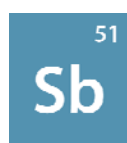


Stable isotopes of antimony available from ISOFLEX

Isotope	Z(p)	N(n)	Atomic Mass	Natural Abundance	Enrichment Level	Chemical Form
Sb-121	51	60	120.903822	57.30%	>99.00%	Metal
Sb-121	51	60	120.903822	57.30%	>99.00%	Oxide
Sb-123	51	62	122.904215	42.70%	>98.00	Metal
Sb-123	51	62	122.904215	42.70%	94.00-98.00	Oxide



Antimony was recognized in compounds by the ancients and was known as a metal at the beginning of the 17th century, possibly much earlier. Its name derives from the Greek words *anti* + *monos*, meaning "not alone," and its symbol, *Sb*, comes from the Latin word *stibium* ("antimony"). Its most important mineral is stibnite, which formed the basis of black eye makeup in biblical times.

The French chemist Nicolas Lémery conducted early studies on antimony chemistry. It is a silvery-white, brittle, metallic element with a crystal system-hexagonal structure. It exists in two unstable allotropic forms – a yellow modification and a dark-gray lustrous amorphous powder – both of which revert to crystalline form.

Antimony is stable in dry air, not readily attacked by moisture, but slowly oxidizes in moist air. Oxidation may result under controlled conditions, forming tri-, tetra- and pentaoxides. Antimony reacts with sulfur, combining in all proportions, forming tri- and pentasulfides. It is oxidized by nitric acid, forming a gelatinous precipitate of hydrated antimony pentoxide. It does not react with cold dilute sulfuric acid; however, reaction occurs in hot concentrated acid: an oxysulfate of indefinite composition and low acid-solubility is formed. It reacts with hydrofluoric acid to form soluble antimony trifluoride and pentafluoride.

Antimony alloys have many commercial applications. The metal makes its alloys hard and stiff and imparts resistance to corrosion; such alloys are used in battery grids and parts, tank linings, pipes and pumps. The lead plates in lead storage batteries comprise 94% lead and 6% antimony. Babbit metal — an alloy of antimony, tin, and copper — is used to make antifriction machine bearings. Alloys made from very high-purity-grade antimony with indium, gallium and bismuth, are used as infrared detectors, diodes, Hall effect devices and thermoelectric coolers.

Properties of Antimony

Name	Antimony
Symbol	Sb
Atomic number	51
Atomic weight	121.75

Properties of Antimony (continued)

Standard state	Solid at 298 °K
CAS Registry ID	7440-36-0
Group in periodic table	15
Group name	Pnictogen
Period in periodic table	5
Block in periodic table	p-block
Color	Silvery lustrous gray
Classification	Semi-metallic
Melting point	630.5 °C
Boiling point	1635 °C
Thermal conductivity	24.00 W/(m·K)
Electrical resistivity	40.00 μΩ·cm
Electronegativity	1.82
Specific heat	207.00 J/(kg·K)
Heat of vaporization	195.20 kJ·mol ⁻¹
Heat of fusion	200.00 kJ·mol ⁻¹
Density of liquid	6.53 g/cm ³ at 630.5 °C
Density of solid	6.697 g/cm ³
Electronic configuration	[Kr]4d ¹⁰ 5s ² 5p ³
Atomic radius	1.41 Å
Covalent radius	Sb ³⁺ : 1.21 Å
Oxidation states	-3, 0, +3, +5