

MATERIAL PROPERTIES & SPECIFICATIONS



Lithium Fluoride (LiF)

Lithium Fluoride is a cubic crystal that transmits very well into the extreme UV region at the hydrogen Lyman-alpha line (121 nm) and beyond. It is a fragile material that is susceptible to thermal and mechanical shock. LiF is used for windows in UV-radiation sources and receivers, x-ray phase retarders, VUV & excimer laser windows, polarizers and lenses. Fairfield Crystal provides single crystal LiF material to support commercial, defense and research and development applications and in addition to blanks we supply polished optical windows, waveplates, lenses, prisms and customer specified optics.

	Lithium Fluoride	LiF
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Optical Properties	
Transmission Range	0.12 to 6.0 microns
Reflection Loss	5.2% @ 6.0 μm (2 surfaces)
Refractive Index	1.3920 @ 0.6 μm
Absorption Coefficient	$5.9 \times 10^{-3}/\text{cm}$ @ 4.3 μm
Crystal Structure	Face-centered cubic; cleavage plane <100>
Lattice Constant	$a = 403.5\text{pm}$

Physical/ Thermal Properties	
Density	6.51g/cc
Melting Point	855 deg C
Thermal Expansion Coefficient	$37 \times 10^{-6} / \text{deg C}$
Youngs Modulus (E)	64.8 GPa
Dielectric Constant	9.1
Hardness	102 Knoop, approx. 3-3.5 Mohs
Poisson Ratio	0.324 (calculated)

Substance	Form	Diameter Range	Thickness Range	Transmission Range (μm)	Finish
Lithium Fluoride	Single Crystal	5 to 150mm	1 to 100 mm	0.12 to 9.00	Fine Ground**

* Special orders available **
Standard finish – other finish available upon request