

# Calcium Fluoride (CaF<sub>2</sub>)

Custom sizes and specifications are available

**Crystal Structure:** Monocrystalline, Polycrystalline **Types Available:** IR Grade, UV Grade, Excimer Grade

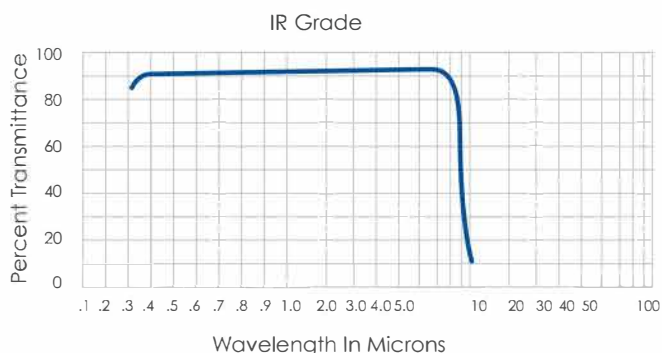
CRYSTALLOGRAPHIC	
Syngony	Cubic
Symmetry Class	m3m
Lattice Constants, Angstrom	a = 5.462 c=a
Cleavability	<111>, perfect
Orientation	<111>, <100>
OPTICAL	
Refractive Index at n <sub>e</sub>	1.4349
Refractive Index n <sub>f</sub> , -n <sub>c</sub>	0.0043
Refractive Index at n <sub>10.6</sub>	1.2996
Thermal Coefficient of Refractive Index at 3.39 microns for +/- 60 deg C	(-0.95)... (-1.17) x 10 <sup>-5</sup>
Transmission Range, Microns	0.15 - 9.0
THERMAL	
Thermal Linear Expansion, deg C <sup>-1</sup> for +/- 60 deg C	(16.5...19.4) x 10 <sup>-6</sup>
Thermal Conductivity, W/(m * deg C) at 36 deg C	9.71
Specific Heat Capacity, J/(kg * deg C)	0.8876 x 10 <sup>3</sup>
Thermal Stability, deg C	20 +/-2
Melting Point, deg C	1418

MECHANICAL	
Density, g/cm <sup>3</sup> at 20 deg C	3.18
Mohs Hardness	4
Vickers Microhardness, Pa	165 x 10 <sup>7</sup>
Constants of Elastic Compliance, Pa <sup>-1</sup>	S <sub>11</sub> =6.83 x 10 <sup>-12</sup> S <sub>12</sub> =-1.53 x 10 <sup>-12</sup> S <sub>44</sub> =29.58 x 10 <sup>-12</sup>
Young Modulus E, Pa	
in <100> direction	14.61 x 10 <sup>10</sup>
in <111> direction	8.99 x 10 <sup>10</sup>
Shear Modulus (G), Pa	
in <100> direction	4.76 x 10 <sup>10</sup>
in <111> direction	3.38 x 10 <sup>10</sup>
Poisson Ratio	0.216
CHEMICAL	
Molecular Weight	78.08
Solubility	
in water, gram/100cm <sup>3</sup>	0.0016

\*IR Grade is the most commonly used grade in ISP Optics Catalog, however ISP Optics reserves the right to use any grade at its discretion.

Refr. Index n vs. Wavelength λ		Internal Transmittance T <sub>i</sub> (λ) vs. Wavelength λ	
WAVELENGTH, MICRONS	REFRACTIVE INDEX	WAVELENGTH, MICRONS	INTERNAL TRANSMITTANCE
0.2	1.4951	0.35	0.97
0.5	1.4951	0.5	0.97
1.0	1.4951	1.0	0.99
2.0	1.4951	3.0	0.99
3.0	1.4951	5.0	0.99
4.0	1.4951	6.0	0.98
5.0	1.4951	7.0	0.97
6.0	1.4951	8.0	0.88
7.0	1.4951	9.0	0.59
8.0	1.4951	10.0	0.19
9.0	1.4951		
10.0	1.4951		
11.0	1.4951		
12.0	1.4951		

Transmittance τ (λ) vs. Wavelength λ



For Reference Only

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