

## Physical Properties and Constants of Silicon

<b>General properties</b>	
<b>Name, symbol, number</b>	silicon, Si, 14
<b>Element category</b>	metalloid
<b>Group, period, block</b>	14, 3, p
<b>Standard atomic weight</b>	28.0855(3) g·mol <sup>-1</sup>
<b>Electron configuration</b>	[Ne] 3s <sup>2</sup> 3p <sup>2</sup>
<b>Electrons per shell</b>	2, 8, 4 (Image)
<b>Physical properties</b>	
<b>Phase</b>	solid
<b>Density (near r.t.)</b>	2.3290 g·cm <sup>-3</sup>
<b>Liquid density at m.p.</b>	2.57 g·cm <sup>-3</sup>
<b>Melting point</b>	1687 K, 1414 °C, 2577 °F
<b>Boiling point</b>	3538 K, 3265 °C, 5909 °F
<b>Heat of fusion</b>	50.21 kJ·mol <sup>-1</sup>
<b>Heat of vaporization</b>	359 kJ·mol <sup>-1</sup>
<b>Specific heat capacity</b>	(25 °C) 19.789 J·mol <sup>-1</sup> ·K <sup>-1</sup>
<b>Atomic properties</b>	
<b>Oxidation states</b>	4, 3, 2, 1 <sup>[1]</sup> , -1, -2, -3, -4 (amphoteric oxide)
<b>Electro negativity</b>	1.90 (Pauling scale)
<b>Ionization energies (more)</b>	1st: 786.5 kJ·mol <sup>-1</sup> 2nd: 1577.1 kJ·mol <sup>-1</sup> 3rd: 3231.6 kJ·mol <sup>-1</sup>
<b>Atomic radius</b>	111 pm
<b>Covalent radius</b>	111 pm
<b>Van der Waals radius</b>	210 pm
<b>Miscellaneous</b>	
<b>Crystal structure</b>	diamond cubic
<b>Magnetic ordering</b>	diamagnetic <sup>[2]</sup>
<b>Electrical resistivity</b>	(20 °C) 10 <sup>3</sup> Ω·m <sup>[3]</sup>
<b>Thermal conductivity</b>	(300 K) 149 W·m <sup>-1</sup> ·K <sup>-1</sup>
<b>Thermal expansion</b>	(25 °C) 2.6 μm·m <sup>-1</sup> ·K <sup>-1</sup>
<b>Speed of sound (thin rod)</b>	(20 °C) 8433 m/s
<b>Young's modulus</b>	185 <sup>[3]</sup> GPa
<b>Shear modulus</b>	52 <sup>[3]</sup> GPa
<b>Bulk modulus</b>	100 GPa
<b>Poisson ratio</b>	0.28 <sup>[3]</sup>
<b>Mohs hardness</b>	7
<b>CAS registry number</b>	7440-21-3
<b>Band gap energy at 300 K</b>	1.12 eV