



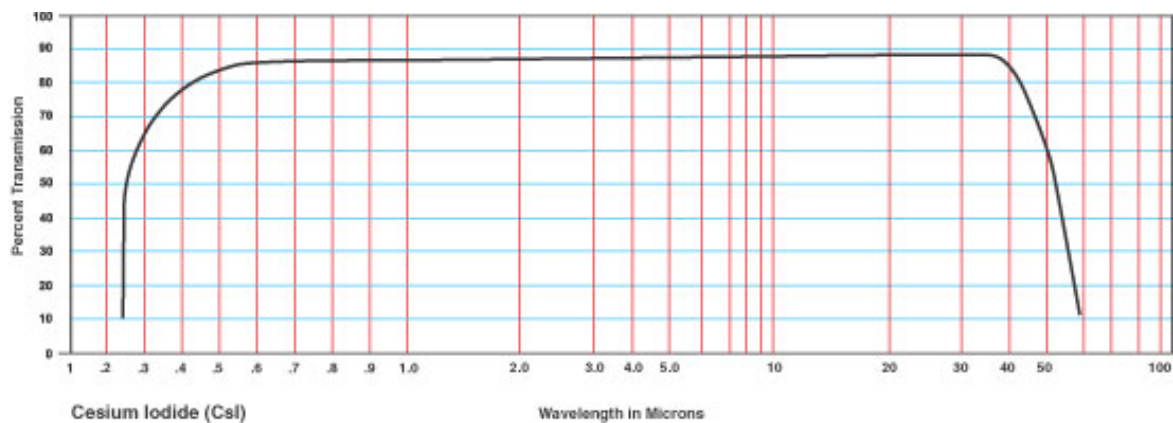
**KNIGHT OPTICAL**

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**Title:** Optical Material / Crystals (Infrared)  
**Material / Specification:** Caesium Iodide for 0.25 to 55 m Transmission  
**Range / Description:** OPM-Caesium Iodide

Soft crystal; soluble in water; hygroscopic; offers an extended transmission range. Because this material is so soft and extremely hygroscopic, it is very difficult to polish. The material with the deepest known IR transmission, CsI is sometimes used for components in the widest range spectrophotometers.

### Internal Transmittance



Refractive Index n vs. Wavelength $\lambda$																
$\mu\text{m}$	0.50	1.00	4.00	8.00	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	44.0	48.0	49.0	50.0
no	1.80	1.75	1.74	1.74	1.73	1.73	1.72	1.72	1.71	1.70	1.69	1.67	1.66	1.64	1.64	1.63

Optical Properties	
Transmission Range	0.25 to 55 micron
Refractive Index	1.73916 at 10 micron
Refractive Loss	13.6% at 10 micron
Crystal/Class Structure	Cubic CsCl, Pm3m,
Cleavage Plane	no cleavage, deforms

Thermal Properties	
Thermal Expansion	$48.3 \times 10^{-6} / ^\circ\text{C}$ at 293 K
Thermal Conductivity	$1.1 \text{ W m}^{-1} \text{ K}^{-1}$ at 298 K
Melting Point	621 °C
Specific Heat Capacity	$201 \text{ J Kg}^{-1} \text{ K}^{-1}$

Mechanical Properties	
Density	4.51 g/cc
Hardness (Knoop)	20 with 200g indenter
Youngs Modulus	5.3 GPa
Shear Modulus	6.24 GPa
Bulk Modulus	12.67 GPa
Poisson Ratio	0.214
Elastic Limit	5.6 MPa (810psi)
Molecular Weight	259.83

Chemical Properties	
Solubility	44 g/100 g water at 0 °C