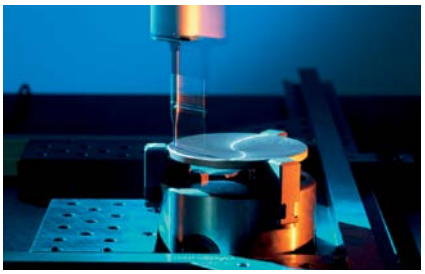
Optical Grade Silicon

Blanks for Infrared Optics

Data Sheet



Crystal Structure	monocrystalline		
Purity	> 99.999 %		
Orientation	<100> <111>		
Conductivity	n type (Phosphorus doped) p type (Boron doped)		
Resistivity	standard optical grade EXT grade mirror grade	n type > 10 Ωcm p type > 30 Ωcm > 50 Ωcm 1 - 10 Ωcm	
Products	Window blanks Mirror blanks Filter blanks Prism blanks Beamsplitter blanks Lens blanks Dome blanks Rods Disks Sputtering targets		
Size	diameter 10 to 300 mm		
Shape and Tolerances	according to customer drawing		
Standard Tolerances	Lens blanks Window blanks	diameter edge thickness variation length/width flatness	± 0.025 mm ± 0.025 mm ± 0.025 mm ± 0.020 mm
Surface Quality	as cut D46 (Rq max. 4 µm) D15 (Rq max. 0.4 µm) D7 (Rq max. 0.2 µm) polished or diamond turned upon request		

Applicable Standards	Manufacturing	DIN EN ISO 286-2 (2010-11) ASME Y14.5M (2009)
	Traceability	MIL 130

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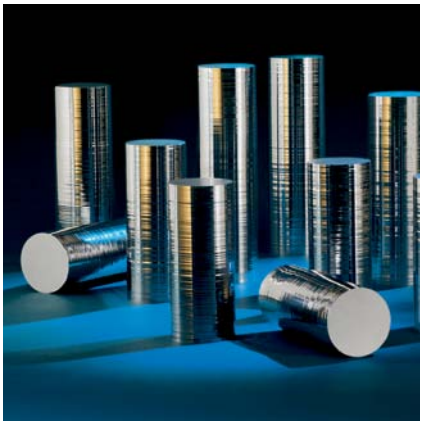
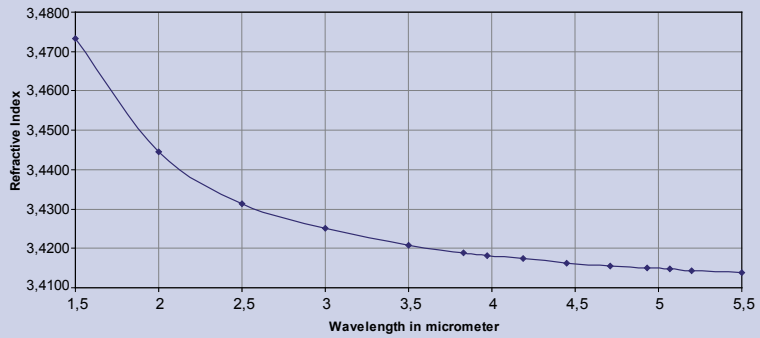
Physical and Optical Properties

Data Sheet

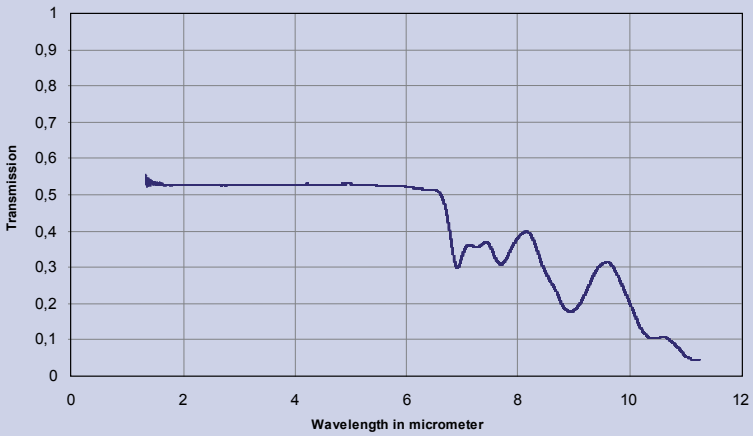
Physical Properties [1]	Melting Point	1687 K
	Density	2.329 g/cm^3
	Thermal Expansion Coefficient	2.6 x 10^{-6}/K
	Young's Modulus (<111> orientation)	1187 GPa
Optical Properties [2]	Refractive Index (at 5.20 µm)	3.4144
	dn/dT (at 5.20 µm)	1.56 x 10^{-4}/K
	Transmission (at 5.20 µm)	52 %



Refractive Index Silicon at 20°C



Transmission of Silicon at 23°C



[1] Taken from NIST Database [2] Measured by Photonic Sense

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