Stable isotopes of barium available from ISOFLEX

Isotope	Z(p)	N(n)	Atomic Mass	Natural Abundance	Enrichment Level	Chemical Form
Ba-130	56	74	129.906311	0.11%	33.00%	Carbonate
Ba-132	56	76	131.905056	0.10%	12.80-40.70%	Carbonate
Ba-134	56	78	133.904504	2.42%	88.00%	Carbonate
Ba-135	56	79	134.905684	6.59%	>94.00%	Carbonate
Ba-136	56	80	135.904571	7.85%	61.00-95.40%	Carbonate
Ba-137	56	81	136.905822	11.23%	91.70%	Carbonate
Ba-138	56	82	137.905242	71.70%	99.80%	Carbonate

Barium was discovered in 1808 by Sir Humphry Davy. Its name derives from the Greek word *barys,* meaning "heavy."

A silvery-white, soft, ductile and somewhat malleable metal, barium gives off a green color in flame. It is extremely reactive and readily reacts with water, ammonia, halogens, oxygen and most acids. Barium metal reacts exothermically with oxygen at ambient temperatures, forming barium oxide; the reaction is especially violent when the metal is present in powder form. Barium also reacts violently with water, forming barium hydroxide and liberating hydrogen. It reacts violently with dilute acids, evolving hydrogen. Barium is a strong reducing agent. It reduces oxidizing agents, reacting violently. It also combines with several metals — including aluminum, zinc, lead and tin — forming a wide range of intermetallic compounds and alloys.

The most important use of barium is as a scavenger in electronic tubes. The metal, often in powder form or as an alloy with aluminum, is employed to remove the last traces of gases from vacuum and television picture tubes. Alloys of barium have numerous applications, including battery performance and deoxidizing alloys to lower the oxygen content. Thin films of barium are used as lubricants on the rotors of anodes in vacuum x-ray tubes, as well as on alloys used for spark plugs. A few radioactive isotopes of barium find applications in nuclear reactions and spectrometry.

Finely divided barium powder is pyrophoric. It can explode in contact with air or oxidizing gases. It is likely to explode when mixed and stirred with halogenated hydrocarbon solvents. All barium salts, especially the water- and acid-soluble compounds, are highly toxic. Barium ion is a stimulant to the heart muscle and can cause death through ventricular fibrillation of the heart. Intake of a few grams of barium salt can be lethal to humans. The insoluble salts such as barium sulfate, however, have little toxic action.

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Isotopes for Science, Medicine and Industry

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Properties of Barium

Name	Barium
Symbol	Ba
Atomic number	56
Atomic weight	137.327
Standard state	Solid at 298 ºK
CAS Registry ID	7440-39-3
Group in periodic table	2
Group name	Alkaline earth metals
Period in periodic table	6
Block in periodic table	s-block
Color	Silvery white
Classification	Metallic
Melting point	727 °C
Boiling point	1845 °C
Vaporization point	1897 ºC
Thermal conductivity	18.40 W/(m·K)
Electrical resistivity	332.00 μΩ·cm at 20°C
Electronegativity	0.9
Heat of vaporization	140.30 $kJ \cdot mol^{-1}$
Heat of fusion	8.00 $kJ \cdot mol^{-1}$
Density of liquid	3.338 g/cm^3
Density of solid	3.51 g/cm^3
Electron configuration	$[Xe]6s^2$
Atomic radius	222 pm
Ionic radius	Ba^{2+} in crystal: 1.42 Å (coordination number 8)
Oxidation state	+2
First ionization potential	10.00 eV

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