BaF_2 – Barium Fluoride

CRYSTALLOGRAPHIC

Syngony	Cubic
Symmetry Class	m3m
Lattice Constants	a = 6.196 Å c = a
Cleavability	(111), perfect

OPTICAL

Refractive Index at ne	1.4759
Refractive Index at nF' **- n**C'	0.0059
Refractive Index at n10.6	1.3926
Refractive Index at n8.0 **- n**12.5	0.0673
Thermal Coefficient of Refractive Index at 3.39 microns for □60 °C	(-1.27) ... (-1.51) x 10-5
Transmission Range, microns	0.15 - 12.5
Absorbance □ (□), cm -1	
at 0.2 microns	0.2
at 0.4 microns	0.08
at 10.6 microns	0.13

THERMAL

Thermal Linear Expansion, °C-1 **for □60 °C**	(16.5 ... 19.2) x 10-6
Thermal Conductivity, W/(m * °C) at 38 °C	7.1
Specific Heat Capacity, J/(kg * °C)	0.456 x 103
Thermal Stability, °C	10 □2
Melting Point, °C	1354

MECHANICAL

Density, g/cm3 **at 20 °C**	4.83
Mohs Hardness	3
Vickers Microhardness, Pa	82 x 107

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Constants of Elastic Compliance, Pa-1	S11 = 15.30 x 10-12 S12 = -4.69 x 10-12 S44 = 39.47 x 10-12
Young Modulus (E), Pa	
in <100> direction	6.54 x 1010
in <111> direction	6.63 x 1010
Shear Modulus (G), Pa	
in <100> direction	2.51 x 1010
in <111> direction	2.53 x 1010
Poisson Ratio	0.307

CHEMICAL

Molecular Weight	175.3
Solubility	
in water, gram/100 cm3	0.17
in acids	soluble
Molecular Weight	175.3

REF. INDEX VS. WAVELENGTH λ

Wavelength, Microns	Refractive Index
0.2	1.5573
0.5	1.4779
1.0	1.4686
2.0	1.4647
3.0	1.4612
4.0	1.4558
5.0	1.4511
6.0	1.4441
7.0	1.4357
8.0	1.4258
9.0	1.4144
10.0	1.4014
11.0	1.3865
12.0	1.3696
12.5	1.3585
15.0	1.3050

INTERNAL TRANSMITTANCE ζ i (λ) VS. WAVELENGTH λ

Wavelength, Microns	Internal Transmittance
0.2	0.70
0.5	0.96
1.0	0.97
3.0	0.97
5.0	0.97
6.0	0.97
7.0	0.97
8.0	0.97
9.0	0.70
10.0	0.85
12.0	0.42

Custom sizes and specifications are available on request.