



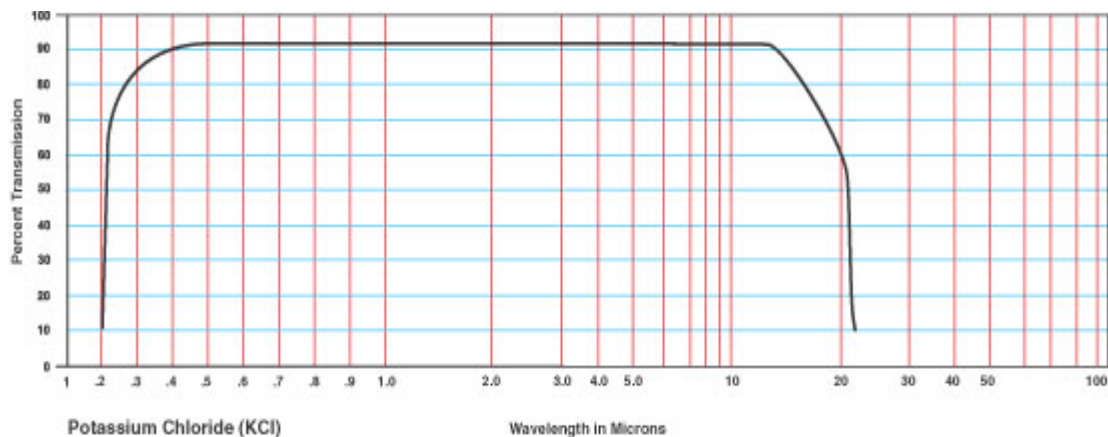
KNIGHT OPTICAL

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Title: Optical Material / Crystals (Infrared)
Material / Specification: Potassium Chloride for 0.21 to 20 Transmission
Range / Description: OPM-Potassium Chloride

Potassium Chloride is mainly used for CO2 laser protection windows.

Internal Transmittance



Internal Transmittance $\tau_i(\lambda)$ vs. wavelength λ											
λ, MKM	0.2	0.5	1.0	3.0	5.0	9.00	10	12	15	20	—
$\tau_i(\lambda)$	0.89	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.95	0.69	—

Refractive Index n vs. Wavelength λ																
λ, MKM	0.2	0.5	1.0	2.0	3.0	5.0	7.0	8.0	9.0	10	11	12	12.5	15	20	30
$n(\lambda)$	1.71	1.49	1.47	1.47	1.47	1.47	1.46	1.46	1.46	1.45	1.45	1.44	1.44	1.43	1.39	1.26

Optical Properties	
Transmission Range	0.21 to 20
Refractive Index	1.45644 at 10
Refractive Loss	6.7% at 10
Crystal/Class Structure	Cubic FCC, NaCl, Fm3m
Cleavage Plane	(100) cleavage

Thermal Properties	
Thermal Expansion	$36 \times 10^{-6} / \text{k}$ at 300k
Thermal Conductivity	$6.53 \text{ W m}^{-1} \text{ K}^{-1}$ at 322K
Melting Point	776°C
Specific Heat Capacity	$690 \text{ J Kg}^{-1} \text{ K}^{-1}$

Mechanical Properties	
Density	1.99 g/cc
Hardness (Knoop)	7.2 <110>, 9.3 <100> with 200g
Youngs Modulus	29.67 GPa
Shear Modulus	6.24 GPa
Bulk Modulus	17.36 GPa
Poisson Ratio	0.216
Elastic Limit	2.3 MPa (330 psi)
Molecular Weight	74.55

Chemical Properties	
Solubility	34.7g/100g water