CESIUM LITHIUM BORATE – CLBO

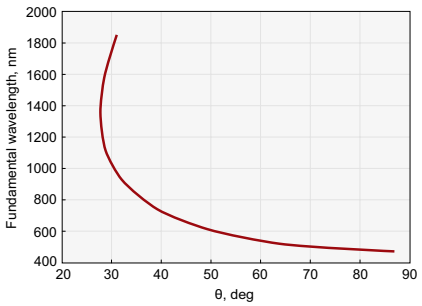
Features

- Well suited for UV applications
- Small walk-off angle
- Large angle tolerance
- No saturation for high power generation

CLBO is a highly hygroscopic NLO crystal material. Therefore, standard CLBO crystals are supplied sealed in 1-inch (ø25.4 mm) housings with anti-reflection coated UV FS protective windows. Unmounted CLBO crystals are available upon custom request.

CLBO is a relatively new nonlinear crystal material, which has excellent properties in the UV that can be used for different applications:

- Harmonic generation (up to fifth) of Nd-doped lasers
- Frequency doubling and tripling of Alexandrite, Ti:Sapphire lasers



SHG Tuning curve of CLBO

Standard Specifications

Flatness	λ/8 @ 633 nm
Parallelism	20 arcsec
Surface quality	10 – 5 scratch & dig (MIL-O-13830A)
Perpendicularity	< 5 arcmin
Angle tolerance	< 30 arcmin
Aperture tolerance	± 0.1 mm
Clear aperture	90% of full aperture

Physical Properties

Chemical formula	$CsLiB_6O_{10}$
Transparency range	180 – 2750 nm
Effective NLO coefficient	1.01 pm/V @ 532 nm 1.16 pm/V @ 488 nm
NLO coefficients	$d_{eff}(I) = d_{36}\sin\theta m \sin(2\varphi)$ $d_{eff}(II) = d_{36}\sin(2\theta m)\cos(2\varphi)$
Sellmeier equations, CLBO at 20°C (0.1914 < λ < 2.09 μm)	$no^2 = 2.2104 + 0.01018 / (\lambda^2 - 0.01424) - 0.01258\lambda^2$ $ne^2 = 2.0588 + 0.00838 / (\lambda^2 - 0.01363) - 0.00607\lambda^2$
Density	2.461 g/cm³
Mohs hardness	5.5
Melting point	1118 K
Thermal conductivity	1.25 W/mK
Refractive indices	n_e = 1.4340, no = 1.4838 @ 1064 nm n_e = 1.4445, no = 1.4971 @ 532 nm
Therm-optic coefficients	$dn_o/dT = -1.9 \times 10^{-6}$/°C $dn_e/dT = -0.5 \times 10^{-6}$/°C

Standard Crystals List

Size, mm	θ, deg	φ, deg	Coating	Catalogue number	Price, EUR
4 × 4 × 10	61.5	45	AR/AR @ 532+266 nm	CLBO-401S	2760
5 × 5 × 8	61.5	45	AR/AR @ 532+266 nm	CLBO-501S	3410

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Application

Wavelength	Phase matching angle	Deff	Angle tolerence	Walk-off angle
532 + 532 = 266 nm	61.7°	0.84 pm/V	0.49 mrad - cm	1.83°