

Cr:BeAlO₂



DESCRIPTION

CRYLINK's Cr:BeAlO₂ crystal products, also known as Alexandrite. It is a broadband tunable laser gain medium with excellent comprehensive performance. It is widely used in dermatology, laser cosmetology, radar technology and other fields. The product has the characteristics of long fluorescence life, high saturation energy density and wide absorption bandwidth. It can be used in medical laser, alexandrite Q laser, laser radar, alexandrite laser treatment instrument products.

FEATURES

- Excellent quality
- Good uniformity
- Large crystal size
- Strong double refraction
- High damage threshold
- The coating threshold is high
- Small section (high saturation flux)
- Wavelength coverage: 500nm-3000nm
- Low symmetry (orthogonal crystal structure)
- Absorption range 380-630 nm, peak at 410 nm and 590 nm
- Performance is enhanced at higher temperatures (90-150 ℃)
- Tuning ranges from 700 nm to 860 nm (main laser wavelength 755 nm)

APPLICATIONS

- Laser beauty
- Photochemistry
- Nonlinear optics
- Radar technology
- Defense applications
- Laser medical equipment
- Photoelectric confrontation
- Remote sensing technology
- High-resolution spectroscopy
- Mainly used for long pulses or Q switch 755nm lasers
- Material handling - Alexandrite laser punching, semiconductor treatment



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PARAMETERS

STANDARD

Diameter Tolerance	+0.000"/- .002"
Clear Aperture	≥98%
Chamfer	0.005" ± 0.003"@45°
Barreling	55±5 μinches
Perpendicularity	<5'
Parallelism	<30"
Flatness	λ/10@633nm
Surface Finish	10-5 scratch-dig per MIL-O-13830
Wavefront Distortion	Less than λ/2 per inch (measured in 1μm)
Facet Coating	Single-layer MgF ₂ Single wavelength, broad band AR coating
Cr Doping	Standard range of reflection: 0.10–0.17 at.% Optimum Cr concentration: 0.83/d at.% (diameter in mm)

PHYSICAL AND CHEMICAL PROPERTIES

Chemical Formula	Be(Al _{1-x} Cr _x) ₂ O ₄
Crystal Structure	Orthorhombic
Lattice Constant	a=5.476Å per ASTM 10-32
	b=9.404 Å
	c=4.427 Å
X-ray Densitometer	3.7g/cm ³
Melting Point	1870 °C
Thermal Expansivity	// a 5.9×10 ⁻⁶ K ⁻¹
	// b 6.1×10 ⁻⁶ K ⁻¹
	// c 6.7×10 ⁻⁶ K ⁻¹
Thermal Conductivity	0.23 W cm ⁻¹ K ⁻¹
Hardness (Vickers)	2000 kg mm ⁻²
Young's Modulus	469 GPa
Breaking Stress	0.457-0.948 GPa
Thermal Shock Resistance	35-74W/cm



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DOPING PARAMETERS

Chromium Concentration Range	0.01-0.2 at. %
Chromium Ion Concentration (0.1 at. %)	$3.51 \times 10^{20} \text{ cm}^{-3}$
Refractive Index (750 nm) (biax)	$E//a = 1.7367$
	$E//b = 1.7421$
	$E//c = 1.7346$
Doping Position Symmetry	78% mirror (laser active) 22% inversion
Nonlinear Refractivity, n_2	$\sim 10^{-13}$ ESU
Findlay Clay Insertion Loss	$< 0.3\% \text{ cm}^{-1}$
Refractive Index Temperature Change	$8 \times 10^{-6} \text{ K}^{-1}$

SPECTRA

