AuSaMicS™ Life Science

TECHNICAL DATA SHEET

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Magnesium Citrate, Anhydrous — Catalogue No. ASC-8065
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Product Information

Product name	Magnesium Citrate, Anhydrous
Catalogue number	ASC-8065
Other names	Trimagnesium dicitrate anhydrous; trimagnesium citrate; tribasic magnesium citrate; E345(i)
CAS No. / EC No.	3344-18-1 / 222-093-9
Formula	$Mg_3(C_6H_5O_7)_2$ ($C_{12}H_{10}Mg_3O_{14}$)
Molecular weight	451.12 g/mol
Theoretical magnesium	16.2%
HS code	2918.15

Description and Intended Use

Magnesium citrate anhydrous is a white to off-white, slightly hygroscopic powder or granule. It is soluble in water and freely soluble in dilute acids. It is used as a magnesium source in dietary supplements, pharmaceutical manufacture and fortified foods where permitted. It is supplied as a raw material, not as a finished therapeutic product.

Mode of Action

In the gastrointestinal tract the salt dissociates into magnesium ions and citrate, and magnesium is absorbed mainly in the small intestine. Human studies found magnesium citrate more soluble and more bioavailable than magnesium oxide. Unabsorbed magnesium draws water into the bowel by osmosis, which causes the laxative effect seen at high doses.

Specifications

Parameter	Specification	Method
Appearance	White to off-white powder or granules	Visual
Identification (magnesium, citrate)	Passes tests A and B	USP
Magnesium (dried basis)	14.5–16.4%	Complexometric titration
pH (50 mg/mL suspension)	5.0–9.0	Potentiometric
Loss on drying	≤ 2.0%	Gravimetric
Chloride	≤ 0.05%	Limit test
Sulfate	≤ 0.2%	Limit test
Calcium	≤ 1.0%	Limit test
Iron	≤ 200 ppm	Limit test

Parameter	Specification	Method
Arsenic	≤ 3 ppm	Limit test
Heavy metals (as Pb)	≤ 50 ppm	Limit test

Microbiological Limits

Test	Specification (CFU)	Method
Total plate count	≤ 1,000 CFU/g	Plate count
Yeasts and moulds	≤ 100 CFU/g	Plate count
Escherichia coli	Negative (absent)	Enrichment
Salmonella	Negative in 25 g	Enrichment
Staphylococcus aureus	Negative in 25 g	Enrichment

Dosing Guidance

- Calculate the amount from the lot magnesium result: mass of salt = target magnesium ÷ (Mg% ÷ 100).
- Example: 100 mg magnesium from a lot at 15.4% Mg requires 649 mg of magnesium citrate anhydrous.
- Declare elemental magnesium, not salt weight, on finished product labels.
- Upper level for supplemental magnesium in adults: 350 mg/day (NHMRC, Australia); 250 mg/day (EU).

Regulatory Status

Region	Status
Australia / New Zealand	Food uses are governed by the Food Standards Code (Schedules 15–17); therapeutic goods by the TGA. Confirm the permitted use for each product category.
European Union	Magnesium salts of citric acid are permitted mineral forms (Directive 2002/46/EC; Regulation (EC) No 1925/2006). Trimagnesium dicitrate anhydrous is food additive E345(i) in solid food supplements up to 100,000 mg/kg (Regulation (EU) 2024/346).
Pharmacopoeias	USP and Ph. Eur. monographs

Storage and Shelf Life

Storage	Store at 15–25 °C in the original, tightly closed container. Keep dry and away from direct sunlight.
Shelf life	2 years from the date of manufacture when stored as directed. See the COA for the lot expiry date.
Incompatibilities	Strong oxidising agents.

Safety

The powder is classified as a skin, eye and respiratory irritant (GHS07, Warning). Avoid breathing dust and wear gloves and eye protection when handling. Read the Safety Data Sheet before use.

References

- United States Pharmacopeia. Magnesium Citrate monograph. USP–NF, current edition.
- Commission Regulation (EU) 2024/346 of 26 January 2024 — trimagnesium dicitrate anhydrous, E345(i).
- Directive 2002/46/EC, Annex II, and Regulation (EC) No 1925/2006, Annex II.
- NHMRC. Nutrient Reference Values for Australia and New Zealand — Magnesium.
- Lindberg JS, Zobitz MM, Poindexter JR, Pak CYC. Magnesium bioavailability from magnesium citrate and magnesium oxide. J Am Coll Nutr. 1990;9(1):48–55.
- Walker AF, Marakis G, Christie S, Byng M. Mg citrate found more bioavailable than other Mg preparations in a randomised, double-blind study. Magnes Res. 2003;16(3):183–191.

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