



>>Entry Name: Lead

Synonym(s): Plumbum (L.)

CAS Registry Number: 7439-92-1

Related CAS Registry Numbers(s): 12596-92-8 14280-50-3 14701-27-0 18466-73-4

Pb

Molecular Formula: Pb

Molecular Weight: 207.2

Accurate Mass: 207.976627

Percentage Composition: Pb 100.00%

plumbing. 29 Isotopes have been reported of which 4 are natural (^{207}Pb used in nmr spectroscopy). Abundance: 13 ppm (earth's crust), 0.003 ppm (seawater). No biological role. Has ccp struct. which becomes hcp at high pressure

Source/Synthesis: End product of each of the three series of naturally occurring radioactive decay schemes. Main ore is sulfide (galena), but also occurs as sulfate (anglesite), carbonate (cerrusite) and as chloride-phosphate (pyromorphite). Metal obt. by roasting sulfide to oxide followed by redn. (C or CO)

Use/Importance: Not attacked by conc. H_2SO_4 and so used in plant for synth. of this acid. Also used extensively in batteries, anti-knock petrol additives (PbEt_4), alloys, ammunition, pigments. Radiation shield around X-ray equipment and nuclear reactors

Physical Description: Bluish-grey, soft, weak, ductile metal which tarnishes in moist air. Otherwise stable to O_2 and H_2O at ord. temp. Dissolves in dil. HNO_3 , AcOH , HCl (slowly). Sol. alkali solns. Attacked at r.t. by F_2 , Cl_2

Melting Point: Mp 327°

Boiling Point: Bp 1770° (1774° , 1751°)

Hazard & Toxicity: Cumulative poison. May be pyrophoric when finely divided. LD_{50} (rat, orl) 1100 mg/kg

Aldrich: 26586-1

Fluka: 15301

Sigma: L8898

Other: Gelest PBL6180

>>Variant: Lead 194

CAS Registry Number: 35105-27-2

Source/Synthesis: Prod. by proton bombardment of Tl

Other Data: $I = +0$. Decays by orbital electron capture or $\beta^{(+)}$ emission to ^{194}Tl

>>Variant: Lead 196

CAS Registry Number: 29136-24-1

Source/Synthesis: Prod. from Tl (p,8n)

Other Data: $I = +0$. Decays by orbital electron capture or $\beta^{(+)}$ emission to ^{196}Tl

>>Variant: Lead 198

CAS Registry Number: 16646-00-7

Source/Synthesis: Prod. from Tl (p,6n)

Other Data: $I = +0$. Decays by orbital electron capture to ^{198}Tl

>>Variant: Lead 200

CAS Registry Number: 16645-99-1

Source/Synthesis: Prod. from Tl (p,4n), or ^{202}Hg (^3He ,5n)

Other Data: $I = +0$. Decays by orbital electron capture to ^{200}Tl

>>Variant: Lead 201

CAS Registry Number: 17239-87-1

Source/Synthesis: Prod. from Tl (p,3n), or ^{203}Tl (d,4n)

Other Data: $I = -5/2$; $\mu = +0.675 \mu_N$. Decays by orbital electron capture to ^{201}Tl . There is also an isomer ^{201m}Pb , $t_{1/2}$ 1.02 min.

>>Variant: Lead 202