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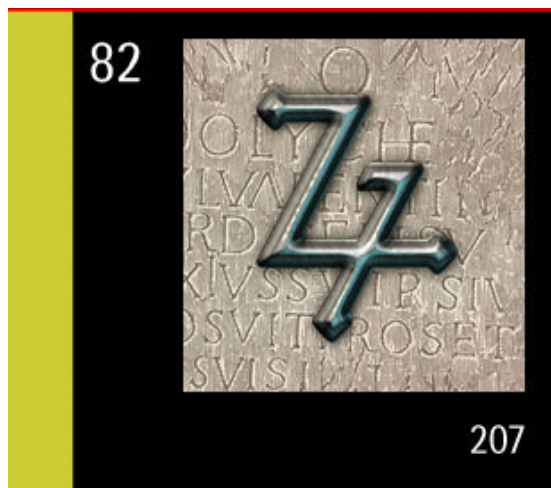
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LEAD - Pb

Atomic Number: 82

Atomic Weight: 207.22



General Information

Discovery: Lead was known to ancient civilizations, and is mentioned in Exodus.

Origin : The name is derived from the Anglo-Saxon "laedan". The chemical symbol comes from the Latin "plumbum", meaning lead.

Appearance: Lead is a soft, weak, ductile metal with a pale grey sheen.

Description : This easily-worked metal has been used for pipes, pewter and paint since Roman times. It

has also been used in lead glazes for pottery and, in this century, as an additive to raise the octane level of petrol. All these uses have now either been banned, replaced or discouraged as lead is known to be detrimental to health, particularly that of children. Daily intake of lead from all sources is about a tenth of a milligram, and the average human body stores about 120 milligrams in the bones. Lead is still widely used for cable sheathing, car batteries, lead crystal, radiation protection and in some solders.

Lead is stable to air and water, but will tarnish in moist air over long periods. It dissolves in nitric acid. Lead is a poor conductor of electricity.

Source: Lead is obtained chiefly from the mineral galena by a roasting process. At least 40% of lead in the UK comes from secondary lead sources such as scrap batteries and pipes.

Biological Role: Lead has no known biological role. It is toxic in a cumulative way, teratogenic and carcinogenic.



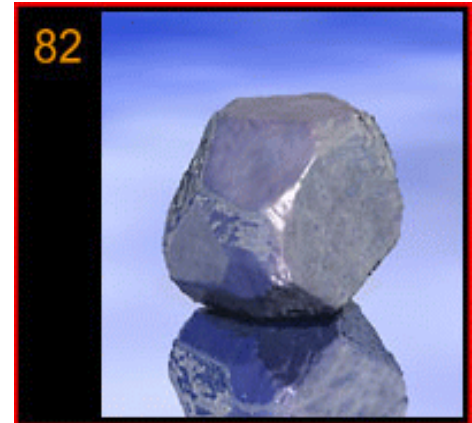
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Physical Information

Atomic Number	82
Relative Atomic Mass (¹² C=12.000)	207.22
Melting Point/ ⁰ F	621
Boiling Point/ ⁰ F	2948
Density	11.35
Weight Lb/in ³	0.4092
Ground State Electron Configuration	[Xe]4f ¹⁴ 5d ¹⁰ 6s ² 6p ²
Electron Affinity(M-M)/kJ mol ⁻¹	35.2



Key Isotopes

nuclide	²⁰⁴ Pb	²⁰⁵ Pb	²⁰⁶ Pb	²⁰⁷ Pb	²⁰⁸ Pb
atomic mass	203.97		205.97	206.98	207.98
natural abundance	1.4%	0%	24.1%	22.1%	52.3%
half-life	stable	3x10 ⁷ yrs	stable	stable	stable

Ionization Energies/kJ mol⁻¹

M - M ⁺	715.5
M ⁺ - M ²⁺	1450.4
M ²⁺ - M ³⁺	3081.5
M ³⁺ - M ⁴⁺	4083
M ⁴⁺ - M ⁵⁺	6640
M ⁵⁺ - M ⁶⁺	8100
M ⁶⁺ - M ⁷⁺	9900
M ⁷⁺ - M ⁸⁺	11800
M ⁸⁺ - M ⁹⁺	13700
M ⁹⁺ - M ¹⁰⁺	16700

Other Information

Enthalpy of Fusion/kJ mol ⁻¹	5.12
Enthalpy of Vaporization/kJ mol ⁻¹	177.8

Oxidation States

Pb^{II}, Pb^{IV}

Covalent Bonds /kJ mol⁻¹

Pb - H	180
Pb - C	130
Pb - O	398
Pb - F	314
Pb - Cl	244
Pb - Pb	100