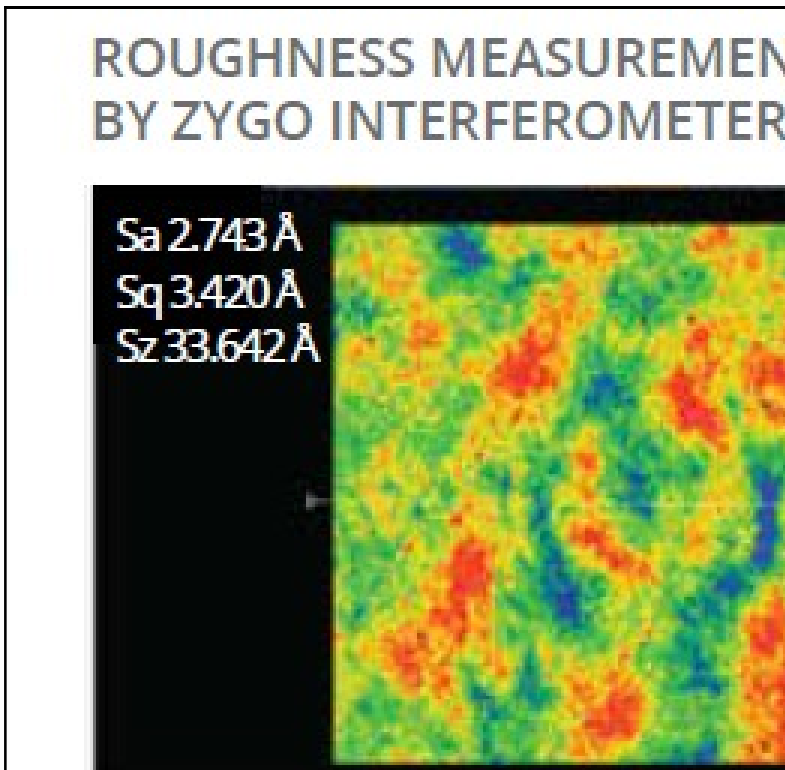


SRC Series LBO Crystals

LBO (Lithium Triborate LiB_3O_5) is a nonlinear optical crystal ideally suitable for various nonlinear optical applications. LBO crystals combine wide transparency, moderately high nonlinear coupling, high damage threshold and good chemical and mechanical properties.



Special Advantages of our LBO:

- Super polished elements for excellent surface quality: roughness < 3Å RMS and scratch dig 2/1
- Very low bulk absorption: up to 2ppm/cm @1064nm
- Crystal size up to 50x50 mm and maximum length of 50 mm
- Strict quality control

Our LBO features:

- Wide transparency range (160nm – 2600nm)
- Moderately high nonlinear coefficient
- High damage threshold
- Type I and II phase matching in a wide wavelength range
- High optical homogeneity
- Wide acceptance angle and small walk-off angle

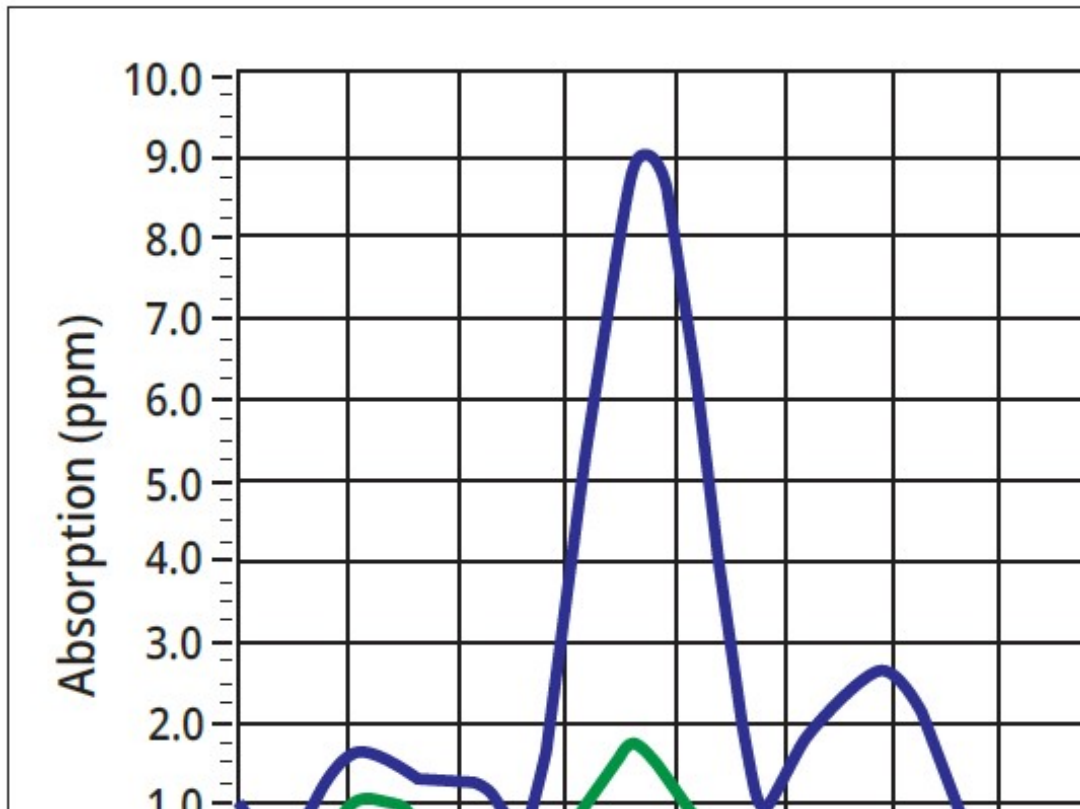
Common Applications:

Second and third harmonic generation of high power diode pumped Nd:YAG and Nd:YLF lasers, Alexandrite, Ti:Sapphire, Dye lasers and ultrashort pulse lasers

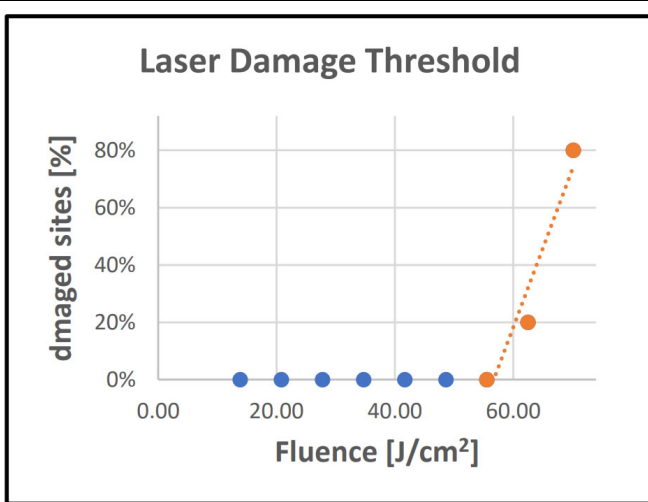
Typical Specifications for LBO:

Apertures	Up to 50x50 mm ²
Length	Up to 50 mm along x axis
Flatness	Up to $\lambda/10$ @1064nm
Roughness	<3Å RMS
Parallelism	Up to 5 arc sec.
Perpendicularity	Up to 5 arc min.
Scratch/Dig	2/1 up to 0/0 per custom demand
AR Coatings	Dual band R < 0.1%
Absorption Coefficient	<Bulk (1064nm) = 2-4 ppm/cm <Surface (1064nm) = 1-2 ppm <Bulk (532nm) = 8ppm/cm <Surface (532nm) = 1-2 ppm
Wave Front Distortion	$\lambda/8$ @633 nm
Laser induced Damage Threshold	800 MW/cm ² @1064 nm 500 MW/cm ² @532 nm 300 MW/cm ² @355 nm For 10 ns pulses

Surface absorption performed @532nm on LBO crystal AR coated @1064/532nm:



Graph clearly highlights that surface absorption at 532nm performed on coated LBO Superpolished crystal (roughness <3Å) is about 4 times less absorbent than standard polished coated LBO crystal (roughness of ~10Å). Based on this difference, LBO Superpolished crystals made by us should exhibit longer lifetime.



Fluence [J/cm ²]	PD [MW/cm ²]	% Fail
13.89	1158	0%
20.84	1737	0%
27.79	2316	0%
34.73	2894	0%
41.68	3473	0%
48.63	4052	0%
55.57	4631	0%
62.52	5210	20%
70.16	5847	80%

Laser Damage Threshold:

Measured at 12ns = 56.72 [J/cm²] or 4727 [MW/cm²]

Calculated for 10ns = 51.78 [J/cm²] or 5178 [MW/cm²]

Test Conditions:

Spot Diam. (FW/e², mm): 0.357
 Wavelength: 1064 Incidence Angle: 0
 Repetition Freq. (Hz): 15 Polarization State: Linear
 Pulse Width (FWHM, ns): 12 Transverse Modes: TEM00

