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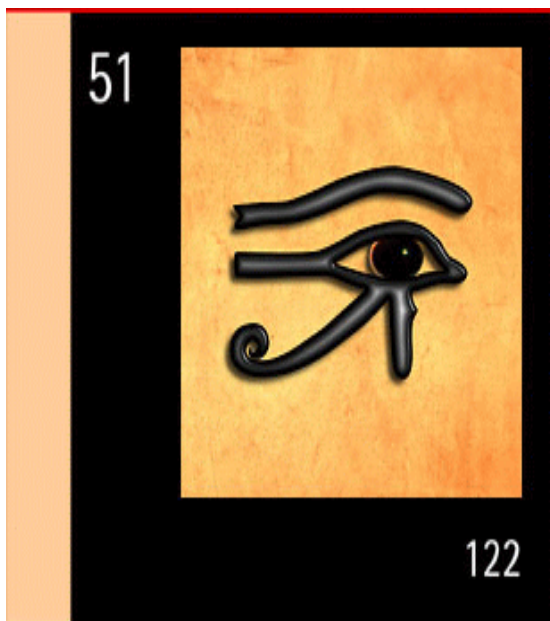
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ANTIMONY - Sb

Atomic Number: 51

Atomic Weight: 121.75



General Information

Discovery: Antimony was probably known to ancient civilizations and was certainly known as a metal at the beginning of the 17th century.

Origin : From the Greek 'anti monos', not alone, and the symbol from the Latin word 'stibium', mark, because the ore stibnite (antimony sulfide) was once used as mascara.

Appearance: Antimony exists as two allotropes, of which the metal is the usual form. This is extremely brittle, with a bright silvery color and a hard, crystalline nature. The second allotropic form is a grey powder.

Description : A semi-metal used in industry to harden other metals. It was earlier used in the production of bells and metal type. It is a fairly rare metal and the main producing countries are China, Russia, Bolivia and South Africa. Antimony is widely used in alloys, especially with lead in order to improve its hardness and mechanical strength, and in this form is used in batteries. Antimony is also used in semiconductor technology in making infra-red detectors and diodes. Other uses include type metal, bullets and cable sheathing. Antimony compounds are used in manufacturing flame-proof compounds, paints, enamels, glass and pottery.

Antimony exists as two allotropic forms. The normal form is metallic and stable; the other is known as the amorphous grey form. Antimony is stable in air and is not attacked by dilute acids or alkalis. It is not acted upon by air at room temperature, but burns brilliantly when heated with the formation of white fumes of antimony (III) oxide.

Source: Antimony is not an abundant element but is found in small quantities in over 100 mineral species. It can be found as the native metal, but more frequently as antimony (III) sulphide from which it is extracted for commercial use. This is done by roasting the antimony (III) sulphide to the oxide, and then reducing with carbon or iron.

Biological Role: Antimony and many of its compounds are toxic.



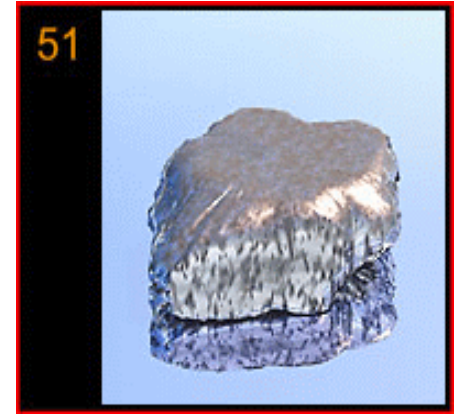
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Physical Information

Atomic Number	51
Relative Atomic Mass (¹² C=12.000)	121.75
Melting Point/ ⁰ F	1166
Boiling Point/ ⁰ F	2516
Density	6.62
Weight Lb/in ³	0.2391
Ground State Electron Configuration	[Kr]4d ¹⁰ 5s ² 5p ³
Electron Affinity(M-M-)/kJ mol ⁻¹	101



Key Isotopes

nuclide	¹²¹ Sb	¹²² Sb	¹²³ Sb	¹²⁴ Sb	¹²⁵ Sb
atomic mass	120.9		122.93		
natural abundance	57.3%	0%	42.7%	0%	0%
half-life	stable	2.8 days	stable	60.4 days	2.71 yrs

Ionization Energies/kJ mol⁻¹

M - M ⁺	833.7
M ⁺ - M ²⁺	1794
M ²⁺ - M ³⁺	2443
M ³⁺ - M ⁴⁺	4260
M ⁴⁺ - M ⁵⁺	5400
M ⁵⁺ - M ⁶⁺	10400
M ⁶⁺ - M ⁷⁺	12700
M ⁷⁺ - M ⁸⁺	15200
M ⁸⁺ - M ⁹⁺	17800
M ⁹⁺ - M ¹⁰⁺	20400

Other Information

Enthalpy of Fusion/kJ mol ⁻¹	20.9
Enthalpy of Vaporization/kJ mol ⁻¹	165.8

Oxidation States

Main	Sb ^{III} , Sb ^V
Others	Sb ^{-III}

Covalent Bonds /kJ mol⁻¹

Sb - H	257
Sb - C	215
Sb - O	314
Sb - F	389
Sb - Cl	313
Sb - Sb	299