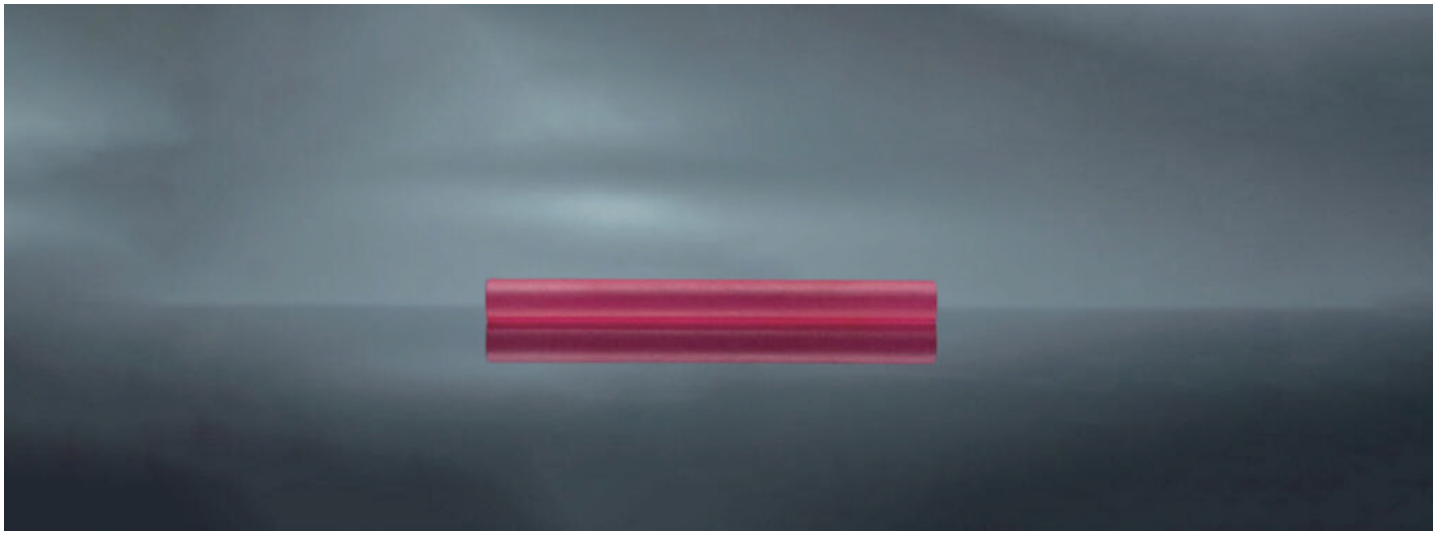
$Cr:BeAl_2O_4$



DESCRIPTION

CRYLINK's $Cr:BeAl_2O_4$ 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 technolo-gy 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 tempera-tures (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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$Cr:BeAl_2O_4$

PARAMETERS

STANDARD

Diameter Tolerance	+.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	$Be(Al_{1-x}Cr_x)_2O_4$
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 $6.7\times10^{-6}K^{-1}$
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

$Cr:BeAl_2O_4$

DOPING PARAMETERS

Chromium Concentration Range	0.01-0.2 at.%
Chromium Ion Concentration (0.1 at.%)	$3.51\times10cm^{-3}$
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	$\sim10^{-13}$ ESU
Findlay Clay Insertion Loss	<0.3% cm^{-1}
Refractive Index Temperature Change	8×10^{-6} K^{-1}

SPECTRA