

## BaF2 lenses

- **Wide wavelength range of 0.2-11  $\mu\text{m}$**
- **Suitable for MWIR (3-5  $\mu\text{m}$ ) thermal cameras**

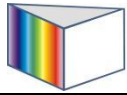
**Barium Fluoride** can be used in the ultraviolet, visible and infrared spectral regions. Barium Fluoride has transmission above 90% between 0.25 and 9.5 $\mu\text{m}$ . Barium Fluoride is half as hard as Calcium Fluoride and also more susceptible to thermal shock. However, it is commonly used in cryogenically cooled thermal imaging systems. It is somewhat more expensive than Calcium Fluoride and not as readily available in large sizes. Hangzhou Shalom EO offer the BaF2 lenses used in MWIR (3-5 micro) thermal imaging applications.



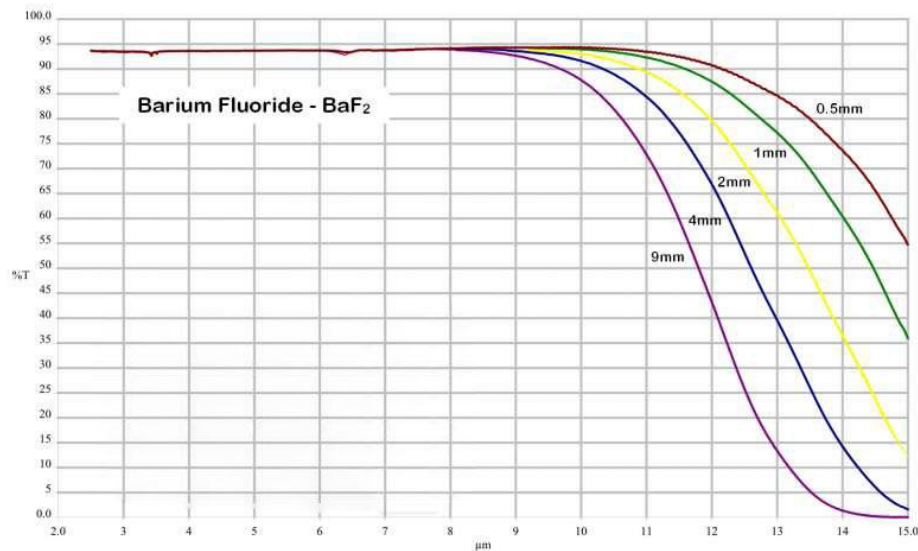
## SPECIFICATIONS

Specifications	
Materials	BaF2 crystals
Diameter range	~200mm
Diameter Tolerance	+0.0/-0.2mm
Thickness Tolerance	+/-0.2mm
Surface Quality	60/40 S/D
Frings (N)	3
Irregularity (delta N)	1
Centration	3'
Chamfer	0.1-0.3mmx45 degree
Coatings	AR/AR@3-5micro

Note: the domes of other specifications is available upon customer's request.

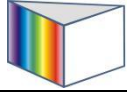


Transmission curve of the BaF2 substrates of different thickness



**Basic Properties**

Physical and optical properties	
Transmission Range	0.15 to 12 $\mu\text{m}$
Refractive Index	1.45 at 5 $\mu\text{m}$ (1)
Reflection Loss	6.5% at 5 $\mu\text{m}$ (2 surfaces)
Absorption Coefficient	$3.2 \times 10^{-4} \text{ cm}^{-1}$ @ 6 $\mu\text{m}$
Reststrahlen Peak	47 $\mu\text{m}$
dn/dT	$-15.2 \times 10^{-6}/^\circ\text{C}$ (2)
dn/d $\mu$ = 0	1.95 $\mu\text{m}$
Density	4.89 g/cc
Melting Point	1386 $^\circ\text{C}$
Thermal Conductivity	11.72 W m $^{-1}$ K $^{-1}$ @ 286 K
Thermal Expansion	$18.1 \times 10^{-6}/^\circ\text{C}$ @ 273 K
Hardness	Knoop 82 with 500g indenter (4)
Specific Heat Capacity	410 J Kg $^{-1}$ K $^{-1}$ (3)
Dielectric Constant	7.33 at 1 MHz
Youngs Modulus (E)	53.07 GPa (3)
Shear Modulus (G)	25.4 GPa (3)
Bulk Modulus (K)	56.4 GPa
Elastic Coefficients	C11 = 89.2 C12 = 40.0 C44 = 25.4 (2)
Apparent Elastic Limit	26.9 MPa (300psi) (4)
Poisson Ratio	0.343
Solubility	0.17g/100g water at 23 $^\circ\text{C}$
Molecular Weight	175.36
Class/Structure	Cubic CaF2, Fm3m, (111) cleavage



**Shalom EO**  
Crystals, optics and components

Hangzhou Shalom Electro-optics Technology Co., Ltd.

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