Magnesium Chloride

$MgCl_2(H_2O)$

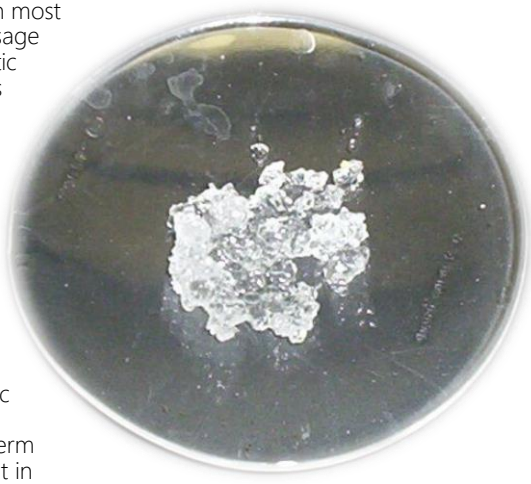
Magnesium chloride, when applied directly to the skin, is transdermally absorbed and has an almost immediate effect on chronic and acute pain.

Did You Know?

...That about 75% of the population do not get enough magnesium from their foods to meet the RDI, so they may be borderline deficient.

Magnesium in Humans

Magnesium is a trace metal found throughout our bodies and is fourth most abundant of the trace metals. It is necessary in every cell for oxygen usage so is essential for life, in fact Magnesium is critical to over 300 enzymatic chemical reactions, most fundamental animal & human body functions and the integrity of the double helix of DNA. Due to farming practices and excessive use of nitrate fertilizers the soil is low in usable magnesium One the best examples of this problem can be illustrated by examining the incredible magnesium deficiency that exists. This widespread problem is under diagnosed, difficult to correct with diet, and potentially related to an incredible number of illnesses. It has been estimated that 68% of the US population is magnesium deficient, or will become magnesium deficient (based on a U.S. government study on dietary habits).



Magnesium Chloride crystals

Magnesium chloride, when applied directly to the skin, is transdermally absorbed and has an almost immediate effect on chronic and acute pain. More frequently, sufferers of arthritis in its many forms have turned to Magnesium oil for near-instant relief from pain. Long term users of transdermal Magnesium oil have experienced an improvement in the health of their bones, ligaments, and the afflicted joints. Some people have reported the re-growth of deteriorated bone, cartilage, and even a regeneration of enamel on their teeth.

Magnesium ions are bitter-tasting, and magnesium chloride solutions are bitter in varying degrees, depending on the concentration of magnesium.

Magnesium toxicity from magnesium salts is rare in healthy individuals with a normal diet, because excess magnesium is readily excreted in urine by the kidneys. A few cases of oral magnesium toxicity have been described in persons with normal renal function ingesting large amounts of magnesium salts, but it is rare. If a large amount of magnesium chloride is eaten, it will have effects similar to magnesium sulfate, causing diarrhoea, although the sulfate also contributes to the laxative effect in magnesium sulfate, so the effect from the chloride is not as severe.

Culinary Use and Reported Benefits of Magnesium Chloride

Culinary Use of Magnesium Chloride

Magnesium chloride (E511) is an important coagulant used in the preparation of tofu from soy milk. In Japan it is sold as nigari (**にがり**, derived from the Japanese word for "bitter"), a white powder produced from seawater after the sodium chloride has been removed, and the water evaporated. In China it is called lushui (卤水). Nigari or lushui consists mostly of magnesium chloride, with some magnesium sulfate and other trace elements. It is also an ingredient in baby formula milk. Consider the following reported benefits:

- Alkalizing agent in the body
- May help those individuals suffering from chemical sensitivities
- Used to treat minor aches and pains
- Used to treat chronic fatigue and Fibromyalgia
- Used for chronic headaches
- Used for cardiovascular / heart health
- Used for cancer prevention
- Used as a mood stabilizer
- Used with treatments for neurological disorders
- Used with treatments for heavy metal toxicity
- Used with treatments for general toxicity

Medically Prescribed Magnesium Chloride

Medically-prescribed magnesium supplements such as Slo-Mag and Mag-SR contain magnesium chloride which is slowly released from a matrix. However, since magnesium is absorbed by the body in ionic form (after the salt dissolves in water) such supplements have no advantage over any soluble magnesium salt (for example, magnesium citrate or magnesium

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aspartate). One veterinary study in 1989 indicated some effectiveness against tumours when magnesium chloride was used as a feed additive.

Typical Dosage

The typical mix produces Magnesium Chloride oil with a Magnesium Chloride content of approx. 23% and this is fairly strong. The strength you use depends on skin sensitivity. Very sensitive skins or certain body areas may need more dilution. The normal accepted recommended daily dietary amount of Magnesium is 300-400 mg. Some would say that 1,000 mg is probably more in the range of what most people need due to stress (cortisol) causing magnesium to be dumped into the sweat in increasing quantities. Most people are numb to the amount of stress experienced every day. But cortisol can be measured by saliva tests if one really wants to know and if found to be high, magnesium dosages can be adjusted up accordingly.

Topical Application

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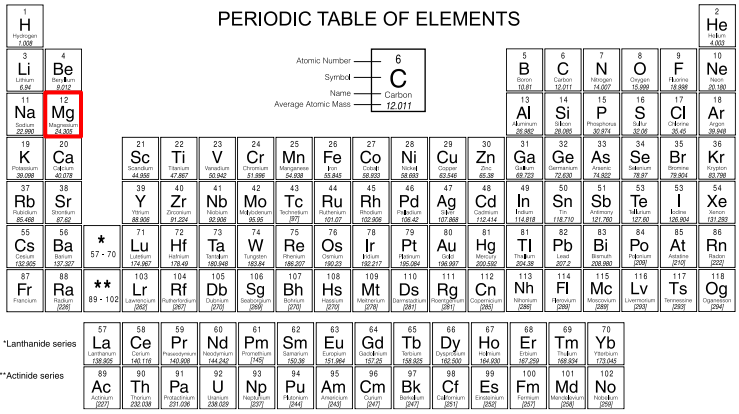
Magnesium as a Metal

Magnesium in its raw state

Magnesium (Pronunciation mag-nee-zee-əm) is a chemical element with the symbol Mg, atomic number 12 and common oxidation number +2. It is an alkaline earth metal and the seventh most abundant element in the Earth's crust, where it constitutes about 2% by mass, and ninth in the known Universe as a whole. This preponderance of magnesium is related to the fact that it is easily built up in supernova stars from a sequential addition of three helium nuclei to carbon (which in turn is made from three helium nuclei). Due to magnesium ion's high solubility in water, it is the third most abundant element dissolved in seawater.

Magnesium is the 11th most abundant element by mass in the human body; its ions are essential to all living cells, where they play a major role in manipulating important biological polyphosphate compounds like ATP, DNA, and RNA. Hundreds of enzymes thus require magnesium ions to function. Magnesium is also the metallic ion at the centre of chlorophyll, and is thus a common additive to fertilizers. Magnesium compounds are used medicinally as common laxatives, antacids (i.e., milk of magnesia), and in a number of situations where stabilization of abnormal nerve excitation and blood vessel spasm is required (i.e., to treat eclampsia). Magnesium ions are sour to the taste, and in low concentrations help to impart a natural tartness to fresh mineral waters.

The free element (metal) is not found naturally on Earth, as it is highly reactive, although once produced, is coated in a thin layer of oxide, which partly masks this reactivity. The free metal burns with a characteristic brilliant white light, making it a useful ingredient in flares. The metal is now mainly obtained by electrolysis of magnesium salts obtained from brine. Commercially, the chief use for the metal is as an alloying agent to make aluminium-magnesium alloys, sometimes called "magnalium" or "magnelium". Since magnesium is less dense than aluminium, these alloys are prized for their relative lightness and strength.



General properties	
Name, symbol, number	magnesium, Mg, 12
Pronunciation	/mæg'ni:ziəm/, *mag-**NEE**-zee-əm*
Element category	alkaline earth metal
Group, period, block	2, 3, s
Standard atomic weight	24.3050
Electron configuration	[Ne] $3s^2$
Electrons per shell	2, 8, 2 (Image)
Physical properties	
Phase	solid
Density (near r.t.)	1.738 g·cm^{-3}
Liquid density at m.p.	1.584 g·cm^{-3}
Melting point	923 K, 650 °C, 1202 °F
Boiling point	1363 K, 1091 °C, 1994 °F
Heat of fusion	8.48 kJ·mol^{-1}
Heat of vaporization	128 kJ·mol^{-1}
Specific heat capacity	(25 °C) 24.869 J·mol^{-1}·K^{-1}
Vapour pressure	
P (Pa) / at T (K)	1 / 701; 10 / 773; 100 / 861; 1 k / 971; 10 k / 1132; 100 k / 1361
Atomic properties	
Oxidation states	**2**, 1 [1] (strongly basic oxide)
Electronegativity	1.31 (Pauling scale)
Ionization energies (more)	1st: 737.7 kJ·mol^{-1}
	2nd: 1450.7 kJ·mol^{-1}
	3rd: 7732.7 kJ·mol^{-1}
Atomic radius	160 pm
Covalent radius	141±7 pm
Van der Waals radius	173 pm
Miscellanea	
Crystal structure	hexagonal
Magnetic ordering	paramagnetic
Electrical resistivity	(20 °C) 43.9 nΩ·m
Thermal conductivity	(300 K) 156 W·m^{-1}·K^{-1}
Thermal expansion	(25 °C) 24.8 µm·m^{-1}·K^{-1}
Speed of sound (thin rod)	(r.t.) (annealed) 4940 m·s^{-1}
Young's modulus	45 GPa
Shear modulus	17 GPa
Bulk modulus	45 GPa
Poisson ratio	0.290
Mohs hardness	2.5
Brinell hardness	260 MPa
CAS registry number	7439-95-4