



Silicon

Optical

Transmission Range :	1.2 μm to 15 μm
Refractive Index :	3.4223 at 5 μm
Reflection Loss :	46.2% at 5 μm (losses from two surfaces)
Absorption Coefficient :	0.01 cm at 3 μm

Physical

Density :	2.33 g/cm ³
Melting Point :	1420 °C
Thermal Conductivity :	163.3 W m ⁻¹ K ⁻¹ at RT
Linear CTE :	2.6 x 10 ⁻⁶ / at RT
Specific Heat Capacity :	703 J Kg ⁻¹ K ⁻¹

Mechanical

Youngs Modulus (E) :	131 Gpa
Shear Modulus (G) :	79.9 Gpa
Bulk Modulus (K) :	102 GPa
Rupture Modulus :	124.1MPa (18000 psi)
Hardness :	1150 Knoop
Poisson Ratio :	0.266

Chemical

Chemical formula :	Si
Solubility :	Insoluble in Water
Molecular Weight :	28.09 g /mole

Notes

Si is used as an optical window mainly in the 3 to 5 μm band.
It is generally doped for use above 10 μm .
Silicon additionally transmits between 30 μm to 100 μm .