

Fused Silica (SiO₂)

The 1 μm laser standard — highest purity, lowest CTE.

PHYSICAL PROPERTIES	
Structure	Amorphous glass
Density	2.20 g/cm ³
Bulk resistivity	> 10 ¹⁷ Ω·cm
OPTICAL PROPERTIES	
Useful transmission range	0.18 – 2.5 μm (low-OH toward 3.5 μm)
Refractive index	1.458 (n _d)
dn/dT	+11.9 × 10 ⁻⁶ /K
THERMAL PROPERTIES	
Thermal conductivity	1.38 W/m·K
Specific heat	~0.75 J/g·K
Thermal expansion (CTE)	0.55 × 10 ⁻⁶ /K
MECHANICAL PROPERTIES	
Young's modulus	73 GPa
Knoop hardness	500 kgf/mm ²
Poisson's ratio	0.17

Typical Applications

Fiber laser (1064–1080 nm) protective windows and lenses; UV optics; high-LIDT mirror substrates; reference flats.

Fabrication & Specification Notes

Specify low-OH (IR grade) material to push transmission toward 3.5 μm — standard UV grade absorbs at 2.2 and 2.7 μm.

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