# Magnesium (Mg)

Element 12 — Complete Summary



12
**Mg**
Magnesium
24.305

## Key Properties

| | |
|---|---|
| Atomic Mass | 24.305 |
| Category | Alkaline Earth Metals |
| State at 20°C | solid |
| Melting Point | 650°C |
| Boiling Point | 1090°C |
| Density | 1.738 |
| Electron Config | [Ne] 3s2 |
| Electronegativity | 1.31 |
| Year Discovered | 1755 |
| Discovered By | Joseph Black |

## ✨ Did You Know?

1. When ignited, magnesium burns with a blindingly brilliant white light, which is why it's used in flares, fireworks, and early camera flashes.
2. It is the central element in the chlorophyll molecule of plants, making it essential for photosynthesis.
3. Magnesium is the lightest of all structural metals, making it valuable for creating strong, lightweight alloys for cars and airplanes.
4. Your body contains about 25 grams of magnesium, with over half of it stored in your skeleton.
5. The familiar remedy Epsom salts are a hydrated magnesium sulfate compound.

**APPEARANCE**
A shiny, silvery-white, and lightweight metal.

**SUPERHERO PERSONA**
*"The White Flame, a brilliantly bright hero who is lightweight but surprisingly strong."*

**EVERYDAY CONNECTION**
The dazzlingly bright sparklers and fireworks on celebration nights.

**POP CULTURE**
Used in flares and incendiary devices in war movies.

## Magnesium: The Light, Bright Metal

Magnesium is a silvery-white element famous for being about one-third lighter than aluminum. When exposed to air, it ignites easily and burns with an intense white flame, which is why it’s widely used in flares, fireworks, and sparklers.

## Why Is Magnesium So Important?

Magnesium’s usefulness comes from its low weight and its ability to enhance the properties of other materials.

Lightweight Alloys: Magnesium is a key alloying element in aluminum and other metals, boosting strength and weldability. These lightweight alloys are critical in industries where every gram matters—such as aerospace, automotive, electronics, and portable tools.

Metallurgy: Added to molten iron and steel, magnesium helps remove impurities like sulfur.

Fire Retardants: Magnesium hydroxide is mixed into plastics to reduce flammability.

Heat Resistance: Magnesium oxide is used in refractory bricks for furnaces, kilns, and fireplaces.

Medicine: Compounds such as magnesium hydroxide (milk of magnesia), magnesium sulfate (Epsom salts), and magnesium citrate all serve important medical roles.

## Essential for Life

Magnesium is indispensable to living things. In plants, it sits at the heart of the chlorophyll molecule, enabling photosynthesis by capturing sunlight. Without magnesium, green plants—and life as we know it—couldn’t exist.

In humans, magnesium is vital to hundreds of enzyme-driven processes, including those that control muscle and nerve activity, blood pressure, and blood sugar balance. An average adult stores around 20 grams of magnesium, mostly in the bones.

## Natural Abundance & History

Magnesium is the eighth most abundant element in Earth’s crust, but it never appears in pure metallic form. Instead, it occurs in minerals such as magnesite and dolomite, and in massive quantities dissolved in seawater. Most commercial magnesium today is extracted either from these minerals or by electrolyzing molten magnesium chloride from seawater.

Discovery (1755): Scottish chemist Joseph Black identified magnesia (magnesium oxide) as the compound of a new element.

Isolation (1792–1831): Early impure samples were made in 1792, but the first pure magnesium metal was produced in 1808 by Sir Humphry Davy via electrolysis. In 1831, French chemist Antoine-Alexandre-Brutus Bussy managed to isolate enough metal to properly study its properties.