

Title: Optical Material / Crystals (Infrared)

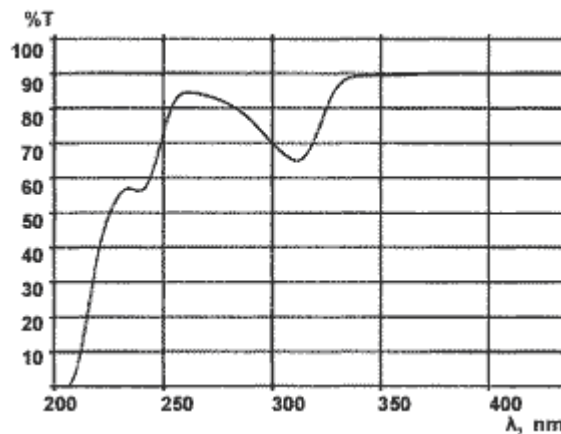
Material / Specification: Calcite for 0.3 to 2.3 micron Transmission

Range / Description: OPM-Calcite

Tel: +44 (0) 1622 859444
 Fax: +44 (0) 1622 859555
 info@knightoptical.co.uk
 http://www.knightoptical.co.uk

Calcite, is used for polarisers and retardation plates. Double refraction occurs when a ray of light enters calcite crystals and due to calcite's unique optical properties, the ray is split into fast and slow beams. As these two beams exit the crystal they are bent into two different angles (known as *angles of refraction*).

Internal Transmittance



Refractive Index n vs. Wavelength λ																
μm	0.20	0.30	0.40	0.50	0.64	0.71	0.80	0.91	1.04	1.50	1.91	2.10	---	---	---	---
no	1.90	1.71	1.68	1.66	1.65	1.65	1.64	1.64	1.64	1.63	1.62	1.62	---	---	---	---
ne	1.57	1.51	1.49	1.48	1.48	1.48	1.48	1.48	1.47	1.47	1.47	1.47				

Optical Properties	
Transmission Range	0.3 to 2.3 micron
Refractive Index	No 1.6654 at 0.51 micron
Refractive Loss	11.7% at 0.51 micron
Crystal/Class Structure	Trigonal (hex)
Cleavage Plane	(1011) cleavage

Mechanical Properties	
Density	2.71 g/cc
Hardness (Knoop)	155 Moh 3
Youngs Modulus	72.35 (perp) 88.19 (para) GPa
Shear Modulus	35 GPa
Bulk Modulus	129.53 GPa
Poisson Ratio	4.83 MPa (700 psi)
Elastic Limit	4.83 MPa (700 psi)
Molecular Weight	100.09

Thermal Properties	
Thermal Expansion	58 x 10 ⁻⁶ /°C
Thermal Conductivity	0.544 W m ⁻¹ K ⁻¹ at 293K
Melting Point	414.5°C
Specific Heat Capacity	201 J Kg ⁻¹ K ⁻¹

Chemical Properties	
Solubility	0.0014g/100g water at 25°C