

Barium fluoride (BaF₂)



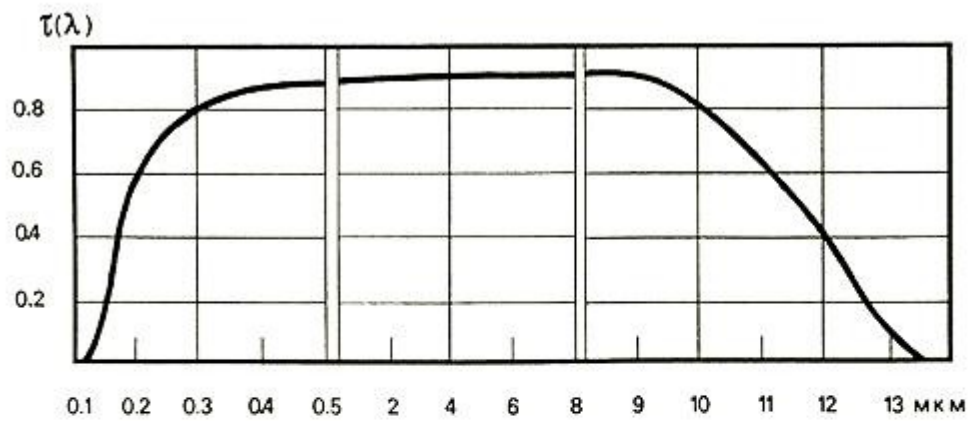
1. Crystallographic characteristics

Crystal system group	Class	Lattice parameters		Cleavage
		a	c	
Cubic	m $\bar{3}$ m	6.196	a	Perfect along (111)

2. Optical characteristics

n_e	$n_F' - n_C'$	$n_{10,5}$	$n_{8,0} - n_{12,5}$	Internal transmittance coefficient		Refractive index	
				l, mkm	$\tau_i(1)$	l, mkm	n (l)
1.4759	0.0059	1.3926	0.0673				
Attenuation coefficient $\kappa(1)$, cm ⁻¹ , less than						0.2	1.5573
						0.5	1.4779
						1.0	1.4686
						2.0	1.4647
						3.0	1.4612
						4.0	1.4587
						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
Thermal coefficient of refractive index at $\lambda = 3.39$ mkm, $10^{-5} \text{ } ^\circ\text{C}^{-1}$ in range of $\pm 60^\circ\text{C}$		Transparency range, mkm (10 mm width)					
(-1.27) - (-1.51)		0.18 - 12					
BF - U	BF - V	BF - I		0.2	0.60		
				0.5	0.96		
				1.0	0.97		
				3.0	0.97		
0.20 (0.2 mkm)	0.08 (0.4 mkm)	0.13 (10.6 mkm)		5.0	0.97		
				6.0	0.97		
				7.0	0.97		
				8.0	0.97		
				9.0	0.97		
				10.0	0.85		
				12.0	0.42		

Transmission spectrum



3. Thermal characteristics

Thermal expansion $\alpha_t \cdot 10^8, ^\circ\text{C}^{-1}$	Thermal conductivity, $\text{W}/(\text{m} \cdot ^\circ\text{C})$	Specific heat, $10^3 \text{ J}/(\text{kg} \cdot ^\circ\text{C})$	Heat resistance, $^\circ\text{C}$	Melting Point, $^\circ\text{C}$
in range of $\pm 60^\circ\text{C}$	at 38°C	0.4560	10 ± 2	1354
$16.5 \div 19.2$	7.1			

4. Mechanical characteristics

Density at 20 ⁰ C, g/cm ³	Hardness/Mohs	Microhardness, 10 ⁷ Pa		Elastic compliance constants, 10 ⁻¹² Pa ⁻¹		
				S ₁₁	S ₁₂	S ₄₄
4.83	3	82		15.30	-4.69	39.47
Modulus of elasticity E, in direction, 10 ¹⁰ Pa		Shear modulus G, in plane, 10 ¹⁰ Pa		Transverse deformation coefficient ν		
6.54	6.63	2.51	2.53	0.307		

Optic stresses coefficient		Photoelastic constants		Piezooptic constants at $\nu = 0.546$ mkm, 10 ⁻¹² Pa ⁻¹		
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B ₁	B ₂	C ₁	C ₂	ν_{11}	ν_{12}	ν_{44}
4.71	-1.70	1.00	-3.71	-0.62	2.31	1.06

5. Chemical stability

Solubility		
in water at 20 ⁰ C, g/100 cm ³	in acids	in organic solvents
0.17	soluble	-