

105% of $\text{Al}_3\text{Mg}_{10}(\text{OH})_{31}(\text{SO}_4)_2$, calculated on the dried basis. A white odourless crystalline powder. Insoluble in water and in alcohol; soluble in dilute solutions of mineral acids. It loses between 10 and 20% of its weight on drying at 200° for 4 hours.

Profile

Magaldrate is an antacid (see p.1692) that is given in oral doses of up to about 2 g.

Preparations

BP 2008: Magaldrate Oral Suspension;

USP 31: Magaldrate and Simethicone Oral Suspension; Magaldrate and Simethicone Tablets; Magaldrate Oral Suspension; Magaldrate Tablets.

Proprietary Preparations (details are given in Part 3)

Arg.: Riopan; **Austria:** Riopan; **Belg.:** Gastralm; Riopan; **Braz.:** Riopan; **Cz.:** Marax†; **Fr.:** Riopan; **Ger.:** Gastrin; Gastrostad†; Glysant; Hevert-Mag; Magastrin; Marax; Riopan; Simaphil; **Gr.:** Felfar; Riopan; **Ital.:** Gadral; Magaltop; Magralbi; Riopan; **Pol.:** Malugastrin; **Port.:** Riopan; **Rus.:** Magal-phil (Магальфин); **S.Afr.:** Riopone; **Spain:** Bemalon; Gastromok; Magion; Minton; **Switz.:** Riopan; **USA:** Iosopan; Riopan; **Venez.:** Cremag.

Multi-ingredient: **Arg.:** Aci-Tip; Carbogosal Antiacido†; **Austral.:** Mylanta Heartburn Relief†; **Braz.:** Riopan Plus; **Chile:** Aci-Tip†; Antiax; **Hong Kong:** Nilicid-MPS†; **India:** Maglid; pH4; Rolac Plus; Ulge†; **Indon.:** Asidrat; Magalat; Nudramag; **Mex.:** Nilicid†; Riopan; **Spain:** Compagel†; **Turk.:** Asidopan Plus; Simegat Plus; **UK:** Bisodol Extra; Bisodol Heartburn Relief; **USA:** Iosopan Plus; Lovsum Plus; Riopan Plus; **Venez.:** Cremalon.

Magnesium Carbonate

Bázisos magnézium-karbonát; E504; Magnesii Carbonas; Magnesi-subcarbonas; Magnesio, carbonato de; Magnésium, carbonate de; Magnesiumsubkarbonaatti; Magnesiumsubkarbonat; Magnezium węglan; Magnezium Carbonate; Magnio subkarbonatas; Uhlíčan hořečnatý zásadité.

Магния Карбонат

CAS — 546-93-0 (anhydrous magnesium carbonate); 23389-33-5 (hydrated normal magnesium carbonate); 39409-82-0 (hydrated basic magnesium carbonate).

ATC — A02AA01; A06AD01.

ATC Vet — QA02AA01; QA06AD01.

Pharmacopoeias. In *Chin.*, *Eur.* (see p.vii), *Jpn*, *US*, and *Viet*. Some pharmacopoeias include a single monograph that permits both the light and heavy varieties while some have 2 separate monographs for the 2 varieties.

Ph. Eur. 6.2 (Magnesium Carbonate, Heavy; Magnesii Subcarbonas Ponderosus). A hydrated basic magnesium carbonate containing the equivalent of 40 to 45% of MgO. A white or almost white powder. 15 g has an apparent volume before settling of not more than 60 mL. Practically insoluble in water; dissolves in dilute acids with strong effervescence.

Ph. Eur. 6.2 (Magnesium Carbonate, Light; Magnesii Subcarbonas Levis). A hydrated basic magnesium carbonate containing the equivalent of 40 to 45% of MgO. A white or almost white powder. 15 g has an apparent volume before settling of at least 100 mL. Practically insoluble in water; dissolves in dilute acids with strong effervescence.

USP 31 (Magnesium Carbonate). A basic hydrated magnesium carbonate or a normal hydrated magnesium carbonate containing the equivalent of 40.0 to 43.5% of MgO. It is an odourless, bulky white powder or light, white, friable masses. Practically insoluble in water; insoluble in alcohol; dissolves in dilute acids with effervescence.

Profile

Magnesium carbonate is an antacid with general properties similar to those of magnesium hydroxide (below) that is given in oral doses of up to about 500 mg. When given orally, it reacts with gastric acid to form soluble magnesium chloride and carbon dioxide in the stomach; the carbon dioxide may cause flatulence and eructation. Magnesium carbonate is often given with aluminium-containing antacids such as aluminium hydroxide, which counteract its laxative effect.

Magnesium carbonate may be used as a magnesium supplement. It is also used as a food additive.

Preparations

BP 2008: Aromatic Magnesium Carbonate Mixture; Compound Magnesium Trisilicate Oral Powder; Kaolin Mixture; Magnesium Sulphate Mixture; Magnesium Trisilicate Mixture;

USP 31: Alumina and Magnesium Carbonate Oral Suspension; Alumina and Magnesium Carbonate Tablets; Alumina, Magnesium Carbonate, and Magnesium Oxide Tablets; Calcium and Magnesium Carbonates Oral Suspension; Calcium and Magnesium Carbonates Tablets; Magnesium Carbonate and Citric Acid for Oral Solution; Magnesium Carbonate and Sodium Bicarbonate for Oral Suspension; Magnesium Carbonate, Citric Acid, and Potassium Citrate for Oral Solution; Magnesium Citrate Oral Solution.

Proprietary Preparations (details are given in Part 3)

Arg.: Polvo Roge; **Austria:** Magnofit; **Fr.:** Mag 2; Mag 2 Junior; Sargemag; **Ger.:** Biocetra Magnesium 365; Palmicol; **Gr.:** Limonata Citromagnes; **Hung.:** Magnesolv; **Ital.:** Magnofit; **NL:** Additiva Magnesium; **Magnezin**; **S.Afr.:** Be-Lax; **Switz.:** Magnesium Nutrimed; **USA:** Mag-Carb.

Multi-ingredient: numerous preparations are listed in Part 3.

Used as an adjunct in: **Arg.:** Bufferin†; **Drstan** Analgesico†; **Diston** Compuesto; **Braz.:** Bufferin; **Somalgin**; **Canad.:** Aspirin with Stomach Guard; Bufferin; Tri-Buffered ASA; **Ital.:** Bufferin†; **USA:** Adrin-B; Bufferin; Buffer; Extra Strength Bayer Plus.

Magnesium Citrate

Magnesii citras; Magnesio, citrato de; Magnésium, citrate de.

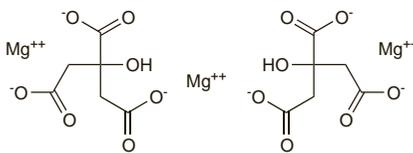
Магний Цитрат

$\text{C}_{12}\text{H}_{10}\text{Mg}_3\text{O}_{14} = 451.1$.

CAS — 3344-18-1.

ATC — A06AD19; A12CC04; B05CB03.

ATC Vet — QA06AD19; QA12CC04; QB05CB03.



Pharmacopoeias. In *Eur.* (see p.vii) and *US*.

Ph. Eur. 6.2 (Magnesium Citrate, Anhydrous). A white or almost white, fine, slightly hygroscopic powder. Soluble in water; practically insoluble in alcohol. It dissolves in dilute hydrochloric acid. Store in non-metallic, airtight containers.

USP 31 (Magnesium Citrate). A 5% suspension in water has a pH of 5.0 to 9.0. Store in airtight containers.

Profile

Magnesium citrate is an osmotic laxative (p.1693) used as a bowel evacuant before investigational procedures or surgery of the colon. Dosages have ranged from about 11 to 25 g of magnesium citrate. In the UK, an aqueous solution containing magnesium citrate is prepared from a sachet (*Citramag*) containing about 11.6 g of magnesium carbonate and about 17.8 g of anhydrous citric acid by mixing with 200 mL of hot water. After the solution has cooled, one dose (the contents of one sachet) is taken by mouth at 8 a.m. the day before the procedure, and a second dose between 2 and 4 p.m. For doses in children, see below. A high fluid intake and low residue diet are needed with such bowel preparations. Magnesium citrate is also used with sodium picosulfate, p.1771.

Magnesium citrate is given as a magnesium supplement in doses of up to about 1.9 g daily by mouth.

For the general properties of magnesium salts, see p.1678.

Administration in children. The *BNFC* recommends the following oral doses of magnesium citrate (*Citramag*) for use as a bowel cleanser in children, to be taken on the day before the procedure:

- 5 to 10 years: / of a sachet at 8 a.m. and / of a sachet between 2 and 4 p.m.
- 10 to 18 years: / to 1 sachet at 8 a.m. and / to 1 sachet between 2 and 4 p.m.

For reconstitution directions, see above.

Migraine. For mention of the use of magnesium supplementation, including magnesium citrate, for the prophylaxis of migraine, see p.1681.

Preparations

USP 31: Magnesium Citrate for Oral Solution.

Proprietary Preparations (details are given in Part 3)

Arg.: Holomagnesio; Limonada Roge; **Austral.:** Mag Cit Prep†; **Austria:** Magnesium Diasporal; Magnofit; **Belg.:** Magnetop†; **Canad.:** Citro-Mag; **Chile:** Magnesium Diasporal†; **Magnesol†;** **Ger.:** Magnesium Diasporal; **Magnesium Verla N;** **Presselin** Helozon P†; **Hong Kong:** Citro-Mag†; **Hung.:** Magnesium Diasporal†; **Pol.:** Magnesol; **Switz.:** Magnegon; **Magnesium Biomed;** **Magnesium Diasporal;** **Magnesium-Sandoz;** **UK:** Citramag; **USA:** Evac-Q-Mag.

Multi-ingredient: **Arg.:** Holomagnesio B6; **Magnebe;** **Total Magnesiano B6;** **Austral.:** Go Kit; Go Kit Plus†; **Austria:** Magnosolv; **Belg.:** Carbobet; **Canad.:** Royvac Kit; **Chile:** Laxogeno; **Fr.:** Citrocholine; **Magne-B;** **Ger.:** Acidovert†; **Lithurex S†;** **Magnorot N;** **Gr.:** Magnesium Sandoz; **Hung.:** Beres Magnesium + B; **Magurli†;** **Pregmag;** **Irl.:** Picolax; **Ital.:** Pomag; **Spain:** Salmagne; **UK:** CitraFleet; **Picolax.**

Magnesium Hydroxide

E528; Hydroxidum hořečnatý; Magnesii hydroxidum; Magnesio, hidróxido de; Magnesium Hydrate; Magnésium, hydroxyde de; Magnesiumhydroxid; Magnesiumhydroxid; Magnézium-hydroxid; Magnezium Hydroksit; Magnio hidroksidas.

Магния Гидроксид

$\text{Mg}(\text{OH})_2 = 58.32$.

CAS — 1309-42-8.

ATC — A02AA04; G04BX01.

ATC Vet — QA02AA04; QG04BX01.

NOTE. Compounded preparations of magnesium hydroxide may be represented by the following names:

- Co-magaldrox x/y (*BAN*)—where x and y are the strengths in milligrams of magnesium hydroxide and aluminium hydroxide respectively.

Pharmacopoeias.

In *Eur.* (see p.vii), *Int.*, *US*, and *Viet*. **Ph. Eur. 6.2** (Magnesium Hydroxide). A fine white or almost white amorphous powder. Practically insoluble in water; dissolves in dilute acids. A solution in water is alkaline to phenolphthalein.

USP 31 (Magnesium Hydroxide). A bulky white powder. Practically insoluble in water, in alcohol, in chloroform, and in ether; soluble in dilute acids. Store in airtight containers.

Adverse Effects, Treatment, and Precautions

As for magnesium salts in general, see p.1679. Magnesium hydroxide may cause diarrhoea, an effect that is dose-dependent. Hypermagnesaemia may occur, usually in patients with renal impairment.

Hypermagnesaemia. There have been reports of hypermagnesaemia in infants given magnesium-containing antacids,¹⁻³ and in an adult patient with normal renal function but bowel obstruction.⁴

1. Brand JM, Greer FR. Hypermagnesemia and intestinal perforation following antacid administration in a premature infant. *Pediatrics* 1990; **85**: 121-4.
2. Alison LH, Bulugahapitiya D. Laxative induced magnesium poisoning in a 6 week old infant. *BMJ* 1990; **300**: 125.
3. Sullivan JE, Berman BW. Hypermagnesemia with lethargy and hypotonia due to administration of magnesium hydroxide to a 4-week-old infant. *Arch Pediatr Adolesc Med* 2000; **154**: 1272-4.
4. Laughlin SA, McKinney PE. Antacid-induced hypermagnesemia in a patient with normal renal function and bowel obstruction. *Ann Pharmacother* 1998; **32**: 312-15.

Interactions

As outlined on p.1692, antacids, including magnesium salts, interact with many other drugs both by alterations in gastric pH and emptying, and by formation of complexes that are not absorbed. Interactions can be minimised by giving the antacid and any other medications 2 to 3 hours apart.

Pharmacokinetics

Magnesium hydroxide, given orally, reacts relatively rapidly with hydrochloric acid in the stomach to form magnesium chloride and water. About 30% of the magnesium ions are absorbed from the small intestine, as described for Magnesium Salts, p.1680.

Uses and Administration

Magnesium hydroxide is an antacid (see p.1692) that is given in oral doses of up to about 1 g. It is often given with aluminium-containing antacids such as aluminium hydroxide which counteract its laxative effect.

Magnesium hydroxide is also given as an osmotic laxative (p.1693) in oral doses of about 2 to 5 g.

Magnesium hydroxide has also been used as a food additive and as a magnesium supplement in deficiency states.

Preparations

BP 2008: Co-magaldrox Oral Suspension; Co-magaldrox Tablets; Liquid Paraffin and Magnesium Hydroxide Oral Emulsion; Magnesium Hydroxide Mixture;

USP 31: Alumina and Magnesia Oral Suspension; Alumina and Magnesia Tablets; Alumina, Magnesia, and Calcium Carbonate Oral Suspension; Alumina, Magnesia, and Calcium Carbonate Tablets; Alumina, Magnesia, and Simethicone Oral Suspension; Alumina, Magnesia, and Simethicone Tablets; Alumina, Magnesia, Calcium Carbonate, and Simethicone Tablets; Aspirin, Alumina, and Magnesia Tablets; Calcium Carbonate and Magnesia Tablets; Calcium Carbonate, Magnesia, and Simethicone Tablets; Magnesia Tablets; Magnesium Hydroxide Paste; Milk of Magnesia.

Proprietary Preparations (details are given in Part 3)

Arg.: Leche de Magnesia Phillips; **Magnesia San Pellegriño;** **Braz.:** Leite de Magnesia de Phillips; Leite de Magnesia; **Magnesio†;** **Mylanta Plus;** **Canad.:** Milk of Magnesia; Phillips' Magnesia Tablets; Phillips' Milk of Magnesia; **Chile:** Leche de Magnesia Phillips; **Magnesia Pasteur;** **Tabletas Antiácidas;** **Denm.:** **Magnesia;** **Fin.:** Emgesan; **Magnesiamaito;** **Fr.:** Carbone; **Magnesia S Pellegriño†;** **Gr.:** Milk of Magnesia; **Hung.:** Antagel M; **India:** Tricaine-MPS; **Indon.:** Laxasium; **Irl.:** Milk of Magnesia; **Israel:** Magnesia S Pellegriño; **Milk of Magnesia;** **Ital.:** Citrato Espresso S. Pellegriño; **Magnesia S Pellegriño;** **Magnesia Volta†;** **Mex.:** Leche de Magnesia Normex; **Port.:** Leite Magnesia Phillips; **Magnesia San Pellegriño;** **S.Afr.:** Babys own Tummy Tablets; **Deopent†;** **Spain:** **Magnesia;** **Magnesia San Pellegriño;** **Swed.:** Emgesan; **Switz.:** **Magnesia S Pellegriño;** **Thai.:** Milk of Magnesia; **Turk.:** Magcine; **Magnesie Calcinee;** **Magnesium Naneli Lafa;** **Magnokal;** **UK:** Milk of Magnesia; **USA:** **Doculac;** **Milk of Magnesia;** **Pedia-Lax;** **Phillips' Chewable;** **Phillips' Milk of Magnesia;** **Venez.:** **Magnesia San Pellegriño.**

Multi-ingredient: numerous preparations are listed in Part 3.

Used as an adjunct in: **Canad.:** C2 with Codeine†; **Denm.:** Kodamid; **Kodimagnyl;** **Magnyl;** **Gr.:** **Ascriptin†;** **Indon.:** **Naspro;** **Rheumapill;** **Israel:** **Ascriptin†;** **Ital.:** **Ascriptin;** **Aspirina 03;** **Mex.:** **Ascriptin;** **USA:** **Arthritis Pain Formula;** **Ascriptin;** **Aspirinox;** **Cope;** **Magnaprin†;** **Vanquish;** **Venez.:** **Ascriptin.**