

# Samarium - Sm

## Chemical properties of samarium - Health effects of samarium - Environmental effects of samarium

Atomic number	62
Atomic mass	150.35 g.mol <sup>-1</sup>
Electronegativity according to Pauling	1.2
Density	6.9 g.cm <sup>-3</sup> at 20°C
Melting point	1072 °C
Boiling point	1790 °C
Vanderwaals radius	unknown
Ionic radius	unknown
Isotopes	11
Electronic shell	[ Xe ] 4f <sup>6</sup> 6s <sup>2</sup>
Energy of first ionisation	542.3 kJ.mol <sup>-1</sup>
Energy of second ionisation	1066 kJ.mol <sup>-1</sup>
Standard potential	- 2.41 V
Discovered by	Paul Emile Lecoq de Boisbaudran in 1879



## Samarium

Samarium is a silvery-white metal belonging to the lanthanide group of the periodic table. It is relatively stable at room temperature in dry air, but it ignites when heated above 150 C and forms an oxide coating in moist air. Like [europium](#) samarium has a relatively stable oxidation state (II).

### Applications

Samarium is used as a catalyst in certain organic reactions: the samarium [iodide](#) (SmI<sub>2</sub>) is used by organic research chemists to make synthetic versions of natural products. The oxide, samaria, is used for making special infrared adsorbing glass and cores of carbon arc-lamp electrodes and as a catalyst for the dehydration and dehydrogenation of ethanol. Its compound with [cobalt](#) (SmCo<sub>5</sub>) is used in making a new permanent magnet material.

### Samarium in the environment

Samarium is the fifth most abundant of the rare elements and is almost four times as common as tin. It is never found free in nature, but is contained in many minerals, including monazite, bastnasite and samarskite. Samarium containing ores are found in USA, China, Brazil, India, Australia and Sri Lanka. World production of samarium oxide is about 700 tonnes per year and world-wide reserves are estimated to be around 2 million tonnes.

## Health effects of samarium

Samarium has no biological role, but it has been noted to stimulate metabolism. Soluble samarium salts are mildly toxic by ingestion and there are health hazards associated with these because exposure to samarium causes skin and eye irritation.

## Effects of samarium on the environment

Samarium does not poses any threat to plants or animals.

Read more: <https://www.lenntech.com/periodic/elements/sm.htm#ixzz81dNWOUmS>