

Calcium Fluoride (CaF₂)

Custom sizes and specifications are available

CRYSTALLOGRAPHIC

Syngony	Cubic
Symmetry Class	m3m
Lattice Constants, Angstrom	a=5.462
	c=a
Cleavability	(111), perfect

OPTICAL

Refractive Index at n_e	1.4349
Refractive Index $n_F - n_C$	0.0043
Refractive Index at $n_{10.6}$	1.2996
Thermal Coefficient of Refractive Index at 3.39 microns for +/- 60 deg C	$(-0.95) \dots (-1.17) \times 10^{-5}$
Transmission Range, microns	0.15-9.0

THERMAL

Thermal Linear Expansion, deg C ⁻¹ for +/- 60 deg C	$(16.5 \dots 19.4) \times 10^{-6}$
Thermal Conductivity, W/(m•deg C) at 36 deg C	9.71
Specific Heat Capacity, J/(kg•deg C)	0.8876×10^3
Thermal Stability, deg C	20 +/- 2
Melting Point, deg C	1418

MECHANICAL

Density, g/cm ³ at 20 deg C	3.18
Mohs Hardness	4
Vickers Microhardness, Pa	165×10^7
Constants of Elastic Compliance, Pa ⁻¹	$S_{11} = 6.83 \times 10^{-12}$ $S_{12} = -1.53 \times 10^{-12}$ $S_{44} = 29.58 \times 10^{-12}$

Young Modulus (E), Pa in <100> direction	14.61×10^{10}
in <111> direction	8.99×10^{10}
Shear Modulus (G), Pa in <100> direction	4.76×10^{10}
in <111> direction	3.38×10^{10}
Poisson Ratio	0.216

CHEMICAL

Molecular Weight	78.08
Solubility in water, gram/100 cm ³	0.0016

Refr. Index n vs. Wavelength λ

WAVELENGTH, MICRONS	REFRACTIVE INDEX
0.2	1.4951
0.5	1.4365
1.0	1.4289
2.0	1.4239
3.0	1.4179
4.0	1.4096
5.0	1.3990
6.0	1.3856
7.0	1.3693
8.0	1.3498
9.0	1.3268
10.0	1.3002
11.0	1.2676
12.0	1.2299

Internal Transmittance τ_i (λ) vs. Wavelength λ

WAVELENGTH, MICRONS	INTERNAL TRANSMITTANCE
0.2	0.87
0.5	0.97
1.0	0.99
3.0	0.99
5.0	0.99
6.0	0.98
7.0	0.97
8.0	0.88
9.0	0.59
10.0	0.19

Transmittance τ (λ) vs. Wavelength λ

