

The Alkaline Earth Metals



The name Beryllium comes from the Greek *beryllos* which is the name for the gemstone *beryl*. The element is a high-melting, silver-white metal which is the first member of the *alkaline earth metals*. It is not abundant in the environment and occurs mainly in the mineral beryl with aluminum and silicon.

Beryllium was first isolated in 1828 by Wöhler. It is used in specialty alloys such as spring metal in which it increases toughness. It was once known as *glucinium* because of the sweet taste of its compounds (which, alas, are toxic).

The chief mineral source of beryllium is also the same material of which emeralds are formed. High quality beryl crystals with chromium impurities have an exquisite green color which has been valued for thousands of years.

[More background information on Be](#)

[More data on Be](#)



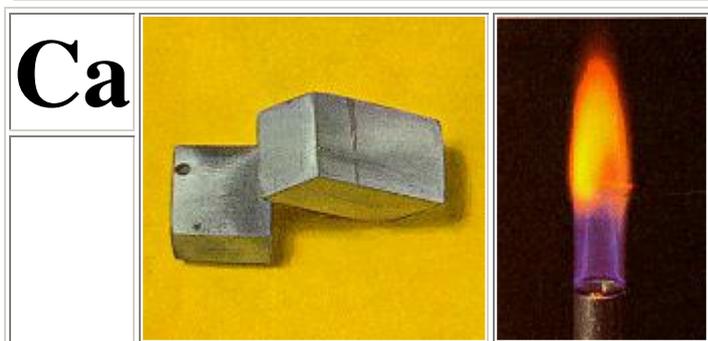
Magnesium takes its name from magnesite ore, named for the district Magnesia in Thessaly, Greece. It is a silver-white metal which burns in air with a blinding white light. It reacts with hot water and acids. The metal is widely distributed in the environment in a number of minerals and a significant amount is found in sea water.

Recognized as an element as far back as 1775, it was first isolated in pure form by Davy in 1805.

The metal and its alloys are widely used to manufacture light-weight mechanical parts. Magnesium is also an important nutritional element in trace amounts and is the central atom in the complex chlorophyll molecule.

[More background information on Mg](#)

[More data on Mg](#)



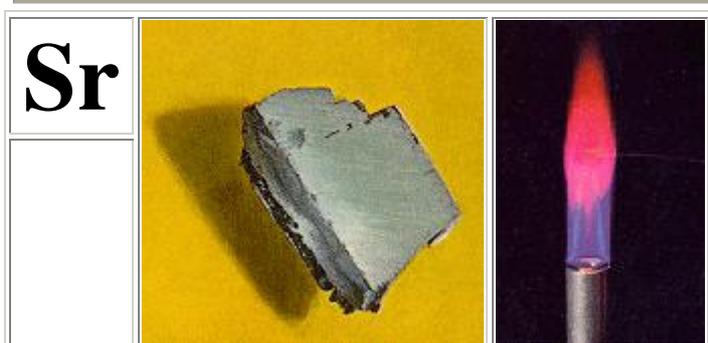
Calcium is a silver-gray metal which takes its name from the Latin word *calx*, which means lime. It is the fifth most abundant element in the earth's crust and is widely distributed as limestone (CaCO_3), quicklime (CaO) and calcium fluoride.

The pure metal was isolated in 1808 by Davy and its compounds give a characteristic brick-red color to flames. Calcium compounds are used in the manufacture of iron and steel, cements and plasters, as well as gypsum wall board. It is important biologically in the formation of bones and teeth.

Calcium metal is fairly reactive and combines with water at room temperature to produce hydrogen gas and calcium hydroxide. It slowly oxidizes in air, becoming encrusted with white CaO and CaCO_3 .

[More background information on Ca](#)

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The element strontium is named for a Scottish town, Strontian. It was isolated in 1808 by Davy and is a silvery and malleable metal that reacts vigorously with water to produce hydrogen gas. It has the same relative abundance as carbon and sulfur but does not occur in pure form.

Strontium compounds are useful in pyrotechnic devices and signal flares because of the bright crimson coloring they give to flames.

Strontium-90, a radioactive isotope of the metal produced by fission reactions is a dangerous environmental menace because its chemistry is similar to calcium and it may take its place in bones. The strong radiation emitted by the isotope interferes with the production of new blood cells and can cause death.

[More background information on Sr](#)

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Barium takes its name from the Greek word *barys* for heavy. It was first isolated in 1808 by Davy (surprise...) and is a soft silver-white metal.

Like the lighter members of its family, barium reacts vigorously with water to produce hydrogen gas and so is commonly stored in oil.

The metal does not occur free in nature but chiefly as the sulfate and carbonate. The sulfate is used in X-ray diagnostics as a contrast medium (i.e., in soft tissue like the digestive tract).

Barium compounds (which are toxic) are also useful in pyrotechnic devices where they impart a characteristic green color.

[More background information on Ba](#)

[More data on Ba](#)



Radium takes its name from the Latin word *radius* or ray. All isotopes of radium are radioactive and many exhibit luminescence, reacting readily with oxygen and water. The metal was discovered and isolated in 1911 by Marie Curie.

When first discovered, compounds of the metal were used on watch dials for self-luminescence and in early cancer therapy. It has been all but replaced now by safer alternatives.

