

Silicon

Silicon has the symbol Si and atomic number 14. A tetravalent metalloid, silicon is less reactive than its chemical analog carbon.

Applications

- ★ Silicon is the principal component of sand in the form of silica and silicates. Therefore it is present in glass, cement, and ceramics.
- ★ Silicon based polymers, known as silicones (breast implants, hardware sealant, etc.) have numerous applications and is often confused with silicon itself.
- ★ Silicon greatly improves the strength of aluminium alloys and is the principal component in optical glass which is used in optical fibre and liquid crystal displays.
- ★ Silicon is the principal component in semiconductor devices such as microprocessors and photo voltaic cells, as it remains a semiconductor at higher temperatures. Because of this role, the high-tech region of Silicon Valley, California, is named after this element.

Characteristics

In its crystalline form, silicon has a dark gray colour and a metallic luster. Even though it is a relatively inert element, silicon still reacts with halogens and dilute alkalis, but most acids do not affect it. It melts at 1410 °C.

Occurrence

Measured by weight, silicon makes up 25.7% of the Earth's crust and is the second most abundant element on Earth, after oxygen. Pure silicon crystals are rarely found in nature; natural silicon is usually found in the form of silicon dioxide (SiO₂ also known as silica) and silicate. Sand is basically tiny crystals of silica (silicon dioxide). It is estimated to be the seventh most plentiful element in the universe.

Production

Silicon is commercially prepared by the reaction of high-purity silica with wood, charcoal and coal in an electric arc furnace using carbon electrodes. At temperatures over 1900 °C, the carbon reduces the silica to silicon according to the chemical equation



Liquid silicon collects in the bottom of the furnace, and is then drained and cooled. The silicon produced via this process is called metallurgical grade silicon and is at least 99% pure.

SIMCOA

The silicon supplied in this pack is kindly sponsored by Simcoa (Silicon Metal Company of Australia) Operations Pty Ltd, operating the only fully integrated silicon metal production plant in the world.

Simcoa, based at Kemerton, 160kms south of Perth, Western Australia, produces in excess of 30 000 tons of high purity silicon annually.

To learn more about their process and products, please visit their website at <http://www.simcoa.com.au>

Safety

Classified as non-toxic and inert. Silicon dust, if present, could produce eye irritation. Visit www.profbunsen.com.au/msds.htm for MSDS.

