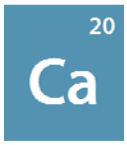
Stable isotopes of calcium available from ISOFLEX

Isotope	Z(p)	N(n)	Atomic Mass	Natural Abundance	Enrichment Level	Chemical Form
Ca-40	20	20	39.9625912	96.941%	99.99%	Carbonate
Ca-42	20	22	41.9576183	0.647%	68.00-96.80%	Carbonate
Ca-43	20	23	42.958767	0.135%	62.20-90.00%	Carbonate
Ca-44	20	24	43.955481	2.086%	94.50-99.00%	Carbonate
Ca-46	20	26	45.953693	0.004%	15.90-24.80%	Carbonate
Ca-48	20	28	47.952533	0.187%	64.00-97.10%	Carbonate



Calcium was discovered in 1808 by Sir Humphry Davy. Its name originates with the Latin word *calx*, meaning "lime." Compounds such as lime were prepared by the Romans as early as the first century AD. Literature dating back to 975 AD indicates that plaster of Paris (calcium sulfate) is useful for setting bones.

A moderately soft, bright silver-white, crystalline metal, calcium oxidizes in air to form adherent protective film and can be machined, extruded or drawn. It is soluble in acid and decomposes in water to liberate hydrogen. It has a brick-red color when introduced to flame in a flame test.

Calcium metal reacts with a number of nonmetallic elements, forming their corresponding binary compounds. While the reaction with fluorine occurs at ambient temperatures, other elements combine only at elevated temperatures in the range of 300-900 ºC. Calcium reacts vigorously with water at ordinary temperatures, with the evolution of hydrogen. It is a strong reducing agent and can reduce most metal oxides and halides into their metals at elevated temperatures. It can reduce all the lower electropositive metals.

Applications of calcium are mostly found in metallurgy. It is used to produce alloys with aluminum, lead, beryllium, copper, silicon and other metals. It is also used as a desulfurizer, decarburizer and deoxidizer for ferrous and nonferrous alloys; for removal of bismuth from lead; and as a reducing agent for zirconium, uranium, thorium and other metals.

Properties of Calcium

Name	Calcium
Symbol	Ca
Atomic number	20
Atomic weight	40.078
Standard state	Solid at 298 °K

ISOFLEX
Isotopes for Science, Medicine and Industry

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Properties of Calcium (continued)

CAS Registry ID	7440-70-2
Group in periodic table	2
Group name	Alkaline earth metal
Period in periodic table	4
Block in periodic table	s-block
Color	Silvery white
Classification	Metallic
Melting point	851 °C
Boiling point	1484 °C
Thermal conductivity	200 W/(m·K)
Electrical resistivity	3.43 μΩ·cm at 0 °C
Electronegativity	1.0
Specific heat	0.647 J/g·K at 20 °C
Heat of vaporization	155 $kJ \cdot mol^{-1}$
Heat of fusion	8.54 $kJ \cdot mol^{-1}$
Density of solid	1.54 g/cm^3
Electron configuration	$[Ar]4s^2$
Ionic radius	1.06 Å (Ca^{2+})
Oxidation state	+2
Standard electrode potential	E^o = -2.87 V