



>>Entry Name: Silicon

CAS Registry Number: 7440-21-3

Related CAS Registry Numbers(s): 12597-35-2 12597-37-4 14067-07-3 14124-67-5 14127-52-7 14175-55-4 14175-56-5 14280-14-9 14337-02-1 14700-85-7 14841-21-5 16941-71-2 16998-71-3 22537-24-2 23778-10-1 26603-58-7 31161-67-8 39610-04-3 59249-44-4 71966-81-9 71966-83-1 104182-95-8

Si

Molecular Formula: Si

Molecular Weight: 28.086

Accurate Mass: 27.976927

Percentage Composition: Si 100.00%

earth's crust is Si. There are no allotropes under normal conditions. Possesses cubic diamond struct. High pressure forms have fcc, bcc structs. Si₃ is cyclic

Source/Synthesis: Occurs as many silicate minerals, but also as silica (sand, SiO₂), micas, zeolites. Isol. from reaction of SiO₂ + C in arc furnace; K₂SiF₆ + C; SiCl₄ + Zn; pyrolysis of SiH₄ and SiI₄

Use/Importance: Employed in silicon polymers, glasses, sol. silicates, concretes, ceramics. Pure element widely used in electronics (as semiconductor) but also alloyed. SiC is an abrasive

Physical Description: Black amorphous powder or blue-grey cryst. Bulk Si is unreactive to O₂, H₂O, H halides (except HF) but dissolves in hot aq. alkalis. Reactive to halogens e.g. F₂ at r.t., Cl₂ at 300°. Acted on by N₂ at 1400°. S reacts at 600°, and P at 1000°

Melting Point: Mp 1410°

Boiling Point: Bp 2355°

Hazard & Toxicity: Non-toxic, but some silicates are carcinogenic (e.g. asbestos)

Aldrich: 34325-0

Fluka: 85350

Sigma: S1508

>>Variant: Silicon 26

CAS Registry Number: 14932-60-6

Source/Synthesis: Prod. from Mg (He,n)

Other Data: $I = +0$. Decays by orbital electron capture or $\beta^{(+)}$ emission to ²⁶Al

>>Variant: Silicon 27

CAS Registry Number: 14276-59-6

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

Other Data: $I = +5/2$; $\mu = -0.8554 \mu_N$. Decays by orbital electron capture or $\beta^{(+)}$ emission to ²⁷Al

>>Variant: Silicon 28

CAS Registry Number: 14276-58-5

Other Data: $I = +0$; $\mu = 0 \mu_N$

>>Variant: Silicon 29

CAS Registry Number: 14304-87-1

Other Data: $I = +1/2$; $\mu = -0.55529 \mu_N$. Nmr relative sensitivity (¹H=1.00) 7.84 x 10⁻³; receptivity (¹³C=1.00) 2.09

>>Variant: Silicon 30

CAS Registry Number: 13981-69-6

Other Data: $I = +0$; $\mu = 0 \mu_N$

>>Variant: Silicon 31

CAS Registry Number: 14276-49-4

Source/Synthesis: Prod. from Si (n, γ)

Other Data: $I = +3/2$. Decays by $\beta^{(-)}$ emission to ³¹P