

LITHIUM FLUORIDE CRYSTALS [LiF]

LiF crystals shows excellent transmittance in the VUV region. It is used for windows, prisms, and lenses in the visible and infrared in 0.104 μ m - 7 μ m. LiF crystalis sensitive to thermal shock and would be attacked by atmospheric moisture at 400°C. In addition irradiation produces color centers. Modest precautions should be taken against moisture and high energy radiation damage. Besides LiF is softens at 600°C and is slightly plastic that can be bent into radius plates. The material can be cleaved along (100) and less commonly (110). Although the optical characteristics are good the structure is not perfect and cleavage is difficult. For good structure LiF is less commonly grown by the Kyropoulos method (air-grown) specifically for monochromator plates. High quality LiF is usually grown by modified Bridgman technique. Maximum available size in diameters is 115mm. LiF is slightly plastic and can be bent into radius plates.



Specification	
Transmission Range	0.12 ~ 6μm
Refractive Index at 0.6 µm	1.39181
Reflection Loss at 0.6 µm	5.2% [2 surfaces]
Absorption Coefficient at 2.7 µm [cm-1]	0.74×10-3
Density [g/cm3]	2.639
Melting Point [°C]	870
Thermal Conductivity at 314K [Wm-1K-1]	4.01
Thermal Expansion at 283K [K-1]	37 × 10-6
Knoop Hardness	102 with 600g indenter
Specific Heat Capacity [J Kgm-1K-1]	1562
Elastic Coefficient	C11=112; C12=46; C44= 63.5
Apparent Elastic Limit	11.2 Mpa [1620 psi]
Poisson Ratio	0.326
Solubility in 100g water at 20°C [g]	0.27
Cleavage	100

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