



NEWAY SINOPHC TECH. LIMITED

ADD:RM. 204, BUILDING 3, NO. 188, AONA RD., CHINA (SHANGHAI) PILOT FREE TRADE ZONE.
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Safety Data Sheet (MSDS)

- Magnesium Citrate Food Grade

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

Date: 28 FEB 2026

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

1.1 Product Identifiers

- Product Name: Magnesium Citrate - Food Grade (Tetrahydrate)
- Product Number: MC-20260228
- Brand: SIGALD
- CAS-No.: 7779-25-1
- EINECS/EC-No.: 231-900-3
- MDL Number: MFCD00016774
- Synonyms: Trimagnesium citrate tetrahydrate; Food grade magnesium citrate; Citric acid magnesium salt

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
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1.3 Emergency telephone

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

1.4 Relevant Identified Uses and Uses Advised Against

- Identified Uses: Food additive (mineral fortifier, acidity regulator, sequestrant, anticaking agent, buffering agent) for beverage, dairy, bakery, confectionery, nutritional supplement and canned food industries.
- Uses Advised Against: Not for pharmaceutical injection; avoid excessive use beyond food additive dosage limits; not for use in strong alkaline high-temperature systems (decomposition risk); avoid long-term contact with aluminum alloys (mild chelation).

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 Pictograms: (Exclamation mark)
- Signal Word: **Warning**
- Hazard Statements:
 - H315: Causes skin irritation
 - H319: Causes serious eye irritation
 - H335: May cause respiratory irritation
 - H302: May be harmful if swallowed in large amounts
- Precautionary Statements:
 - P264: Wash skin thoroughly after handling
 - P271: Use only outdoors or in a well-ventilated area
 - P280: Wear protective gloves/eye protection
 - P302+P352: If on skin: Wash with plenty of water
 - P305+P351+P338: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 - P312: Call a POISON CENTER or doctor/physician if you feel unwell
 - P332+P313: If skin irritation occurs: Get medical advice/attention
 - P337+P313: If eye irritation persists: Get medical advice/attention
 - P301+P312: If swallowed and feeling unwell: Call a POISON CENTER or doctor

2.3 Physical and Chemical Hazards Non-combustible, no explosion risk; slightly hygroscopic; decomposes in strong alkaline high-temperature environments ($\geq 120^{\circ}\text{C}$, $\text{pH} > 9$) with no hazardous products; stable under normal food processing and storage conditions.

2.4 Health Hazards

- Local irritation: Dust/aqueous solution may cause mild skin redness/itching and eye irritation (redness, tearing) in direct contact; irritation is reversible with prompt rinsing.

- Respiratory hazard: Inhalation of bulk dust may cause mild respiratory tract irritation (cough, chest tightness) in sensitive individuals; no chronic respiratory effects.
 - Acute oral toxicity: Low toxicity; excessive ingestion may cause mild gastrointestinal discomfort (nausea, diarrhea, abdominal distension) due to magnesium ion overload; no systemic toxic effects at standard dosage.
 - **Food grade note:** Safe for human consumption when used in strict compliance with food additive dosage limits; magnesium is an essential mineral for the human body, metabolized normally with no adverse effects from normal dietary intake.
- 2.5 Environmental Hazards Low acute toxicity to aquatic organisms; high concentration may cause slight water pH reduction; fully soluble in water, no bioaccumulation; citrate and magnesium ions are natural nutrients in ecosystems, no eutrophication risk.
- 2.6 Other Hazards Slight hygroscopic caking under high humidity (>75%); no other hazards identified for food grade use under specified conditions.

SECTION 3: Composition/Information on Ingredients

- Substance / Mixture: Pure organic salt (food grade tetrahydrate)
- Chemical Name: Trimagnesium Citrate Tetrahydrate
- Formula: $C_6 H_6 Mg_3 O_{14} \cdot 4H_2O$
- Molecular Weight: 451.11 g/mol
- CAS-No.: 7779-25-1

Component	Classification	Concentration (w/w)	CAS No.	Hazard Statements
Magnesium Citrate ·4H ₂ O (food grade)	Mild hazardous (GHS Cat.2 skin/eye)	≥98.0%	7779-25-1	H302, H315, H319, H335
Moisture	Non-hazardous	15.0~19.0%	7732-18-5	None
Inorganic Salt Impurities	Non-hazardous	≤0.5%	-	None

SECTION 4: First Aid Measures

4.1 Description of First-Aid Measures

- **Inhalation:** Move victim to fresh air, keep airway open. Loosen tight clothing. If coughing or discomfort persists, rest and call a doctor/poison control center if needed.
- **Skin Contact:** Immediately remove contaminated clothing and shoes. Rinse affected skin with **plenty of running water** for 10-15 minutes. If irritation persists, apply mild anti-irritation ointment and seek medical advice. Wash contaminated clothing before reuse.
- **Eye Contact:** Immediately hold eyelids open and rinse eyes with **copious amounts of running water** for 15-20 minutes (rinse from inner to outer corner, no rubbing). Remove contact lenses if present and easy to do. Seek medical attention if irritation persists for more than 1 hour.
- **Ingestion:** Rinse mouth with plenty of water (do not swallow large amounts). Do **not** induce vomiting. Drink 1-2 cups of water or milk to dilute if discomfort occurs. Call a doctor if severe gastrointestinal symptoms (persistent diarrhea, vomiting) develop.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed

- Acute effects: Mild skin/eye irritation from direct contact; mild respiratory irritation from dust inhalation; mild gastrointestinal discomfort (diarrhea, nausea) from excessive ingestion.
- Delayed effects: No known delayed toxic effects based on comprehensive toxicological testing; prolonged unprotected skin contact may cause mild chronic dermatitis in sensitive individuals.

4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed Medical attention is recommended only for severe eye contact, persistent skin/respiratory irritation or severe gastrointestinal symptoms from excessive ingestion; no specific antidote, treat symptomatically (e.g., eye drops for irritation, electrolyte supplementation for severe diarrhea).

SECTION 5: Firefighting Measures

5.1 Extinguishing Media

- Suitable Extinguishing Media: Water spray, dry chemical powder, carbon dioxide (CO₂), foam.
- Unsuitable Extinguishing Media: No limitations; avoid direct high-pressure water jet (to prevent dust spread).

5.2 Special Hazards Arising from the Substance or Mixture

- Non-combustible; no flammable/explosive gases produced during combustion.

- Decomposes at high temperature (>300°C) to produce magnesium oxide, carbon dioxide and water vapor (no toxic combustion products); slight smoke may be generated during intense heating.
- Dust may form non-explosive suspensions in air; no explosion risk in normal food processing.

5.3 Advice for Firefighters

- Wear standard fire-fighting gear (dust mask, goggles, fire-resistant clothing); wear a self-contained breathing apparatus if decomposition smoke is excessive.
- Fight fire from upwind; cool exposed containers with water spray to prevent thermal expansion and hygroscopic caking.
- No special environmental precautions for fire water; citrate and magnesium ions are non-toxic to the environment.

SECTION 6: Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

- Wear personal protective equipment (N95/P95 dust mask, nitrile rubber gloves, safety goggles, dust-proof overalls) before cleaning up.
- Evacuate non-essential personnel from the spill area; ensure good ventilation to disperse dust.
- Do not touch the spilled material with bare hands; do not inhale dust; avoid contact with skin/eyes.

6.2 Environmental Precautions

- No special environmental precautions; the product is non-toxic and biodegradable, no harm to soil and water bodies even in large spills.
- Prevent large quantities of spilled material from entering drinking water sources as a precaution (no toxic risk, only slight pH change).

6.3 Methods and Materials for Containment and Cleaning Up

- **Small Spill (solid powder):** Gently sweep into a sealed HDPE plastic container with a plastic broom (no metal tools to avoid dust flying); reuse or dispose of as non-hazardous waste.
- **Large Spill (solid powder):** Contain with plastic dikes; collect with a dust-free vacuum cleaner into sealed drums. Clean the contaminated area with a small amount of water (rinse water can be discharged directly to municipal sewers).
- **Spill of aqueous solution:** Absorb with inert absorbent (vermiculite, sand) if needed; collect the absorbent into sealed containers and dispose of as non-hazardous waste; no neutralization required.

6.4 Reference to Other Sections For waste disposal, see Section 13; for personal protection, see Section 8.

SECTION 7: Handling and Storage

7.1 Precautions for Safe Handling

- Operate in a **well-ventilated area** with local exhaust ventilation and dust collection equipment; avoid dust generation and inhalation during weighing/mixing.
- Use dedicated food-grade equipment (304/316 stainless steel, HDPE) for handling; no cross-use with strong alkaline food additives/raw materials (prevents decomposition).
- Strictly follow food additive dosage limits (no overuse); record the usage amount in detail (traceable).
- Wear specified PPE during all operations; wash hands/face thoroughly with soap and water after handling; do not eat/drink/smoke in the operation area.
- Avoid contact with strong alkalis (NaOH, KOH) at high temperature (>120°C) to prevent decomposition (loss of sequestrant and fortifier efficacy).

7.2 Conditions for Safe Storage, Including Any Incompatibilities

- **Storage Conditions:** Store in a cool, dry, well-ventilated food-grade warehouse; temperature $\leq 25^{\circ}\text{C}$, relative humidity $\leq 65\%$; keep container tightly sealed to prevent moisture absorption (slight hygroscopy) and caking.
- **Segregation Storage:** Store separately from strong alkalis, strong oxidizing agents and high-moisture food raw materials; set up a dedicated storage area with clear product labels.
- **Packaging Requirements:** Use sealed food-grade HDPE plastic drums or paper bags with inner PE liner; mark the product name, CAS number, dosage limit and mild irritation hazard warning on the package.
- **Shelf Life: 24 months** (unopened, under specified storage conditions); 6 months after opening (seal tightly and use as soon as possible, check for caking/color change before use).

- **Inventory Management:** Implement "first-in, first-out" principle; conduct regular quality inspections (appearance, pH, purity); discard if caked and cannot be dispersed (loss of efficacy).

7.3 Specific End Use Only for food production as mineral fortifier/acidity regulator/sequestrant/anticaking agent; strictly comply with national food additive usage standards and dosage limits.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control Parameters

- Occupational Exposure Limit (OEL):
 - China: MAC (Maximum Allowable Concentration) 10 mg/m³ (air, dust)
 - US OSHA: PEL 10 mg/m³ (8-hour TWA, dust)
 - EU: OEL 5 mg/m³ (8-hour TWA, dust)
- Biological Exposure Limit (BEL): No specific limit for food grade use.

8.2 Exposure Controls

- **Engineering Controls:** Install local exhaust ventilation and high-efficiency dust collection equipment (HEPA filter) at the operation post; maintain good air circulation in storage/operation areas.
- **Personal Protective Equipment (PPE):**
 - Respiratory Protection: Wear N95/P95 dust mask during dry operation (weighing, mixing); no respiratory protection needed for aqueous solution handling.
 - Eye/Face Protection: Wear impact-resistant safety goggles with side shields (prevent dust/solution splashing into eyes).
 - Skin Protection: Wear chemical-resistant nitrile rubber gloves (length ≥30cm) and dust-proof food-grade overalls; wear anti-slip plastic shoes.
 - Hand Washing: Set up dedicated hand washing facilities near the operation area with neutral soap and running water; no emergency shower/eye wash required (mild irritation only).
- **Environmental Exposure Controls:** Set up dust collection and treatment systems; no special treatment for cleaning wastewater (can be discharged directly); prevent dust from escaping into the environment.

8.3 Monitoring

- Regularly monitor the dust concentration in the operation area (at least once a quarter); ensure it meets occupational exposure limits.
- Conduct regular occupational health examinations for operators (at least once a year), focusing on skin, eyes and respiratory system.

SECTION 9: Physical and Chemical Properties

Property	Details (25°C, 1 atm)
Physical State	White crystalline powder/crystals
Color	Pure white (slightly off-white allowed for food grade)
Odor	Odorless
Taste	Slightly salty (food grade)
Melting Point	150°C (decomposes on heating, loses water)
Boiling Point	Not applicable (decomposes before boiling)
Flammability	Non-combustible (NFPA Flammability: 0)
Flash Point	Not applicable
Autoignition Temperature	>300°C
Decomposition Temperature	>150°C (loses water, decomposes at >300°C)
pH Value (1% aqueous solution)	5.5-7.0 (weakly acidic to neutral)
Water Solubility	12.0 g/100mL (25°C); solubility increases with temperature
Solubility	Insoluble in ethanol, ether, benzene and organic solvents
Hygroscopy	Slightly hygroscopic (absorbs moisture in high humidity)
Density (25°C)	1.73 g/cm ³ (solid)

Property	Details (25°C, 1 atm)
Bulk Density	0.8-1.1 g/cm ³
Vapor Pressure	<0.0001 kPa (25°C)
Viscosity	Not applicable (solid); 1% aqueous solution: 1.4 mPa·s (25°C)
Corrosivity	Non-corrosive to 304/316 stainless steel, HDPE, PVC; no corrosivity to mild steel
Reactivity	Reacts with strong alkalis (decomposition); sequesters metal ions (Ca ²⁺ , Fe ³⁺ , Cu ²⁺); stable with acids/neutral substances

SECTION 10: Stability and Reactivity

10.1 Chemical Stability: **Highly stable** under normal food processing and storage conditions ($\leq 25^{\circ}\text{C}$, dry, sealed); no decomposition or quality change when used as specified for food grade.

10.2 Possibility of Hazardous Reactions:

- Decomposes in **strong alkaline high-temperature water** ($>120^{\circ}\text{C}$, $\text{pH}>9$) to form magnesium carbonate and citrate (loss of sequestrant/fortifier efficacy; no violent reaction).
- Sequesters heavy metal ions (Fe³⁺, Cu²⁺) to form stable complexes (intentional use in food processing; no hazardous reaction).
- No hazardous reactions with common food-grade ingredients (sugars, starches, proteins, fats, flavors, weak acids/alkalis).

10.3 Conditions to Avoid: High temperature ($>150^{\circ}\text{C}$, decomposition), high humidity ($>75\%$, caking), contact with strong alkalis at high temperature (decomposition), direct sunlight (moisture absorption).

10.4 Incompatible Materials: Concentrated strong alkalis (sodium hydroxide, potassium hydroxide), strong alkaline food additives (sodium carbonate), high-temperature alkaline food systems, strong reducing agents (at high temperature).

10.5 Hazardous Decomposition Products: Magnesium oxide (MgO), carbon dioxide (CO₂) and water vapor (H₂O) at $>300^{\circ}\text{C}$; no hazardous decomposition products under food processing temperatures ($<120^{\circ}\text{C}$) (only water loss).

10.6 Hazardous Polymerization: Will not occur under any conditions (organic salt, no polymerization).

SECTION 11: Toxicological Information

11.1 Information on Toxicological Effects

- **Acute Toxicity:**
 - Oral (Rat, LD₅₀): 6400 mg/kg bw (low toxicity, mild gastrointestinal effect only)
 - Dermal (Rabbit, LD₅₀): >5000 mg/kg bw (no significant dermal absorption, mild irritation)
 - Inhalation (Rat, LC₅₀): >10 mg/m³ (4-hour exposure, dust; mild respiratory irritation only)
- **Skin Corrosion/Irritation:** Causes **mild skin irritation (Grade 2)** (Rabbit, 4-hour exposure); slight redness, no blistering/necrosis (GHS Cat.2).
- **Serious Eye Damage/Eye Irritation:** Causes **serious eye irritation (Grade 2)** (Rabbit, 30-second exposure); redness, tearing, no permanent damage (GHS Cat.2).
- **Respiratory or Skin Sensitization:** No sensitizing effects (no allergic reaction from repeated exposure in animal tests).
- **Germ Cell Mutagenicity:** Negative in Ames test and chromosome aberration test; no mutagenicity at any dose.
- **Carcinogenicity:** IARC Group 3 (not classifiable as to its carcinogenicity to humans); no carcinogenic effect in long-term animal tests.
- **Reproductive Toxicity:** No reproductive toxicity (Rat, 1000 mg/kg bw/day for 90 days); no adverse effects on fertility and fetus (only local mild irritation).
- **Specific Target Organ Toxicity (Single/Repeated Exposure):** No systemic target organ toxicity; repeated exposure causes only local mild irritation (skin/eye/respiratory tract); excessive oral intake causes mild gastrointestinal tract irritation.
- **Aspiration Hazard:** Low (solid powder; no aspiration hazard for aqueous solution).

11.2 Additional Information: Toxicological properties are well studied; the only health risks are **local mild irritating effects** from direct contact and mild gastrointestinal discomfort from excessive ingestion (no systemic toxicity); food grade use is safe when dosage is controlled and the product is used in accordance with food processing guidelines.

SECTION 12: Ecological Information

12.1 Toxicity:

- Aquatic toxicity (Zebrafish, LC₅₀): >3000 mg/L (96-hour exposure; no direct toxicity)
- Aquatic toxicity (Daphnia, EC₅₀): >2500 mg/L (48-hour exposure; no direct toxicity)
- Aquatic toxicity (Green Algae, EC₅₀): >3000 mg/L (72-hour exposure; no adverse effects)
- No direct chemical toxicity to aquatic organisms; no pH-induced effects at normal use concentrations.

12.2 Persistence and Degradability:

- Fully biodegradable (inorganic-organic hybrid); citrate is degraded by microbes in natural water/soil to CO₂ and water; magnesium ions are utilized by algae/plants as a nutrient.
- No hydrolysis under normal environmental conditions (25°C, pH 6-9); stable in water/soil until biodegraded or utilized by organisms.

12.3 Bioaccumulative Potential:

- Log Kow: -5.2 (no lipophilicity); no bioaccumulation in aquatic organisms (bioconcentration factor BCF <5).
- Magnesium and citrate ions are essential for living organisms; do not accumulate in the food chain.

12.4 Mobility in Soil:

- Moderately mobile in soil (high water solubility, slight adsorption to soil particles); slight leaching risk to groundwater (no toxic risk, magnesium is a beneficial soil nutrient).
- Adsorption coefficient (Koc): 40-60 (moderate mobility); citrate is biodegraded in soil, magnesium ions are retained by soil colloids.

12.5 Results of PBT and vPvB Assessment:

- P (Persistence): No (fully biodegradable)
- B (Bioaccumulation): No (BCF <5)
- T (Toxicity): No (no direct aquatic toxicity)
- Not classified as PBT/vPvB (excellent ecological safety).

12.6 Other Adverse Effects:

- No adverse effects on soil and water ecosystems at any concentration; magnesium ions can improve soil fertility; citrate is a natural chelator with no environmental harm.
- No eutrophication risk; citrate is rapidly biodegraded, magnesium is not a eutrophication-causing element.

SECTION 13: Disposal Considerations

13.1 Waste Treatment Methods

- **Product Waste (food grade):** Unused/expired product is **non-hazardous waste**; can be disposed of with general industrial solid waste, dissolved in water for biological wastewater treatment (citrate biodegraded, magnesium utilized by microbes) or directly mixed into soil as a mineral nutrient.
- **Contaminated Packaging:** Rinse the packaging with a small amount of water (collect rinse water for normal discharge); the rinsed packaging can be recycled as non-hazardous plastic/paper waste.
- **Spilled Material/Contaminated Absorbent:** Collected material can be reused (if not contaminated); contaminated material is disposed of as product waste (Section 6.3).
- **Aqueous Waste Solution:** No neutralization required; discharge directly to municipal sewage system or hand over to wastewater treatment units (complies with national discharge standards).

13.2 Disposal Compliance:

- Comply with China's *Solid Waste Pollution Control Law* and *Water Pollution Prevention and Control Law*; no hazardous waste disposal procedures required.
- Comply with international regulations (REACH, EPA, Basel Convention); dispose of in accordance with local environmental protection rules; the product can be directly released to the environment without harm.

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: -;



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IMDG: -; IATA-DGR: -14.5 Environmental Hazards: ADR/RID: No; IMDG Marine Pollutant: No; IATA-DGR: No 14.6 Special Precautions for User:

- Transport in ordinary closed dry transport vehicles; avoid mixed transport with strong alkalis, strong oxidizing agents and high-moisture food raw materials.
 - The vehicle is equipped with leak-proof facilities; avoid direct sunlight, rain, high temperature (>30°C) and violent collision during transport.
 - Load/unload gently to prevent packaging damage and powder leakage; no special requirements for drivers/escorts (follows normal road transport regulations).
- 14.7 Packaging Requirements:
- Use food-grade HDPE plastic drums or paper bags with inner PE liner (sealed, moisture-proof); the packaging meets food safety and transport requirements.
 - Mark the product name, CAS number, net weight, storage conditions and mild irritation hazard warning (skin/eye) on the package.

SECTION 15: Regulatory Information

15.1 National/International Regulations (Food Grade)

- **China:**
 - GB 2760-2021 *National Food Safety Standard for the Use of Food Additives* (approved for all food categories; maximum usage: 0.05-2.0 g/kg according to food type)
 - GB 1886.242-2021 *National Food Safety Standard for Food Additive Magnesium Citrate*
 - *Hazardous Chemical Safety Management Regulation* (non-hazardous chemical classification)
 - **EU:**
 - EC 1333/2008 (food additive code: E345; approved for all food categories; GMP dosage limit)
 - REACH Regulation (listed in the EU Inventory; no SVHC classification; occupational exposure limit: 5 mg/m³)
 - CLP Regulation (GHS classification: Skin/eye irritation Cat.2)
 - **US:**
 - FDA 21 CFR 182.5446 (food additive approval; GRAS certification; no strict dosage limit, GMP use)
 - OSHA 29 CFR 1910.1000 (occupational exposure limit: 10 mg/m³; non-hazardous for transport)
 - EPA (aquatic toxicity classification: Class IV, practically non-toxic)
 - **International:**
 - Codex Alimentarius Commission (CAC): CODEX STAN 192-1995 (approved for food use; GMP dosage limit)
 - GHS Rev.9 (non-hazardous for transport; mild skin/eye irritation Cat.2 for handling)
- 15.2 Other Regulations:
- Comply with occupational health and safety regulations (GBZ 2.1-2019 in China, OSHA in US) for operators (mild irritation protection).
 - Food production enterprises must comply with GMP/HACCP standards; record the usage of magnesium citrate in detail (traceable).
 - Comply with national mineral fortifier regulations (e.g., China GB 14880) for food fortification use.

SECTION 16: Other Information

- **Further Information:** This MSDS is for **Food Grade Trimagnesium Citrate Tetrahydrate (CAS 7779-25-1)**, compliant with GB/T 16483, GB/T 17519 and GHS Rev.9 standards. It is intended for safe handling, storage, transport and use in food production. The supplier is not liable for any damage caused by **improper use, overdose, mixed storage/transport with incompatible substances** or non-compliance with national food additive regulations.
- **Key Reminder for Food Use:** Strictly follow the dosage limit in GB 2760-2021 and GB 14880 (mineral fortifier); avoid use in high-temperature strong alkaline food systems (>120°C, pH>9) to prevent decomposition; utilize sequestrant function to chelate metal ions and prevent food discoloration/oxidation; suitable for magnesium fortification in beverage and dairy products (high solubility and bioavailability).
- **Revision Date:** 28 FEB 2026
- **Version:** 1.0