

Optical Grade Germanium

Blanks for Infrared Optics

Data Sheet

Crystal Structure	monocrystalline or polycrystalline		
Purity	> 99.999 %		
Orientation	<111> other orientation upon request		
Conductivity	n type (Antimony doped) p type (Boron doped) other dopant upon request		
Resistivity	standard optical grade	5 - 40 Ω cm	
	EXPT grade	0.5 - 5 Ω cm	
	other resistivity range upon request		
Products	Window blanks Mirror blanks Filter blanks Prism blanks Beamsplitter blanks Lens blanks Dome blanks Rods Disks Sputtering targets Evaporation granules		
Size	diameter 10 to 350 mm larger sizes (max. 500 mm) upon request		
Shape and Tolerances	according to customer drawing		
Standard Tolerances	Lens blanks	diameter	± 0.025 mm
		edge thickness variation	± 0.025 mm
	Window blanks	length/width	± 0.025 mm
		flatness	± 0.020 mm
Surface Quality	as cut D46 (Rq max. 4 μ m) D15 (Rq max. 0.4 μ m) D7 (Rq max. 0.2 μ m) polished or diamond turned upon request		

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

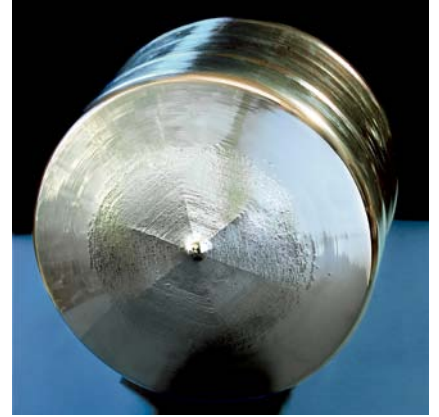


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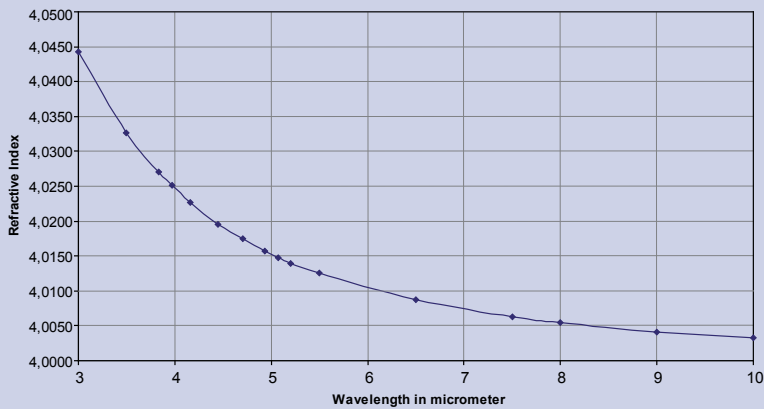
Physical and Optical Properties

Data Sheet

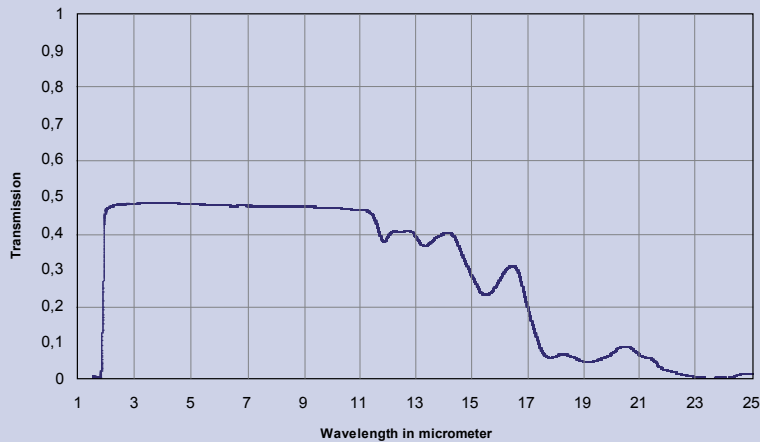
Physical Properties ^[1]	Melting Point	1211.4 K
	Density	5.323 g/cm ³
	Thermal Expansion Coefficient	5.7 x 10 ⁻⁶ /K
	Young's Modulus (<111> orientation)	155.6 GPa
	Modulus of Rupture	72.4 MPa
Optical Properties ^[2]	Refractive Index (at 5.20 μm)	4.0140
	dn/dT (at 5.20 μm)	4.14 x 10 ⁻⁴ /K
	Transmission (at 5.20 μm)	46 %



Refractive Index Germanium at 20°C



Transmission of Germanium at 23°C



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

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