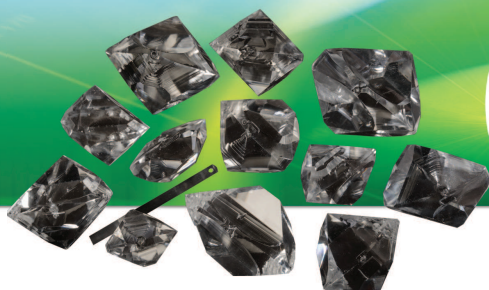




**Grown in France,**  
*Manufactured in France, Sold all over the World.*



# LBO

Lithium Triborate -  $\text{LiB}_3\text{O}_5$

## Applications

### Operation

**Second Harmonic Generation of 1064nm**

### Advantages

- + High damage Threshold ( $>70\text{J}/\text{cm}^2$  at 10Hz, 10ns at 1064nm performed on coated crystals of 15mm long)
- + Small walk-off at room Temperature
- + No Walk-off (NCPM) at 150°C
- + Low bulk absorption ( $<15\text{ppm}/\text{cm}$  at 1064nm)
- + High optical homogeneity

### Field of Application

- + High-power lasers for Ti:Sapphire pumping
- + High repetition rate lasers for material processing

**Sum Frequency Mixing of 1064nm and 532nm**

The most popular solution to achieve UV (355nm)  
 + Fair efficiency

- + UV lasers for material processing
- + Gas laser replacement

## Optical properties

Average refractive index

1.6

Coefficients in Sellmeier's equation

$$\left[ n_i^2 = A_i + \frac{B_i}{\lambda^2 - C_i} - D_i \lambda^2 \right]$$

Index	A	B	C	D
$n_x$	2.4542	0.01125	0.01135	0.01388
$n_y$	2.5390	0.01277	0.01189	0.01848
$n_z$	2.5865	0.01310	0.01223	0.01861

K. Kato IEEE J.QE-26, 1173 (1900)

Transparency range,  $\mu\text{m}$

0.16  $\rightarrow$  2.6

Residual absorption (PCI) at 1064nm:

$<15\text{ ppm}/\text{cm}$

## Physical properties

Chemical formula

$\text{LiB}_3\text{O}_5$

Crystal structure

Orthorhombic

Point group

mm2

Lattice parameters,  $\text{\AA}$

a 8.44  
 b 7.37  
 c 5.14

Hardness (Mohs)

5.5

Hygroscopic susceptibility

Weak

Density,  $\text{g}\cdot\text{cm}^{-3}$

2.47

Specific heat,  $\text{J}/\text{kg}\cdot\text{K}$

1060

Thermal conductivity,  $\text{mW}\cdot\text{cm}^{-1}\cdot^\circ\text{C}^{-1}$

35

Aperture,  $\text{mm}^2$ :

from 2x2 to 50x50

Length, mm:

up to 60