

Silica Glass (SiO₂)

Specialist Data Sheet

Product Name	Silica Glass (SiO ₂)
Transmission Range	0.18 ~ 1 μm (3μm for IR grades)
Refractive Index	1.47012 @ 4 μm
Reflection Loss	7.0% @ 0.4 μm (2 surfaces)
Absorption Coefficient	10 x 10 ⁻⁶ @ 1 μm
Reststrahlen Peak	n/a
dN/dT	+11.9 x 10 ⁻⁶ /°C
dN/du	1.3 μm
Density	2.203 g/cc
Melting Point	1600 °C (softening)
Thermal Conductivity	1.38 W m ⁻¹ K ⁻¹
Thermal Expansion	0.55 x 10 ⁻⁶ /°C @ 300K
Hardness	Knoop 500 with 200g indenter
Specific Heat Capacity	703 J Kg ⁻¹ K ⁻¹
Dialectric Constant	3.91 @ 1 KHz
Youngs Modulus (E)	73.1 GPa
Shear Modulus (G)	31.2 GPa
Bulk Modulus (K)	36.7 GPa
Elastic Coefficients	n/a
Apparent Elastic Limit	55 Mpa (7980 psi)
Poisson Ratio	0.17
Solubility	Insoluble in Water
Molecular Weight	28.09
Class/Structure	Amorphous glass

Notes:

Fused silica is the glassy form of quartz and is thus isotropic. It is tough and hard and has a very low expansion. Normal varieties contain water which gives strong absorption in the IR. Water-free varieties are available.

Application:

Fused silica is a hard, high temperature pure glass. It is used for UV and visible components. Infra-red grades are available for NIR use



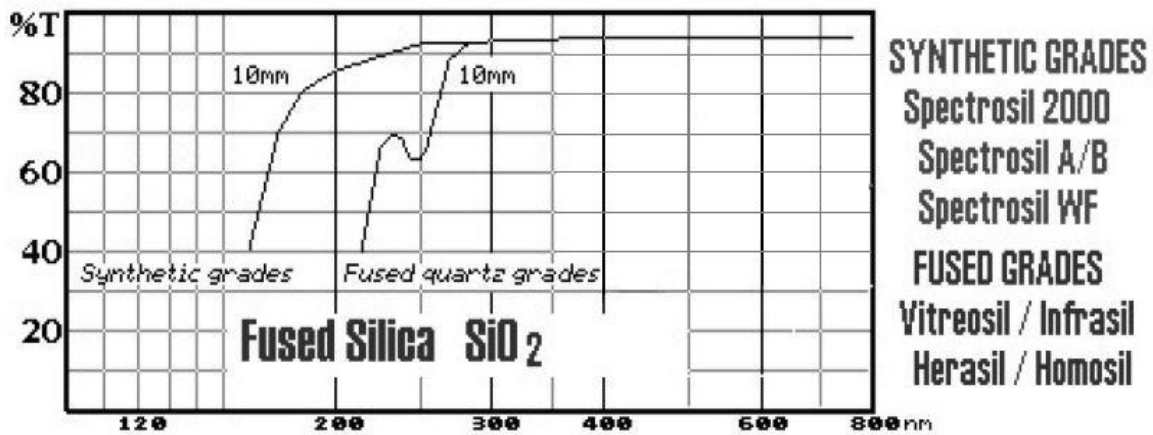
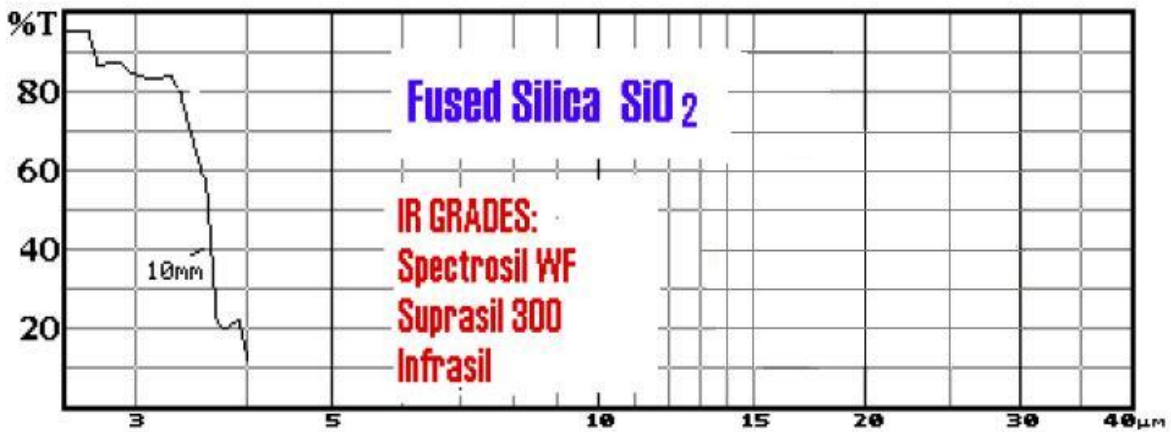
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Refractive Index:

μm	No	μm	No	μm	No	μm	No
0.20	1.55051	0.60	1.45804	1.1	1.44920	2.0	1.43809
0.25	1.50745	0.65	1.45653	1.2	1.44805	2.2	1.43501
0.30	1.48779	0.70	1.45529	1.3	1.44692	2.4	1.43163
0.36	1.47529	0.75	1.45424	1.5	1.44462	2.6	1.42789
0.40	1.47012	0.80	1.45332	1.6	1.44342	2.8	1.42377
0.45	1.46557	0.85	1.45250	1.7	1.44217	3.0	1.41925
0.50	1.46233	0.90	1.45175	1.8	1.44087	3.2	1.41427
0.55	1.46008	1.0	1.45042	1.9	1.43951	3.37	1.41099

Transmission Range Graph:



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