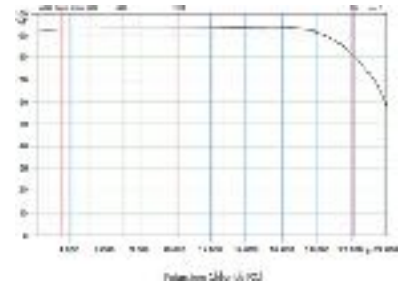


Optical Material Potassium Chloride (KCl) Optical Crystals

Potassium Chloride (KCl) is commonly used for infrared transmission crystal windows in gas and liquid sample cells used with infrared and FTIR spectrophotometers. KCl crystal windows are particularly useful for spatter barrier windows in CO₂ lasers because they have a low refractive index at 10.6 microns and the damage threshold is high. KCl is hygroscopic.



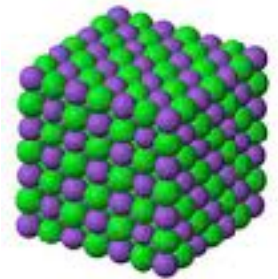
Optical Properties - Potassium Chloride (KCl) Optical Crystals

Transmission Range: 0.21 to 20 microns
Refractive Index: 1.456 at 10 microns
Reflection Loss: 6.8% at 10.6 microns (2 surfaces)
dN/dT (Expansion Coefficient): $-33.2 \times 10^{-6}/^{\circ}\text{C}$
dL-dT(Refractive Index Gradient): $40 \times 10^{-6}/^{\circ}\text{C}$
Coefficient of Absorption: 0.001 cm^{-1}



Physical Properties - Potassium Chloride (KCl) Optical Crystals

Thermal Conductivity: (W/cm K): 0.036
Damage Threshold (Newman & Novak): $4\text{GW}/\text{cm}^2$ or $2\text{j}/\text{cm}^2$ 0.5-1ns pulse rate
Damage Threshold (Kovalev & Faizullof): $4.2\text{j}/\text{cm}^2$ 1.7ns pulse rate
Melting Point: 776°C
Young's Modulus: 29.67 GPa
Apparent Elastic Limit: 330 psi
Structure: Cubic-- (100) cleavage plane



Chemical Properties - Potassium Chloride (KCl) Optical Crystals

Solubility: 34.7gm/100gm H₂O at 20° C

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