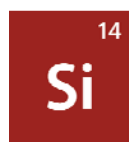


Stable isotopes of silicon available from ISOFLEX

Isotope	Z(p)	N(n)	Atomic Mass	Natural Abundance	Enrichment Level	Chemical Form
Si-28	14	14	27.9769265	92.23%	99.90-99.99%	Elemental
Si-28	14	14	27.9769265	92.23%	99.90-99.99%	Oxide
Si-29	14	15	28.9764947	4.67%	>99.00%	Elemental
Si-29	14	15	28.9764947	4.67%	>99.00%	Oxide
Si-30	14	16	29.9737702	3.10%	>99.00%	Elemental
Si-30	14	16	29.9737702	3.10%	>99.00%	Oxide



The discovery of silicon is credited to Jöns Jakob Berzelius in 1824 in Sweden. Its name originates with the Latin word *silicis*, which means “flint.” It is the second most abundant element, exceeded only by oxygen, making up 25.7% of the earth's crust by weight.

Silicon exists in two allotropic modifications: *Crystalline silicon* is made up of grayish-black lustrous needle-like crystals, or octahedral platelets, with a cubic structure. *Amorphous silicon* is a brown powder. Elemental silicon is relatively stable in most substances at ordinary temperatures and shows similarity to other elements of its group. It exists as sand quartz, flint, amethyst, agate, opal, jasper and rock crystal.

Silicates and *silica* have many applications in numerous fields, including making cements and concretes for building materials, glasses and glassware, ceramics, pigments, adsorbents, paper boards, fillers, detergents, precious gems, catalysts and water-softeners. *Silicones* are used as lubricants and in making rubbers, plastics, electrical coatings, adhesives, paints and varnishes, and as water repellents for textiles, papers and concrete. *Elemental silicon* has a major application in computer chips. *Silicon of hyperpurity* — doped with trace elements, such as boron, phosphorus, arsenic or gallium — is one of the best semiconductors and is used in transistors, power rectifiers, diodes and solar cells. *Hydrogenated amorphous silicon* converts solar energy into electricity. Inhalation of silica dusts or silicate mineral dusts can cause silicosis or other lung diseases.

Properties of Silicon

Name	Silicon
Symbol	Si
Atomic number	14
Atomic weight	28.08555
Standard state	Solid at 298 °K

Properties of Silicon (continued)

CAS Registry ID	7440-21-3
Group in periodic table	14
Group name	None
Period in periodic table	3
Block in periodic table	p-block
Color	Dark gray with a bluish tinge
Classification	Semi-metallic
Melting point	1414 °C
Boiling point	2355 °C
Thermal conductivity	149 W/(m·K) at 298.2 °K
Electrical resistivity	3-4 $\mu\Omega\cdot\text{cm}$ at 0 °C
Electronegativity	1.80
Specific heat	0.71 kJ/kg K
Heat of vaporization	359 kJ·mol ⁻¹
Heat of fusion	50.2 kJ·mol ⁻¹
Density of high-purity liquid	2.53 g/cm ³ at 1414 °C
Density of solid	2.33 g/cm ³
Electron configuration	[Ne]3s ² 3p ²
Atomic radius	1.173 Å
Oxidation state	+4
Critical temperature	4 °C
Calculated crucial pressure	530 atm