



NEWAY SINOPHC TECH. LIMITED

ADD:RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI) PILOT FREE TRADE ZONE.
Email:marketing01@newayphc.com; Phone:+86-021-50350029 <https://www.newayphc.com>

Safety Data Sheet (MSDS)

(Complies with GB/T 16483, GB/T 17519; Adapts to GHS Rev.9, IMDG, IATA Standards)**Product**

Name: DL-malic Acid (Food Grade, Anhydrous)**Revision Date:** 26 FEB 2026

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

1.1 Product Identifiers

- Product Name: DL-malic Acid (Food Grade, Anhydrous)
- Product No.: DLA-20260228
- Brand: SIGALD
- CAS-No.: 617-48-1
- Synonyms: DL-Hydroxybutanedioic acid; Racemic malic acid; Food Grade DL-malic Acid; DL - 苹果酸（无水）

1.2 Supplier Details

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

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

1.4 Identified Uses & Uses Advised Against

- **Identified Uses:** Food additive (acidulant, flavor enhancer, preservative synergist, pH regulator); raw material for beverage, bakery, confectionery, dairy, fruit products, seasoning; food flavor synthesis auxiliary material.
- **Uses Advised Against:** Avoid excessive contact with mucous membranes in high concentration; avoid use in strong alkaline food systems (pH >8.0) for long-term storage.

SECTION 2: Hazards Identification

2.1 GHS Classification

Skin Irritation (Category 2); Eye Irritation (Category 2); Specific Target Organ Toxicity - Single Exposure (Category 3, Gastrointestinal tract)

2.2 GHS Label Elements

- Hazard Pictogram: (Warning)
- Signal Word: **Warning**
- Hazard Statements: H315 (Causes skin irritation); H319 (Causes serious eye irritation); H335 (May cause respiratory irritation); H302 (Harmful if swallowed in large amounts)
- Precautionary Statements: P264, P280, P302+P352, P305+P351+P338, P312, P332+P313

2.3 Hazard Summary

White crystalline powder/crystal, odorless, sour fruit taste (milder than citric acid). Mild skin/eye irritation in direct high-concentration contact; may cause mild respiratory irritation if inhaled as fine dust; excessive oral ingestion causes mild gastrointestinal discomfort (nausea, acid

regurgitation). Non-combustible, no explosion risk; stable in acidic/neutral systems, slight decomposition in strong alkali. Environmentally friendly, fully biodegradable; naturally present in fruits (apple, grape, peach).

2.4 Physical & Chemical Hazards

No physical/chemical hazards under normal storage/use; non-combustible, non-explosive; slightly hygroscopic; decomposes at extreme high temperature (>200°C) and strong alkaline conditions (pH >8.0).

2.5 Health Hazards

Mild skin/eye/respiratory irritation at high concentration; mild gastrointestinal discomfort with excessive ingestion; no acute/chronic toxic effects at standard food additive dosages; no sensitization, mutagenicity, carcinogenicity or reproductive toxicity (FAO/WHO certified); naturally metabolized in the human body.

2.6 Environmental Hazards

No adverse effects on aquatic/terrestrial organisms; fully biodegradable (BOD₅ /COD >0.95); no bioaccumulation potential; no eutrophication risk; acts as a microbial nutrient in natural environments.

SECTION 3: Composition/Information on Ingredients

- **Substance Type:** Pure racemic chemical substance (food-grade dicarboxylic acid)

3.1 Main Component

Component	Content (w/w)	CAS No.	Formula
DL-malic Acid (Anhydrous)	≥99.0%	617-48-1	C ₄ H ₆ O ₅

3.2 Non-Hazardous Auxiliary Ingredients

- Food-grade anticaking agent (Silicon Dioxide): ≤0.3%
- Deionized water (trace): ≤0.2%
- **Total Hazardous Ingredients:** ≥99.0% (DL-malic Acid)

SECTION 4: First Aid Measures

4.1 First-Aid for Different Exposure Routes

- **If Inhaled:** Move to fresh air, keep breathing comfortable. Rinse mouth with water; consult a doctor if coughing/chest discomfort persists for more than 1 hour.
- **In Case of Skin Contact:** Rinse skin thoroughly with running water for 10-15 minutes, remove contaminated clothing. Apply mild moisturizer if irritation/redness occurs; consult a doctor if symptoms do not subside.
- **In Case of Eye Contact:** Rinse eyes cautiously with plenty of clean water for 10 minutes (hold eyes open), remove contact lenses if present. Consult a doctor immediately if irritation/redness/blurred vision occurs.
- **If Swallowed:** Rinse mouth with water, drink 1-2 cups of milk or alkaline water (baking soda solution, low concentration) to neutralize. Do not induce vomiting. Consult a doctor if gastrointestinal discomfort (nausea, stomachache) persists.



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4.2 Most Important Symptoms & Effects

Mild skin/eye redness/irritation; mild cough from dust inhalation; mild acid regurgitation/nausea with excessive ingestion; no severe toxic symptoms or long-term damage.

4.3 Medical Attention Note

Inform the physician of the product name (DL-malic Acid) and exposure route if medical consultation is required; no specific antidote, symptomatic treatment (neutralization for ingestion, emollient for skin) only.

SECTION 5: Firefighting Measures

5.1 Suitable Extinguishing Media

Water spray, foam, carbon dioxide (CO₂), dry chemical powder – all applicable with no limitations.

5.2 Special Hazards from the Substance

Non-combustible; decomposes only at extreme high temperature (>200°C) to produce non-toxic carbon dioxide and water vapor; no hazardous combustion gases, fumes or residues.

5.3 Advice for Firefighters

Wear standard fire-fighting protective gear (gloves, goggles, dust respirator); avoid inhalation of thermal decomposition dust in large-scale fire; fight fire from a safe distance and ensure good ventilation at the fire site.

SECTION 6: Accidental Release Measures

6.1 Personal Precautions

Wear nitrile rubber gloves, safety goggles and FFP1 dust mask for all spills; wear non-slip shoes (powder may cause slippery floors); ensure good ventilation at the spill site to avoid dust accumulation.

6.2 Environmental Precautions

No special environmental measures; the product is biodegradable and non-polluting; sweep up spilled powder to avoid direct entry into drinking water sources (no environmental risk if entered).

6.3 Containment & Cleaning Up

- **Small Spill:** Gently sweep up with a brush, collect in a sealed plastic container for reuse/disposal; wipe the floor with a damp cloth to prevent slipping and dust resuspension.
- **Large Spill:** Contain with plastic barriers to prevent spread; transfer to sealed HDPE drums for recycling/disposal; clean the area with a damp mop and dry thoroughly.

6.4 Disposal Reference

See Section 13 for waste disposal requirements.

SECTION 7: Handling and Storage

7.1 Safe Handling Precautions

- Operate in a well-ventilated area; use dust suppression measures (mist spray) during bulk mixing/transfer to avoid fine powder formation and inhalation.

- Avoid direct contact with skin, eyes and mucous membranes; wear PPE for bulk handling operations.
- Avoid contact with strong alkalis (NaOH/KOH) and extreme high temperature (>200°C) to prevent decomposition.
- **Hygiene Measures:** Wash hands with soap and water after handling; do not eat/drink/smoke while operating the product; avoid touching eyes/mucous membranes after contact with the product.

7.2 Safe Storage Conditions

- **Storage:** Cool, dry, well-ventilated food-grade warehouse; keep container tightly sealed to prevent moisture absorption, caking and contamination.
- **Temperature & Humidity:** Storage temp $\leq 25^{\circ}\text{C}$, relative humidity $\leq 60\%$; install dehumidification equipment for long-term storage (≥ 6 months).
- **Incompatibilities:** Strong alkalis, strong oxidizing agents, alkaline food additives (sodium bicarbonate, sodium citrate, potassium sorbate in high concentration).
- **Storage Class:** TRGS 510 Class 13 (Non-Hazardous Solids)
- **Shelf Life:** 36 months (unopened, specified conditions); 12 months after opening (seal tightly, dry storage).

SECTION 8: Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

- Occupational Exposure Limit (OEL): TWA 10 mg/m³ (respirable dust); STEL 20 mg/m³
- ACGIH TLV: TWA 10 mg/m³ (total dust)

8.2 Exposure Controls & PPE

- **Engineering Controls:** Local exhaust ventilation (LEV) for large-scale processing; dust collection system; dehumidification equipment for storage area; emergency eye wash station and hand washing facility in bulk processing area.
- **Personal Protective Equipment:**
 - Eye/Face: Safety goggles with side shields (mandatory for all handling operations) to prevent powder splashing.
 - Skin: Nitrile rubber gloves (food grade, ≥ 0.11 mm) and clean protective clothing for all handling.
 - Respiratory: FFP1 dust mask for regular bulk handling; FFP2 mask for large-scale spill or fine dust generation.
 - Foot: Non-slip food-grade safety shoes (mandatory for all handling to prevent slipping).
 - Hygiene: Food-grade hand washing facilities with pure water and soap at the workplace; neutralizing hand soap recommended for post-handling use.

SECTION 9: Physical and Chemical Properties

a) Physical State: Crystalline powder/crystal b) Color: White to off-white c) Odor: Odorless d) Taste: Sour, mild fruit-like (apple) taste, slower sour taste release than citric acid e) Melting Point: 128-132°C f) Boiling Point: 200°C (decomposes) g) Flammability: Non-combustible h) Flash Point:

>150°C (Closed Cup)j) Autoignition Temperature: >400°Cj) pH Value (25°C, 1% aq. solution): 2.2-2.6k) Solubility: Freely soluble in water (~550 g/L at 25°C); soluble in ethanol (50 g/L), methanol; slightly soluble in etherl) Density (25°C, solid): 1.601 g/cm³m) Bulk Density: 0.7-1.0 g/cm³n) Hygroscopy: Slightly hygroscopico) Vapor Pressure (25°C): Negligible (<0.0001 hPa)p) Viscosity: N/A (solid); 4-6 mPa·s (10% aqueous solution, 25°C)q) Partition Coefficient (log Kow): -1.42 (highly hydrophilic)r) Explosive Properties: Not explosives) Oxidizing Properties: None

SECTION 10: Stability and Reactivity

10.1 Chemical Stability

Stable under recommended storage/use conditions; extremely stable in acidic/neutral food systems (pH 2.0-7.0); no decomposition in normal food processing temperatures (0-121°C, sterilization/baking/pasteurization).

10.2 Hazardous Reactions

No hazardous reactions under normal food production use; no polymerization; reacts with strong alkalis to form malate salts (non-hazardous, water-soluble); decomposes at >200°C into non-toxic by-products (CO₂, H₂O).

10.3 Conditions to Avoid

Extreme high temperature (>200°C), direct contact with strong concentrated alkalis, prolonged high humidity (caking), strong oxidizing agents (high-concentration hydrogen peroxide).

10.4 Incompatible Materials

Concentrated strong alkalis (NaOH, KOH), high-concentration oxidizing agents, alkaline food additives in large amounts, heavy metal ions (Fe³⁺ - slight discoloration, no efficacy loss).

10.5 Hazardous Decomposition Products

Non-toxic carbon dioxide and water vapor (only at >200°C); no hazardous by-products under normal food use conditions.

SECTION 11: Toxicological Information

11.1 Key Toxicological Effects

- **Acute Toxicity:** Oral (Rat, LD₅₀) = 3400 mg/kg (practically non-toxic); Dermal (Rabbit, LD₅₀) >5000 mg/kg; Inhalation (Rat, LC₅₀) >10 mg/m³ (4h).
- **Skin/Eye Irritation:** Mild irritation (Rabbit test, 4h exposure); no corrosivity, irritation reversible after rinsing with water/neutralizer.
- **Sensitization:** No skin/respiratory sensitization (long-term human/animal use data, FAO/WHO certified).
- **Mutagenicity/Carcinogenicity:** No mutagenic effects (Ames test, chromosome aberration test); IARC Class 3 (not classifiable as carcinogenic to humans); FDA GRAS certified.
- **Reproductive Toxicity:** No adverse reproductive/developmental effects in animal tests; safe for pregnant/lactating women at standard dosages.

- **Target Organ Toxicity:** Mild gastrointestinal tract irritation only with extreme excessive ingestion; no target organ toxicity at standard food additive dosages; naturally metabolized to CO₂ and water in the human body.
- **Aspiration Hazard:** Low (crystalline powder/crystal, moderate bulk density, no aspiration risk).

11.2 Additional Information

DL-malic Acid is a natural fruit acid (abundant in apples, grapes, peaches), approved by FAO/WHO/Codex Alimentarius; ADI: 0-20 mg/kg body weight; milder sour taste than citric acid with longer aftertaste, widely used as a "mild acidulant" in food industry; long-term use confirms high safety at standard dosages.

SECTION 12: Ecological Information

12.1 Ecotoxicity

- Fish (Zebrafish, LC₅₀): >5000 mg/L (96h)
- Daphnia (EC₅₀): >3000 mg/L (48h)
- Algae (EC₅₀): >5000 mg/L (72h) No toxic effects on aquatic organisms; non-toxic to soil microorganisms and plants; can be used as a plant growth regulator in low concentration.

12.2 Persistence & Degradability

Fully biodegradable (BOD₅/COD >0.95) in aquatic/soil environments; degraded by microorganisms into inorganic substances (CO₂, H₂O) within 1-2 days; no residual pollution.

12.3 Bioaccumulative Potential

None; highly hydrophilic, rapidly metabolized/utilized by organisms; no bioaccumulation in food chain/aquatic/terrestrial organisms.

12.4 Mobility in Soil

High mobility (freely soluble in water); readily dissolves in soil water, but rapidly degraded by soil microbes; no long-term accumulation, no groundwater pollution risk.

12.5 PBT/vPvB Assessment

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

12.6 Other Ecological Effects

Acts as a microbial nutrient in natural environments; no adverse impact on ecosystem balance; safe for use in food production with no environmental side effects.

SECTION 13: Disposal Considerations

13.1 Waste Treatment Methods

- **Product Waste:** Uncontaminated waste can be reused as food/feed additive; contaminated waste can be neutralized with dilute alkali (5% NaOH) then disposed of as non-hazardous solid waste in accordance with local food safety regulations; aqueous waste can be directly treated by biological wastewater treatment systems (biodegradable).
- **Packaging Waste:** Rinse empty containers with pure water (rinse water usable for food production if qualified); dispose of rinsed packaging as food-grade non-hazardous waste or recycle (HDPE/paper/aluminum foil).



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13.2 Disposal Notes

Neutralize spilled powder with dilute alkali before disposal to reduce irritation; incineration is acceptable (produces only non-toxic by-products); landfilling is also acceptable (biodegrades rapidly in soil).

SECTION 14: Transport Information

14.1 UN Classification & Number

ADR/RID/IMDG/IATA-DGR: **Not dangerous goods** (no UN number)

14.2 Transport Details

- UN Proper Shipping Name: Non-dangerous goods (Food Additive - DL-malic Acid)
- Transport Hazard Class: None
- Packaging Group: None
- Marine Pollutant: No (IMDG)

14.3 Transport Precautions

- Transport at $\leq 25^{\circ}\text{C}$; use sealed, moisture-proof food-grade packaging; avoid rain, moisture, direct sunlight and package collision.
- Prevent powder leakage/caking; use pallets for loading to avoid ground contact/contamination.
- Avoid transport with strong concentrated alkalis, strong oxidizing agents, alkaline food additives and non-food grade hazardous chemicals.
- Mark package with "**Food Grade**", "**Moisture Proof**", "**Irritant**" and "**Non-Dangerous Goods**".

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) – approved as food acidulant/flavor enhancer
- Food Hygiene Law of the People's Republic of China
- GB 10765/GB 10767 (Infant Formula Food Standards) – compliant for use

15.2 International Regulations

- GHS Rev.9: Skin Irrit. 2, Eye Irrit. 2, STOT-SE 3
- REACH (EU): Registered; not in SVHC Candidate List; complies with EC 1333/2008
- TSCA (US): Listed on Inventory; FDA GRAS certified (21 CFR 184.1069)
- Codex Alimentarius (FAO/WHO): Approved as food acidulant/flavor enhancer (Codex STAN 192-1995), ADI: 0-20 mg/kg body weight

15.3 Other Requirements

Comply with local food safety/transport/environmental regulations; follow GB 2760-2021 maximum addition limits for different food types; optimal use in acidic/neutral food systems (pH 2.0-7.0) for best stability and efficacy.

SECTION 16: Other Information



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16.1 Document Validity

This MSDS is based on current scientific and technical knowledge, compliant with international and national standards. It is for the safe handling, storage, transport and disposal of food-grade DL-malic Acid.

16.2 Revision History

First Version - 26 FEB 2026 (No subsequent revisions)

