long-term exposure in normal dosage
- Aspiration Hazard: Low (solid powder, low dust flying tendency, slightly soluble in water)

11.2 Additional InformationThe toxicological properties of folic acid have been fully and deeply studied worldwide; it is a safe and essential water-soluble vitamin recognized by the food and drug administration of various countries, and no obvious toxic effects on the human body and animals in the recommended dosage range.

SECTION 12: Ecological Information

12.1 Toxicity: Fish (Zebrafish, LC_{50}): >5000 mg/L (96-hour exposure); Daphnia (EC_{50}): >2000 mg/L (48-hour exposure); Algae (Chlorella, EC_{50}): >5000 mg/L (72-hour exposure); Soil Microorganisms: No inhibitory effect at ≤2000 mg/kg soil12.2 Persistence and Degradability: Fully biodegradable in natural environment (BOD_5/COD > 0.7), degraded into carbon dioxide, water and small molecular nitrogen-containing compounds by microorganisms in soil and water within 14 days, no persistent organic pollutants generated.12.3 Bioaccumulative Potential: No bioaccumulation potential (water-soluble, rapidly metabolized and degraded in

organisms, no accumulation in liver, fat and other tissues)12.4 Mobility in Soil: Moderate mobility in soil, partially soluble in soil water, but rapidly degraded by microorganisms, no leaching risk to groundwater and surface water.12.5 Results of PBT and vPvB Assessment: Not classified as PBT/vPvB (highly biodegradable, no bioaccumulation, no persistent toxicity)12.6 Endocrine Disrupting Properties: No endocrine disrupting effects reported (in vitro and in vivo tests by OECD show no interference with the endocrine system of organisms)12.7 Other Adverse Effects: No known adverse ecological impacts at normal use and release concentration; the product is a natural water-soluble vitamin, which can be degraded in the environment without persistent pollution, and the nitrogen-containing decomposition products can be used as microbial nutrients.

SECTION 13: Disposal Considerations

13.1 Waste Treatment Methods

- Product Waste: Small amount of expired or deteriorated product can be mixed with combustible waste and incinerated in a licensed incineration plant; large amount of waste can be recycled for refining and reuse after purification. Do not discharge directly into soil, water bodies or the atmosphere.
- Packaging Waste: Rinse the brown glass/aluminum foil packaging with purified water for 2~3 times, dry it and recycle it; the slightly contaminated packaging can be disposed of as general industrial waste; the heavily contaminated packaging is treated in accordance with local solid waste disposal regulations.
- Spill Waste: The collected spilled powder is sealed and sent to a licensed solid waste treatment plant for incineration or landfill disposal, and shall not be stacked at will or thrown into the environment; the cleaning water containing the product shall be treated by biological methods before discharge.

13.2 Disposal Notes

- Comply with local, national and international waste disposal regulations (e.g., China's Solid Waste Pollution Prevention and Control Law, EU's WEEE Directive); do not mix with hazardous waste for disposal.
- The disposal operation shall be carried out by professional personnel with corresponding qualifications; personal protective equipment shall be worn during disposal to avoid contact with eyes and respiratory tract.

SECTION 14: Transport Information

14.1 UN Number: ADR/RID: -; IMDG: -; IATA-DGR: -14.2 UN Proper Shipping Name: ADR/RID: Not dangerous goods; IMDG: Not dangerous goods; IATA-DGR: Not dangerous goods14.3 Transport Hazard Class(es): ADR/RID: -; IMDG: -; IATA-DGR: -14.4 Packaging Group: ADR/RID: -; IMDG: -; IATA-DGR: -14.5 Environmental Hazards: ADR/RID: No; IMDG Marine Pollutant: No; IATA -DGR: No14.6 Special Precautions for User: Transport in sealed, light-shielding and moisture-proof packaging (brown glass/aluminum foil); transport temperature ≤30℃, avoid direct strong

light, high temperature, collision, extrusion and rain during transport. Separate from strong acids, strong bases and strong oxidants during transport to avoid mixing and contact.14.7 Incompatible Materials: Avoid transport with strong acids, strong bases, strong oxidants, strong light-sensitive materials and high-temperature materials.

Further Information: Not classified as dangerous goods under ADR, RID, IMDG, IATA and Chinese national transport regulations; can be transported by ordinary road, sea and air transport.

SECTION 15: Regulatory Information

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

- National Regulations (China): Food Safety Law; Pharmaceutical Administration Law; Cosmetic Supervision and Administration Regulation; Feed Additive Management Regulations; Hazardous Chemical Safety Management Regulation (Non-hazardous classification)
- International Regulations: GHS Classification (Rev. 9): Category 2 (eye irritation); REACH (EU): Registered in the REACH Inventory, compliant with CLP Regulation; TSCA (US): Listed on the TSCA Inventory; Codex Alimentarius Commission (CAC): Approved as food additive and fortifier; Comply with USP, EP, ChP, JP pharmacopoeia standards.

15.2 Other Regulations: Comply with local food, pharmaceutical, cosmetic and feed additive use regulations and dosage limit standards; the use in industrial products shall comply with the relevant industrial product quality and environmental protection standards.

SECTION 16: Other Information

- Further Information: This MSDS is based on the latest scientific knowledge and complies with GB/T 16483, GB/T 17519, GHS, IMDG and IATA standards. It is intended for the safe handling, storage, transport and disposal of folic acid. The supplier is not liable for any damage caused by improper use, storage, transportation or non-compliance with the safety precautions in this document.
- Revision Date: 25 FEB 2026