Lithium niobate LN

Lithium niobate LN is an inorganic substance with a chemical formula of LiNbO3. It is a negative crystal and a ferroelectric crystal . The polarized lithium niobate crystal has many properties such as piezoelectricity, ferroelectricity, photoelectricity, nonlinear optics, and thermoelectricity. High-performance materials with photorefractive effects at the same time. Lithium niobate crystal is a good piezoelectric transduction material, ferroelectric material , electro-optic material , as an electro-optic material, it plays an optical modulation role in optical communication, and is widely used in parametric oscillators, frequency doubling, acousto-optic devices, and optical modulation device. The incorporation of MgO can effectively improve the anti-damage threshold of the crystal.

Main features: Curie temperature 1140±5℃ , high modulation bandwidth, stable physical and chemical properties.

Typical applications: SAW filters, isolators, narrowband filters, sensors, photonic tunable filters, acousto-optic devices, optical gyroscopes, optical waveguide optical switches, optical modulation directional couplers, optical communication modulators, interferometers , gyrator, high-speed long-distance communication devices and frequency multiplier devices, etc.

Product parameters:

Dimensions	3", 4", 6", 8" Ingot and Wafer (SAW/Optical Grade)
doping	Undoped or dopable MgO
Crystal rod length	≥50mm
Wafer Thickness	0.25, 0.35, 0.50(mm) can be customized
Tangential	Y42°/Y36°/Y128°/X/Y/Z can be customized according to customer needs
surface treatment	Polished on one side, Polished on both sides
TTV	＜ 5μm
Warpage	≤40μm
Oriented Edge Width	32.0±2.0mm can be customized
polished surface	Roughness Ra≤1nm
Chamfer	0.1mm@45° or round edge

Material properties:

Lattice parameters	a=0.515Å, c=13.863Å, Z=6Å
melting point	125 0 ±5°C
Curie point	1140±5°C
Moh's hardness	5
density	4.6 5 g/ cm^3
Deliquescence	not deliquescent
Dielectric constant	ε11/ε0=85; ε33/ε0=29.5
Thermal expansion coefficient	a1=a2=2×10^{-6} / ℃ , a3=2.2×10^{-6} / ℃ @25 ℃
Resistivity	38 W/m/K @ 25 ℃

Light transmission range	370-5000nm
piezoelectric constant	d22=2.04×10-11 C /N, d33=0.6×10-11 C /N, d15=7×10-11 C /N, d31=-0.1×10-11 C /N
Electro-optic coefficient	gT33=32pm/V, gS33=31pm/V; gT31=10pm/V, gS31=8.6pm/V gT22=6.8pm/V, gS22=3.4pm/V
Refractive index	no=2.2827 ne=2.1928 @633nm