

Calcium Fluoride Technical Data

Transmission Range: 0.13 to 10 μm (Note: IR grade will have restricted performance outside IR range)

Refractive Index: No 1.39908 at 5 μm (1) (2)

Reflection Loss: 5.4% at 5 μm

Absorption Coefficient: $7.8 \times 10^{-4} \text{ cm}^{-1}$ at 2.7 μm

Reststrahlen Peak: 35 μm

Dn/dT : $10.6 \times 10^{-6}/^{\circ}\text{C}$ (3)

$Dn/d\mu = 0$: 1.7 μm

Density: 3.18g/cc

Melting Point: 1360 $^{\circ}\text{C}$

Thermal Conductivity: 9.71 W $\text{m}^{-1} \text{K}^{-1}$ (4)

Thermal Expansion: $18.85 \times 10^{-6}/^{\circ}\text{C}$ (5) (6)

Hardness: Knoop 158.3 (100) with 500g indenter

Specific Heat Capacity: 854 J $\text{Kg}^{-1} \text{K}^{-1}$

Dielectric Constant: 6.76 at 1MHz (7)

Youngs Modulus (E): 75.8 GPa (7)

Shear Modulus (G): 33.77 GPa (7)

Bulk Modulus (K): 82.71 GPa (7)

Elastic Coefficients: $C_{11}=164$ $C_{12}=53$ $C_{44}=44.7$ (7)

Apparent Elastic Limit: 36.54 MPa

Poisson Ratio: 0.26

Solubility: 0.0017g/100g water at 20 $^{\circ}\text{C}$

Molecular Weight: 78.08

Class/Structure: Cubic Fm3m (#225) Fluorite Structure. Cleaves on (111)