

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.



Substance	Form	Diameter Range	Thickness Range	Transmission Range (µm)	Surface Finish
Lithium Fluoride	Single Crystal	5 to 150 mm	1 to 100mm*	0.12 to 6.00	Fine Ground**

*Special orders available

**Standard finish – other finish available upon request

OPTICAL PROPERTIES

Transmission Range	0.12 to 6.0 microns
Refractive Index	1.3920 at 0.6 microns
Reflection Loss	5.2% at 0.6 microns (2 surfaces)
Absorption Coefficient	$5.9 \times 10^{-3}/\text{cm}$ at 4.3µm

PHYSICAL PROPERTIES

Density	2.64 gm/cc
Melting Point	855°C
Poisson Ratio	0.324 (calculated)
Hardness	102 Knoop , approx. 3 – 3.5 Mohs
Crystal Structure	Cubic – Cleavage Plane <100>
Coefficient of Thermal Expansion (CTE)	$37 \times 10^{-6}/\text{K}$

Fabrication

LiF can be oriented and cut along customer specified axes however extreme care must be taken because the material cleaves easily. The material can be polished using diamond turning or standard pitch polish, but expertise is required particularly on steep radii because the crystal can splinter or tear out. Fairfield Crystal also provides polishing services. Our expertise in crystal growth and understanding of the crystal structure gives us an advantage and enables us to offer superior polished surfaces and surface figure to customers' rigorous specifications. For other specifications or specific requirements please contact our sales team.



Polishing Capabilities

Surface figure: $1/20\lambda$ @ 632.8nm
Surface quality: 10/5 S/D, <5 angstrom RMS
Parallelism: < 10 arc seconds
Sizes: 5.0 to 150 mm Diameter

Hazard Labeling: Not regulated by Department of Transportation (DOT)

Shipping Classification: UPS or FedEx: Ground, Air

Fairfield Crystal Technology will be pleased to quote you price and delivery.

Contact us

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