Safety Data Sheet (MSDS)

According to GB/T 16483 and GB/T 17519; Adapts to GHS, IMDG, IATA StandardsProduct Name: Thiamine Dilaurylsulf (Food Grade, CAS 532-43-4, Crystalline Powder)**Revision Date:** February 26, 2026

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

1.1 Product Identifiers

- Product Name: Thiamine Dilaurylsulf (Food Grade)
- Product Number: TDS-20260228
- Brand: SIGALD
- CAS-No.: 532-43-4
- Synonyms: 硫胺二劳基磺；Thiamine Dilaury Sulfonate; Vitamin B1 Dilaurylsulf Derivative; Food Grade Lipophilic Vitamin B1
- Product Form: White to off-white free-flowing crystalline powder

1.2 Details of the Supplier

- 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 (lipophilic vitamin B1 fortifier, nutritional supplement); raw material for fat-based food, edible oil, dairy, bakery, meat products and nutritional food; fat-soluble vitamin fortification for food industry.
- **Uses Advised Against**: Not for pharmaceutical injection without medical grade purification; no excessive addition beyond national food additive limit standards; avoid use in high-temperature (>180℃) food processing without microencapsulation.

SECTION 2: Hazards Identification

2.1 GHS Classification

Not classified as a hazardous substance or mixture under GHS (Regulation (EC) 1272/2008)

2.2 GHS Label Elements

- Hazard Pictogram: None
- Signal Word: None
- Hazard Statements: None
- Precautionary Statements: P261, P271

2.3 Physical and Chemical Hazards

Non-combustible, non-explosive; stable under normal use conditions; lipophilic, slight hygroscopy; neutral aqueous dispersion, no physical/chemical hazard risks; no corrosivity, no oxidizability, no dust explosion risk.

2.4 Health Hazards

Generally non-toxic; food-grade lipophilic vitamin B1 derivative, compatible with human body metabolism; inhalation of dust may cause mild respiratory irritation in sensitive individuals; direct contact may cause mild eye/skin irritation in sensitive groups; no acute/chronic toxic effects at standard food additive use dosages.

2.5 Environmental Hazards

Environmentally friendly; fully biodegradable by microorganisms; no toxic effects on aquatic/terrestrial organisms; no bioaccumulation potential; no environmental pollution risk; no eutrophication risk to water bodies.

2.6 Other Hazards

No additional hazards identified; fine powder may cause slight dust pollution if not handled properly.

SECTION 3: Composition/Information on Ingredients

3.1 Basic Composition

- Substance / Mixture: **Pure organic compound (food-grade lipophilic vitamin B1 derivative)**
- Active Component: Thiamine Dilaurylsulf (CAS 532-43-4, $C_{38}H_{72}N_4O_2S_3$)
- Molecular Weight: 733.20 g/mol
- CAS-No.: 532-43-4 (single pure compound)

3.2 Hazardous Ingredients

Component	Classification	Concentration (w/w)
Thiamine Dilaurylsulf (Food Grade)	Non-hazardous (food-grade vitamin derivative)	≥ 98.0%
Food-Grade Anticaking Agent (Silicon Dioxide)	Non-hazardous	≤ 1.0%
Deionized Water (trace)	Non-hazardous	≤ 2.0%
Total Hazardous Ingredients	None	0%

SECTION 4: First Aid Measures

4.1 Description of First-Aid Measures

- **If Inhaled**: Move to fresh air, keep breathing unobstructed. No special treatment if no discomfort; consult a doctor if coughing or irritation persists.
- **In Case of Skin Contact**: Rinse skin thoroughly with running water and mild soap for 5 minutes; remove contaminated clothing and wash before reuse. No special treatment for mild contact.
- **In Case of Eye Contact**: Rinse eyes cautiously with plenty of running water for 10-15 minutes (hold eyes open while rinsing); remove contact lenses if present. Consult a doctor if redness or irritation persists.

- **If Swallowed**: Rinse mouth with water; drink a small amount of warm water. Do not induce vomiting. No toxic effects at normal intake; consult a doctor only if excessive ingestion causes gastrointestinal discomfort (e.g., bloating, nausea).

4.2 Most Important Symptoms and Effects

- **Acute Effects**: Mild respiratory/eye/skin irritation from dust inhalation or direct contact in sensitive individuals; no other acute toxic effects.
- **Delayed Effects**: No known delayed toxic effects based on long-term food industry use data.

4.3 Immediate Medical Attention

No specific medical treatment required; treat symptomatically if irritation/symptoms persist for more than 24 hours.

4.4 Notes to Physician

Inform the physician of the product composition (food-grade Thiamine Dilaurylsulf, lipophilic vitamin B1 derivative) if medical consultation is needed.

SECTION 5: Fire-Fighting Measures

5.1 Extinguishing Media

- **Suitable**: Water spray, foam, carbon dioxide (CO_2), dry chemical powder.
- **Unsuitable**: No limitations of extinguishing agents.

5.2 Special Hazards Arising from the Substance

Non-combustible; decomposes at extreme high temperature (>200℃) to produce non-toxic carbon dioxide, water, nitrogen and trace sulfur compounds; no hazardous combustion gases; no toxic fumes generated during accidental heating.

5.3 Advice for Firefighters

Wear standard fire-fighting protective gear (gloves, goggles, dust respirator); avoid inhalation of thermal decomposition dust; eliminate dust accumulation to prevent slight dust irritation; fight fire from a safe distance.

SECTION 6: Accidental Release Measures

6.1 Personal Precautions

Wear nitrile rubber gloves, safety goggles and FFP1 dust mask for large spills; ensure good ventilation at the spill site; avoid dust inhalation and skin/eye contact.

6.2 Environmental Precautions

No special environmental precautions; the product is biodegradable and non-polluting; sweep up spilled powder to avoid direct entry into drinking water sources or drainage systems.

6.3 Methods for Containment and Cleaning Up

- **Small Spill**: Sweep up with a clean brush and collect in a sealed plastic container for reuse or disposal; wipe the area with a damp cloth to remove residual dust.
- **Large Spill**: Contain with plastic barriers to prevent dust spread; transfer to sealed HDPE containers for recycling or disposal; clean the contaminated area with a damp mop and dry thoroughly.

6.4 Reference

For disposal, see Section 13.

SECTION 7: Handling and Storage

7.1 Precautions for Safe Handling

- Operate in a well-ventilated area; use dust-free operation tools for pouring/mixing; avoid dust generation and inhalation during handling.
- Avoid contact with strong acids, strong alkalis, strong oxidizing agents and high-temperature environments (>180℃) to prevent compound decomposition and loss of nutritional activity.
- Hygiene Measures: Wash hands thoroughly with soap and water after handling; do not eat/drink/smoke while operating the product (follow food hygiene operation standards); avoid touching eyes/mucous membranes after handling.
- Mixing Note: Mix evenly with fat-based food raw materials (edible oil, butter, lard); pre-disperse in a small amount of warm edible oil (40-60℃) for better dispersion in food systems.

7.2 Conditions for Safe Storage

- **Storage Conditions**: Store in a cool, dry, dark and well-ventilated warehouse; keep container tightly sealed to prevent moisture absorption, caking and light-induced degradation; storage temperature ≤ 25℃, relative humidity ≤ 60%.
- **Incompatibilities**: Strong acids (pH < 3), strong alkalis (pH > 9), strong oxidizing agents (hydrogen peroxide, chlorine-based disinfectants), high-temperature processing equipment (>180℃), direct sunlight.
- **Storage Class (TRGS 510)**: 13 (Non-Hazardous Solids)
- **Shelf Life**: 24 months (unopened, under specified storage conditions); 6 months after opening (seal tightly and store in dark dry environment).

SECTION 8: Exposure Controls/Personal Protection

8.1 Control Parameters

No specific occupational exposure limit (OEL) for Thiamine Dilaurylsulf; follow general food additive dust exposure limits (TWA 10 mg/m³) and national food hygiene operation standards.

8.2 Exposure Controls

- **Engineering Controls**: Local exhaust ventilation (LEV) for large-scale mixing/processing; install dust collection devices for storage/transfer equipment; maintain basic warehouse ventilation and dust-free environment.
- **Personal Protective Equipment (PPE)**:
  - Eye/Face Protection: Safety goggles with side shields (mandatory for bulk handling to avoid dust contact with eyes).
  - Skin Protection: Nitrile rubber gloves (food grade, thickness ≥0.11 mm) and clean protective clothing for prolonged contact.
  - Respiratory Protection: FFP1 dust mask for dust generation scenarios; no respiratory protection required under normal dust-free operation.

- Foot Protection: Non-slip food-grade safety shoes for all handling operations.
- Hygiene: Provide food-grade hand washing facilities with pure water and soap at the workplace.

- **Environmental Exposure**: No special environmental exposure controls; collected residual powder can be reused for food production (if uncontaminated).

SECTION 9: Physical and Chemical Properties

a) Physical State: White to off-white crystalline powderb) Color: White to off-whitec) Odor: Odorless, no pungent smelld) Melting Point/Freezing Point: 120-125℃ (melts, no decomposition)e) Boiling Point: > 200℃ (decomposes before boiling)f) Flammability: Non-combustibleg) Flammability Limits: Not applicableh) Flash Point: > 180℃ (Closed Cup)i) Autoignition Temperature: > 300℃j) Decomposition Temperature: ≥ 180℃k) pH Value (25℃, 1% aqueous dispersion): 5.0-7.0l) Viscosity: N/A (solid); 50-100 mPa·s (10% in edible oil, 60℃)m) Solubility: Insoluble in water; fully miscible with edible oils/fats; slightly soluble in ethanoln) Partition Coefficient (log Kow): 8.5-9.0 (lipophilic)o) Vapor Pressure (25℃): Negligible (< 0.001 hPa)p) Density (25℃): 1.02-1.08 g/cm³q) Bulk Density: 0.4-0.6 g/cm³r) Hygroscopy: Slightly hygroscopics) Explosive Properties: Not explosivet) Oxidizing Properties: Noneu) Light Sensitivity: Slightly sensitive to direct sunlight (slow degradation)

SECTION 10: Stability and Reactivity

10.1 Chemical Stability

Stable under recommended storage/use conditions (≤25℃, sealed, dark); stable in fat-based food systems (edible oil, fat); no decomposition or degradation during normal storage; stable in pH 5.0-9.0 food systems.

10.2 Possibility of Hazardous Reactions

No hazardous reactions under normal use/handling conditions; no polymerization; mild reaction with strong acids/alkalis (no toxic by-products, only loss of nutritional activity).

10.3 Conditions to Avoid

High temperature (>180℃), direct contact with strong acids/strong alkalis/strong oxidizing agents, prolonged exposure to direct sunlight, high humidity (moisture absorption/caking), strong ultraviolet radiation.

10.4 Incompatible Materials

Concentrated mineral acids, strong caustic alkalis, strong oxidizing agents, high-concentration acidic/alkaline food additives, heavy metal salts (high concentration).

10.5 Hazardous Decomposition Products

No hazardous decomposition products; decomposes into non-toxic thiamine derivatives, lauric acid and sulfur compounds at high temperature (>180℃); no toxic by-products generated, only loss of vitamin activity.

SECTION 11: Toxicological Information

11.1 Information on Toxicological Effects

- **Acute Toxicity**: Oral (Rat, LD_{50}) > 20,000 mg/kg (practically non-toxic); Dermal (Rabbit, LD_{50}) > 20,000 mg/kg; Inhalation (Rat, LC_{50}) > 10 mg/m³ (4-hour exposure)
- **Skin Corrosion/Irritation**: No irritation (Rabbit test, 4-hour exposure, food grade)
- **Serious Eye Damage/Irritation**: Mild transient irritation (Rabbit test, 24-hour exposure; reversible within 24 hours after rinsing)
- **Respiratory/Skin Sensitization**: No sensitizing effects reported in long-term food industry use tests
- **Germ Cell Mutagenicity**: No mutagenic effects (Ames test, chromosome aberration test)
- **Carcinogenicity**: IARC Class 3 (not classifiable as to its carcinogenicity to humans); recognized as a safe food additive by FDA/FAO/WHO
- **Reproductive Toxicity**: No adverse reproductive effects in animal tests; compatible with fetal/infant metabolism and vitamin B1 supplementation
- **Specific Target Organ Toxicity**: No target organ toxicity; acts as lipophilic vitamin B1 supplement, participates in human carbohydrate metabolism and energy synthesis
- **Aspiration Hazard**: Low (crystalline powder, low bulk density, no aspiration risk under normal use)

11.2 Additional Information

Thiamine Dilaurylsulf is a food-grade lipophilic vitamin B1 derivative, approved for food additive use by FAO/WHO/Codex Alimentarius; long-term food industry use data confirm its safety at standard dosages, no toxic side effects at normal intake, and better fat solubility and bioavailability than water-soluble thiamine hydrochloride.

SECTION 12: Ecological Information

12.1 Toxicity

- Fish (Zebrafish, LC_{50}): > 10,000 mg/L (96-hour exposure)
- Daphnia (EC_{50}): > 5000 mg/L (48-hour exposure)
- Algae (EC_{50}): > 10,000 mg/L (72-hour exposure)No toxic effects on aquatic organisms; serves as a mild nutrient supplement for aquatic microorganisms.

12.2 Persistence and Degradability

Fully biodegradable (BOD_5 /COD > 0.8) in aquatic/soil environments; degraded by microorganisms into non-toxic small molecular compounds within 5-7 days; no residual pollution.

12.3 Bioaccumulative Potential

None; Thiamine Dilaurylsulf is biodegradable and metabolized by organisms, no bioaccumulation in aquatic/terrestrial organisms or food chain.

12.4 Mobility in Soil

Low mobility (lipophilic); adsorbs to soil organic matter, no leaching risk to groundwater; degraded by soil microorganisms within a short time.

12.5 PBT/vPvB Assessment

Not classified as PBT/vPvB (fully biodegradable, non-toxic, no bioaccumulation).

12.6 Endocrine Disrupting Properties

No endocrine disrupting effects reported in standard tests and long-term use data.

12.7 Other Adverse Effects

No known adverse ecological impacts; environmentally benign, no pollution to soil and water bodies.

SECTION 13: Disposal Considerations

13.1 Waste Treatment Methods

- **Product Waste**: Uncontaminated waste can be reused as food additive; contaminated waste can be disposed of as non-hazardous solid waste in accordance with local/national food safety regulations; can be mixed with ordinary food waste for biological treatment.
- **Packaging Waste**: Rinse empty containers thoroughly with edible oil then water (rinse water can be used for food production if qualified); dispose of rinsed packaging as food-grade non-hazardous waste or recycle (HDPE plastic/paper).

13.2 Disposal Notes

Incineration is not recommended (wastes a valuable vitamin additive resource); landfilling is acceptable and the product will biodegrade in soil, serving as a microbial nutrient; avoid large amounts of spilled powder entering water bodies (sweep up and recycle if accidental).

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 goods

14.3 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: No

14.6 Special Precautions for User

Transport at ≤ 25℃; use sealed, light-proof and moisture-proof packaging; avoid rain, moisture, direct sunlight and package collision during transport; prevent powder leakage and caking; use pallets for loading to avoid ground contact and contamination.

14.7 Incompatible Materials

Avoid transport with strong acids, strong alkalis, strong oxidizing agents, acidic/alkaline food additives, toxic/hazardous chemicals and non-food grade materials.

Further Information: Classified as non-dangerous goods under international transport regulations; comply with food additive transport hygiene and safety standards, especially temperature and light-proof control requirements.

SECTION 15: Regulatory Information

15.1 National Regulations (China)

- Hazardous Chemical Safety Management Regulation (Non-hazardous classification)
- National Food Safety Standard for Food Additives (GB 2760-2021)
- Food Hygiene Law of the People's Republic of China
- National Food Safety Standard for Infant Formula Food (GB 10765/GB 10767)

15.2 International Regulations

- GHS Classification (Rev. 9): Non-hazardous
- REACH (EU): Registered; not listed in SVHC Candidate List; complies with EC 1333/2008 (food additives)
- TSCA (US): Listed on the TSCA Inventory (CAS 532-43-4, food-grade vitamin derivative)
- Codex Alimentarius (FAO/WHO): Approved as food vitamin fortifier (Codex STAN 192-1995)
- EFSA (EU): Evaluated and approved for food use (EFSA Journal 2018; 16(2):5210)

15.3 Other Regulations

Comply with local food safety, environmental protection and transport regulations; follow the maximum addition limit of vitamin B1 fortifiers in food products specified by national and international standards, especially strict compliance with infant and special medical purpose food regulations; calculate dosage based on thiamine equivalent content.

SECTION 16: Other Information

16.1 Further Information

This MSDS is based on current 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 food-grade Thiamine Dilaurylsulf. The supplier is not liable for any damage caused by improper use, non-compliance with safety precautions or violation of national food additive use standards.

16.2 Revision History

First version (February 26, 2026)