

LITHIUM FLUORIDE VACUUM LiF

Crystallographic LiF (Lithium Fluoride)

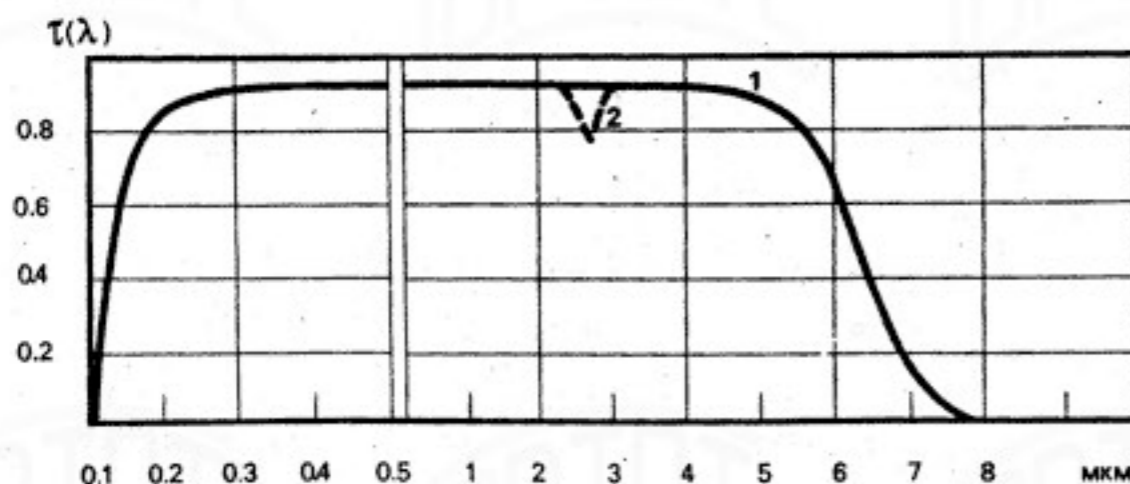
Syngony	Cubic
Symmetry Class	m3m
Lattice Constants, Angstroms	a=4.026 c=a
Cleavability	(100), perfect

Optical LiF (Lithium Fluoride)

Refractive Index at n_e	1.3931
Refractive Index at $n_F - n_C$	0.004
Thermal Coefficient of Refractive Index at $\lambda = 3.39$ microns, $^{\circ}\text{C}^{-1}$ for $\pm 60^{\circ}\text{C}$	$(-1.25 \dots -1.51) \cdot 10^{-5}$
Transmission Range, microns (thickness 10mm)	0.12, 6.5

Transmittance $t_i(\lambda)$ vs. wavelength λ

1. in vacuum
2. on an air



λ, MKM	$t_i(\lambda)$
0.2	0.90
0.5	0.98
1.0	0.97
3.0	0.97
5.0	0.88
6.0	0.65
7.0	0.14

λ, MKM	$n(\lambda)$
0.2	1.4390
0.5	1.3943
1.0	1.3871
2.0	1.3788
3.0	1.3666
4.0	1.3494
5.0	1.3266
6.0	1.2975
7.0	1.2620
8.0	1.2180
9.0	1.1650
10.0	1.1010

Thermal LiF (Lithium Fluoride)

Thermal Linear Expansion $\alpha_t, ^{\circ}\text{C}^{-1}$ for $\pm 60^{\circ}\text{C}$	$(28.1, 34.8) \cdot 10^{-6}$
Thermal Conductivity, $\text{W}/(\text{m} \cdot ^{\circ}\text{C})$ at 26°C	14.2
Specific Heat Capacity, $\text{J}/(\text{kg} \cdot ^{\circ}\text{C})$ at 10°C	1561.7
Melting Point, $^{\circ}\text{C}$	870

Mechanical LiF (Lithium Fluoride)

Density, g/cm^3 at 20°C	2.60	
Mohs Hardness	4	
Vickers Microhardness, Pa	$9.8 \cdot 10^8$	
Constants of Elastic Compliance, Pa^{-1}	S_{11}	$11.32 \cdot 10^{-12}$
	S_{12}	$-3.06 \cdot 10^{-12}$
	S_{44}	$15.91 \cdot 10^{-12}$
Poisson Ratio	0.270	
Young Modulus (E), Pa	$\langle 100 \rangle$	$8.84 \cdot 10^{10}$
	$\langle 100 \rangle$	$14.22 \cdot 10^{10}$
Shear Modulus (G), Pa	(100)	$4.09 \cdot 10^{10}$
	(100)	$6.29 \cdot 10^{10}$

Chemical LiF (Lithium Fluoride)

in water at 20°C $\text{g}/100\text{cm}^3$	in acids
0.27	soluble

"Opto-Technological Laboratory" produces lenses, windows, prisms, wedges and others optical components according to customers' specifications and drawings out of crystals lithium fluoride (LiF).