

Magnesium ${}_{12}\text{Mg}^{24.312}$

Magnesium was recognized as an element in 1755 by Joseph Black at Edinburgh, Scotland; isolated by Sir Humphry Davy in 1808.

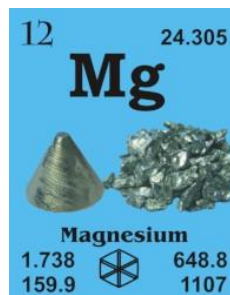
[Greek, Magnesia = district of Thessaly]

French: magnesium

German: magnesium

Italian: magnesio

Spanish: magnesio



Atomic number	12
Density in g/cm ³	1.738
Atomic radius in pm	145
Atomic weight	24.305
Melting point in °C	648.8
Boiling point in °C	1107

Description: Magnesium is a silvery-white, lustrous and relatively soft metal. It is obtained by the electrolysis of fused MgCl_2 . Magnesium burns in air when ignited and it reacts with hot water. It is used as the bulk metal and in lightweight alloys. Magnesium as a 'sacrificial' electrode will protect other metals that are exposed to seawater and ground water.

MAGNESIUM SINGLE CRYSTAL PROPERTIES

State:	single crystal
Crystal structure:	hexagonal
Production method:	Bridgman
Standard size:	diameter 10-20mm thickness 1-2
Orientation:	(0001), (1-100) and (11-20)
Orientation accuracy:	<2°, <1°, <0.4° or <0.1°
Polishing:	as cut, one or two sides polished
Roughness of surface:	<0.03µm
Purity:	99.999%
Typical analysis (ppm):	C 3 H < 1 O 9 N < 5 Cu 1.60 Fe 1.80 Ni < 1 Pb 0.30 Si 0.30 Ga, Hf and Ta are below the detection limit
Density:	1.74 g/cm ³
Melting point:	648.85 °C / 922.0 °K
Boiling point:	1089.85 °C / 1363 °K
Molar volume:	13.98 cm ³

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Thermal conductivity:	156 [300 K] Wm-1K-1
Coefficient of linear thermal expansion:	26.1 x 10 ⁻⁶ K ⁻¹
Electrical resistivity:	4.38x 10 ⁻⁸ [293 K] Wm
Mass magnetic susceptibility:	+6.8 x 10 ⁻⁹ (s) kg ⁻¹ m ³
Young's modulus:	44.7 GPa
Rigidity modulus:	17.3 GPa
Bulk modulus:	35.6 GPa
Poisson's ratio:	0.291
Radii:	Mg ²⁺ 79; atomic 160; covalent 136
Electronegativity:	1.31 (Pauling); 1.23 (Allred); 3.75 eV (absolute)
Effective nuclear charge:	2.85 (Slater); 3.31 (Clementi); 4.15 (Froese-Fischer)
Number of Isotopes (incl. nuclear isomers):	12
Isotope mass range:	20 -> 31
Crystal structure, (cell dimensions / pm), space group	hexagonal
X-ray diffraction: mass absorption coefficients:	CuK α 38.6 (μ/r) / cm ² g ⁻¹ MoK α 4.11 (μ/r) / cm ² g ⁻¹
Neutron scattering length:	0.5375 b/10 ⁻¹² cm
Thermal neutron capture cross-section:	0.063 sa / barns

