

LiNbO₃

Introduction

LiNbO₃ crystal combines low cost, good mechanical and physical properties as well as high optical homogeneity. Therefore, LiNbO₃ wedges have been widely used in fiber isolators and circulators.

CASTECH provides

- 50,000 to 100,000 pcs/month of LiNbO₃ wedges used for fiber optical isolators and circulators
- Reliable Delivery
- Strict quality control
- Technical support
- Very competitive price

Basic Properties of LiNbO₃

Crystal Structure:	Trigonal, Space group R3c, Point group 3m
Melting Point:	1253°C
Mohs Hardness:	5
Density:	4.64 g/cm ³
Deliquescence	None
Optical Homogeneity	~5x10 ⁻⁵ /cm
Transparency Range	420nm-5200nm
Absorption Coefficient:	~0.1%/cm @1064nm
Refractive indices at 1064nm:	n _e = 2.146, n _o = 2.220 @ 1300 nm n _e = 2.156, n _o = 2.232 @ 1064 nm n _e = 2.203, n _o = 2.286 @ 632.8 nm
Thermal Expansion Coefficients (at 25°C)	//a, 2.0x10 ⁻⁶ /K //c, 2.2x10 ⁻⁶ /K
Thermal Conductivity Coefficient:	38 W/m/K at 25°C
Thermal Optical Coefficient:	dn _o /dT=-0.874x10 ⁻⁶ /K at 1.4μm dn _e /dT=39.073x10 ⁻⁶ /K at 1.4μm
The Sellmeier equations (λ in μm)	n _o ² = 4.9048 + 0.11768/(λ ² -0.04750) - 0.027169λ ² n _e ² = 4.5820 + 0.099169/(λ ² -0.04443) - 0.02195λ ²

Specifications of LiNbO₃ wedges

Aperture	1.0 x 1.0 mm ² to 4 x 4 mm ²
Dimension tolerance	±0.05mm
Wedge Angle tolerance	±0.1°
Optical axis orientation	±0.5°
Flatness	λ/4 @ 632.8 nm
Surface Quality	20-10
AR-coating	R<0.2% @1550nm±40nm
Standard Size	1.25mmx1.25mmx0.5mm with 13° or 15° wedge, phi=22.5°

Note: Other sizes and coatings are available upon request.