

*** Name Origin:**

Latin: calx, calcis (lime).

*** Realitive Abundance (by mass):**

Earth's Crust: 3.5%

*** Sources:**

Obtained from minerals like chalk, limestone & marble. Very abundant. Makes up 3.5% of crust. Occurs only in compounds.

*** Uses:**

Used for dehydrating oils, decarburization and desulfurization of iron and its alloys, getter in vacuum tubes. Also used as an alloying agent for aluminum, copper and lead, a reducing agent for beryllium and used in fertilizer, concrete & plaster of paris. Calcium is an essential component shells, bones, teeth and plant structures.

*** Additional Notes:**

Though lime was prepared by the Romans in the first century under the name calx, the metal was not discovered until 1808. After learning that Berzelius and Pontin prepared calcium amalgam by electrolyzing lime in mercury, Davy was able to isolate the impure metal. Calcium is a metallic element, fifth in abundance in the earth's crust, of which it forms more than 3%. It is an essential constituent of leaves, bones, teeth, and shells. Never found in nature uncombined, it occurs abundantly as limestone (CaCO_3), gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$), and fluorite (CaF_2); apatite is the fluorophosphate or chlorophosphate of calcium. The metal has a silvery color, is rather hard, and is prepared by electrolysis of the fused chloride to which calcium fluoride is added to lower the melting point. Chemically it is one of the alkaline earth elements; it readily forms a white coating of oxide in air, reacts with water, burns with a yellow-red flame, forming largely the oxide. The metal is used as a reducing agent in preparing other metals such as thorium, uranium, zirconium, etc., and is used as a deoxidizer, desulfurizer, and inclusion modifier for various ferrous and nonferrous alloys. It is also used as an alloying agent for aluminum, beryllium, copper, lead, and magnesium alloys, and serves as a "getter" for residual gases in vacuum tubes, etc. Its natural and prepared compounds are widely used. Quicklime (CaO), made by heating limestone and changed into slaked lime by the careful addition of water, is the great cheap base of chemical industry with countless uses. Mixed with sand it hardens as mortar and plaster by taking up carbon dioxide from the air. Calcium from limestone is an important element in Portland cement. The solubility of the carbonate in water containing carbon dioxide causes the formation of caves with stalactites and stalagmites and is responsible for hardness in water. Other important compounds are the carbide (CaC_2), chloride (CaCl_2), cyanamide (CaCN_2), hypochlorite ($\text{Ca}(\text{OCl})_2$), nitrate ($\text{Ca}(\text{NO}_3)_2$), and sulfide (CaS). Natural calcium contains six isotopes. Thirteen other radioactive isotopes are known.