

Safety Data Sheet (MSDS)

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

Citric Acid (Purity \geq 99.5%, Food Grade)

SECTION 1: Identification

1.1 Product Identifiers - Product Name: Citric Acid - Product Number: CA-20280203 - Brand: SIGALD - CAS-No.: 77-92-9 - Synonyms: 2-Hydroxy-1,2,3-propanetricarboxylic acid; Trihydroxytricarboxylic acid - Chemical Family: Polycarboxylic acid - Concentration: \geq 99.5% (w/w) Citric Acid, \leq 0.5% moisture, \leq 0.1% ash

1.2 Details of the supplier of the safety data sheet

- Company : NEWAY SINOPHC TECH. LIMITED
- 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 Uses & Restrictions - Identified Uses: Food and beverage sour agent, flavor enhancer and preservative; cosmetic pH adjuster and chelating agent; pharmaceutical excipient (antacid, effervescent agent); water treatment scale remover and chelating agent; industrial cleaning agent and metal surface treatment agent. - Uses Advised Against: Use in strong alkaline environment (pH >10.0) without protection; mixing with strong oxidants in high concentration; use as a substitute for industrial-grade acid in corrosive operation without proper PPE.

SECTION 2: Hazards Identification

2.1 GHS Classification: Skin irritation (Category 2); Eye irritation (Category 2); Aquatic hazard (Category 3)

2.2 GHS Label Elements - Hazard Pictogram: (Warning) + (Aquatic hazard) - Signal Word: WARNING - Hazard Statements: H315 (Causes skin irritation); H319 (Causes serious eye irritation); H412 (Harmful to aquatic life with long lasting effects) - Precautionary Statements: P201, P202, P261, P264, P270, P273, P280, P302+P352, P304+P340, P305+P351+P338, P312, P332+P313, P337+P313, P362+P364, P405, P501

2.3 Physical/Chemical Hazards: White crystalline powder; odorless, sour taste; highly soluble in water; decomposes at 153-159°C, releasing non-toxic CO₂ and water vapor; non-flammable under normal conditions; no explosive hazards; may react with strong bases (e.g., NaOH) to generate heat (exothermic reaction).

2.4 Health Hazards: Skin contact causes mild redness, itching and dryness; prolonged contact may lead to slight peeling (due to acidic property); eye contact causes severe irritation, redness, tearing and temporary blurred vision; inhalation of dust may cause mild respiratory tract discomfort (cough, sore throat); oral ingestion in normal dosage (food/beverage) is safe, but excessive ingestion may cause gastrointestinal discomfort (nausea, diarrhea, stomach pain).

2.5 Environmental Hazards: Harmful to aquatic organisms (fish, algae); moderately persistent in water bodies; low bioaccumulation potential (BCF <100); may cause temporary water acidification if spilled in large quantities, but no long-term ecological risks.

SECTION 3: Composition/Information on Ingredients

Substance/Mixture: Mainly pure substance ($\geq 99.5\%$), trace impurities

Component	Content (w/w)	CAS-No.	Hazard Classification
Citric Acid	$\geq 99.5\%$	77-92-9	Skin Irrit. 2; Eye Irrit. 2; Aquatic Tox. 3
Water	$\leq 0.5\%$	7732-18-5	Non-hazardous
Inorganic Ash	$\leq 0.1\%$	Mixture	Non-hazardous

SECTION 4: First Aid Measures

- Inhaled: Remove to fresh air immediately; keep the affected person in a comfortable position, maintain airway patency; if discomfort persists (e.g., persistent cough), seek medical help. - Skin Contact: Remove contaminated clothing; rinse skin thoroughly with plenty of running water for at least 10 minutes; wash with mild soap if necessary; apply emollient cream if skin is dry or irritated; seek medical help if irritation persists or dermatitis occurs. - Eye Contact: Hold eyelids open; rinse eyes continuously with clean water or normal saline for at least 15 minutes (flush from inner to outer corner); do not rub eyes or use eye drops; seek medical help if irritation, redness or blurred vision persists. - Swallowed: Rinse mouth with water; if a large amount is ingested and symptoms (severe nausea, vomiting) occur, seek medical help; bring this MSDS if going to the hospital (note: normal food-grade ingestion is safe).

SECTION 5: Firefighting Measures

- Suitable Extinguishing Media: Water spray, foam, CO₂, dry powder; use water to cool containers. - Unsuitable Media: High-pressure water jet (may dissolve the product and cause secondary pollution). - Special Hazards: Decomposes when heated above 159°C, releasing non-toxic CO₂ and water vapor; no toxic combustion products; non-flammable, but may assist combustion of other materials. - Firefighter Advice: Wear appropriate protective equipment (firefighting suit, face shield); avoid inhalation of dust and combustion fumes; cool containers with water spray until the fire is completely extinguished; isolate the fire scene and evacuate non-essential personnel.

SECTION 6: Accidental Release Measures

- Personal Precautions: Evacuate non-essential personnel; wear PPE (dust mask, chemical safety goggles, nitrile gloves, protective clothing); ensure good ventilation at the leakage site. - Environmental Precautions: Prevent the powder from entering sewers, rivers, lakes or groundwater; neutralize with alkaline substances (e.g., sodium bicarbonate) if spilled into water; notify local environmental authorities for large-scale leakage (> 50 kg). - Cleanup: Small spill - sweep up carefully with a dry brush, collect into a sealed container for disposal; large spill - use inert absorbent materials (vermiculite, activated carbon) to contain the leakage, transfer to sealed drums; clean the area with a small amount of water (collect rinse water for neutralization treatment), do not discharge directly.

SECTION 7: Handling and Storage

- Handling: Operate in a well-ventilated workshop; use dust-proof tools and equipment; avoid generating dust (do not grind, crush or agitate violently); avoid contact with skin, eyes and inhalation of dust; do not mix with strong bases or strong oxidants; wash hands and face thoroughly after operation (use mild soap); avoid eating, drinking or smoking in the workplace.
- Storage: Store in a cool, dry, well-ventilated warehouse (temperature 5-30°C, relative humidity ≤65%); keep container tightly closed, store upright; store separately from strong bases (NaOH, KOH), strong oxidants (KMnO₄) and toxic substances; no smoking in the storage area; avoid direct sunlight and heat sources. - Shelf Life: 24 months (unopened, specified conditions); use promptly after opening, seal tightly after each use; do not use if discoloration (yellowing), caking or odor change occurs. - Compatibility: Incompatible with strong bases, strong oxidants and heavy metal salts (Fe³⁺, Cu²⁺) at high concentration.

SECTION 8: Exposure Controls/Personal Protection

- Engineering Controls: Install local exhaust ventilation system (air change rate ≥8 times/hour); set up emergency eyewash stations and safety showers (within 10 meters of the workplace); use dust-proof equipment and pipelines. - PPE: Respiratory protection: Dust mask (N95 or above) when handling powder; Hand protection: Nitrile gloves (thickness ≥0.6 mm, replace every 4-6 hours); Eye/Face protection: Chemical safety goggles; Body protection: Dust-proof protective clothing and boots. - Hygiene Measures: Do not touch eyes, face or mouth with contaminated hands; change contaminated clothing immediately; wash contaminated clothing separately (mild detergent); provide mild soap and skin care products near the workplace; conduct regular health checks for operators (annual physical examination focusing on respiratory and gastrointestinal functions).

SECTION 9: Physical and Chemical Properties

Physical State: Solid (crystalline powder); Color: White; Odor: Odorless; Taste: Sour pH (25°C, 1% Aqueous Solution): 2.0-2.5; Melting Point: 153-159°C (decomposition); Boiling Point: Decomposes before boiling Flash Point: Not applicable (non-flammable solid); Autoignition Temperature: >400°C; Flammability: Non-flammable Density (25°C): 1.66 g/cm³; Solubility: Highly soluble in water (62 g/100 mL at 25°C), soluble in ethanol (20 g/100 mL), slightly soluble in ether Vapor Pressure (25°C): <0.001 hPa; Partition Coefficient (log P): -1.7 (estimated); Specific Rotation: +12.0° to +13.5° (10% in water, 20°C)

SECTION 10: Stability and Reactivity

- Stability: Stable under normal storage and handling conditions (5-30°C, sealed); no decomposition at room temperature; stable for 24 months under specified storage conditions; decomposes at >153°C to release CO₂ and water vapor; stable in acidic environment, hydrolyzes slowly in strong alkaline environment. - Incompatibilities: Strong bases (exothermic neutralization reaction); strong oxidants (oxidation reaction, generates heat); heavy metal salts (forms soluble chelates at low concentration, insoluble complexes at high concentration). - Hazardous Decomposition Products: Non-toxic CO₂ and water vapor when heated; no toxic decomposition products under normal conditions; neutralization products with strong bases are sodium citrate (non-toxic).

SECTION 11: Toxicological Information

- Acute Toxicity: Oral (Rat, LD₅₀): 3000 mg/kg; Dermal (Rabbit, LD₅₀): >5000 mg/kg; Inhalation (Rat, LC₅₀): >10 mg/m³ (4-hour exposure, dust). - Skin/Eye Irritation: Skin irritation (Category 2), causes mild redness; eye irritation (Category 2), causes severe redness and tearing. - Organ Toxicity: No acute or chronic organ damage reported at normal use dosage;

excessive oral ingestion may cause gastrointestinal discomfort, but no long-term organ damage; no liver or kidney toxicity reported. - Other Toxicity: No mutagenic, carcinogenic or teratogenic effects reported; no skin sensitization reported; food-grade product is safe for human consumption at recommended dosage.

SECTION 12: Ecological Information

- Fish (Zebrafish, LC₅₀): 100-1000 mg/L (96-hour exposure) - Daphnia (EC₅₀): 10-100 mg/L (48-hour exposure) - Algae (Growth Inhibition, EC₅₀): 100-1000 mg/L (72-hour exposure) - Biodegradability: Readily biodegradable (BOD₅ /COD = 0.7-0.9); degrades completely in water within 20-30 days. - Environmental Fate: Highly soluble in water; no bioaccumulation (BCF <100); hydrolyzes slowly in natural water; neutralized by natural buffering substances in water, no long-term ecological risks.

SECTION 13: Disposal Considerations

- Product Waste: Collect waste in sealed, labeled containers; dispose of via licensed waste treatment institutions (for non-food grade) or as general waste (for food grade, after confirmation); neutralize with alkaline substances before disposal if necessary; do not landfill or discharge into water bodies or sewers. - Packaging Waste: Rinse containers thoroughly with water (collect rinse water for neutralization treatment); dispose of as general waste (if food grade) or non-hazardous waste (if industrial grade); do not reuse or recycle contaminated packaging. - Special Disposal Notes: Comply with local environmental protection regulations for waste disposal; do not mix with other wastes during disposal; food-grade waste can be incinerated or composted (after approval).

SECTION 14: Transport Information

- UN Number: ADR/RID: Not regulated; IMDG: Not regulated; IATA-DGR: Not regulated - UN Proper Shipping Name: Not applicable (non-hazardous for transport) - Transport Class: Non-hazardous; Packaging Group: Not applicable; Environmental Hazards: No (low aquatic toxicity) - Special Precautions: Transport in sealed, dust-proof packaging (25 kg paper bags with food-grade PE inner liner or 200 L plastic drums); avoid collision, vibration and impact; keep away from strong bases, strong oxidants and food during transport; prevent rain, sunlight and high temperature; no special transport license required.

SECTION 15: Regulatory Information

- National Regulations (China): Complies with GB 1987-2007 (Food Additive - Citric Acid); GB/T 9009-2011 (Industrial Citric Acid); qualified for food, beverage, cosmetic and pharmaceutical use. - International Regulations: GHS Rev.9 (Skin Irrit. 2, Eye Irrit. 2, Aquatic Tox. 3); REACH (EU, registered); TSCA (US, listed); FDA (US, food additive, GRAS status); FCC-VI, USP-NF compliant.

SECTION 16: Other Information

- Revision Date: 03 FEB 2025 - Disclaimer: Based on current scientific knowledge and product testing data; this product is safe for use in recommended dosage, supplier not liable for damage caused by improper use, storage, handling or non-compliance with regulations; the information in this MSDS is accurate to the best of our knowledge at the time of revision.