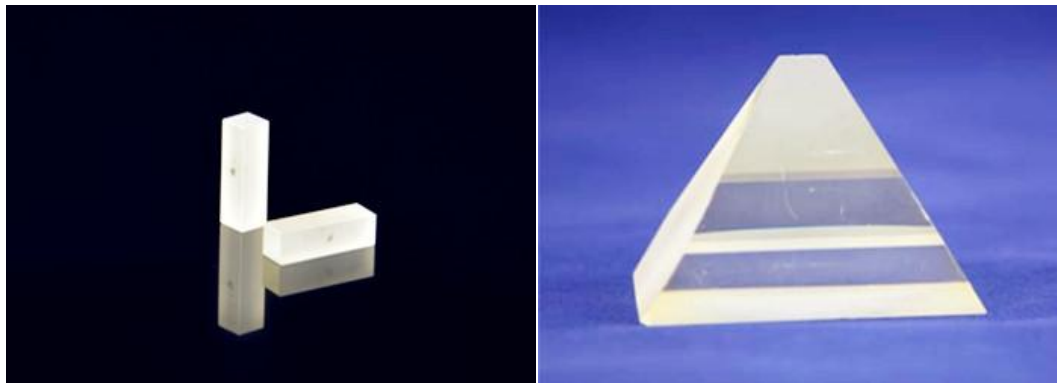


## KTP Crystals - Potassium Titanyl Phosphate Crystal

- Size up to 20x20x40mm<sup>3</sup> and length upto 60mm
- Coating options : Dual band AR, BBAR, HR, HT

Potassium Titanyl Phosphate (KTiOPO<sub>3</sub> or KTP) is an excellent optical crystals suitable for use in many optical systems. It has high nonlinear coefficient and stable physical property. Its most popular application is as a frequency doubler of 1064nm to generate 532nm laser. KTP's properties also make it superior for electro-optic modulation (EO components), optical parametric generation (OPO or OPA components).

**KTP crystals** are widely used in commercial and military lasers including laboratory and medical systems, range-finders, lidar, and industrial systems.



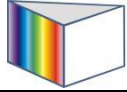
## SPECIFICATIONS

Specifications	
Clear aperture	central 90% of the diameter
Internal quality	No visible scattering paths or centers when inspected by a 50mW green laser
Flatness	less than $\lambda/8$ @ 633nm
Transmitting wavefront distortion	less than $\lambda/8$ @ 633nm
Chamfer	$\leq 0.2\text{mm}$ at $45^\circ$
Chip	$\leq 0.1\text{mm}$
Scratch/Dig code	better than 10/ 5 to MIL-PRF-13830B
Parallelism	better than 20 arc seconds
Perpendicularity	$\leq 5$ arc minutes
Angle tolerance	$\Delta\theta \leq 0.25^\circ$ , $\Delta\phi \leq 0.25^\circ$
Quality Warranty Period:	one half year under proper use.

## Basic Properties

Basic properties	
Crystal Structure	Orthorhombic, space group Pna21, point group mm2
Lattice Parameter	a=6.404?, b=10.616?, c=12.814?, Z=8
Melting Point	About 1172° C
Mohs Hardness	5
Density	3.01 g/cm <sup>3</sup>
Thermal Conductivity	13W/m/K
Thermal Expansion Coefficient	$\alpha_x=11 \times 10^{-6}/^\circ\text{C}$ , $\alpha_y=9 \times 10^{-6}/^\circ\text{C}$ , $\alpha_z=0.6 \times 10^{-6}/^\circ\text{C}$

Optical and Nonlinear Optical properties	
Transparency Range	350~4500nm
SHG Phase Matchable Range	497~1800nm (Type II)
Therm-optic Coefficients (/°C)	$dn_x/dT=1.1 \times 10^{-5}$ $dn_y/dT=1.3 \times 10^{-5}$ $dn_z/dT=1.6 \times 10^{-5}$
Absorption Coefficients	<0.1%/cm at 1064nm <1%/cm at 532nm
For Type II SHG of a Nd:YAG laser at 1064nm	Temperature Acceptance: 24°C-cm Spectral Acceptance: 0.56nm-cm Angular Acceptance: 14.2mrad-cm ( $\varphi$ ); 55.3mrad-cm ( $\theta$ ) Walk-off Angle: 0.55°
NLO Coefficients	$d_{\text{eff}}(\text{II}) \approx (d_{24}-d_{15})\sin^2\varphi\sin^2\theta - (d_{15}\sin^2\varphi + d_{24}\cos^2\varphi)\sin\theta$
Non-vanished NLO susceptibilities	$d_{31}=6.5 \text{ pm/V}$ $d_{24}=7.6 \text{ pm/V}$ $d_{32}=5 \text{ pm/V}$ $d_{15}=6.1 \text{ pm/V}$ $d_{33}=13.7 \text{ pm/V}$
Sellmeier Equations ( $\lambda$ in $\mu\text{m}$ )	$n_x^2=3.0065+0.03901/(\lambda^2-0.04251)-0.01327\lambda^{-2}$ $n_y^2=3.0333+0.04154/(\lambda^2-0.04547)-0.01408\lambda^{-2}$ $n_z^2=3.3134+0.05694/(\lambda^2-0.05658)-0.01682\lambda^{-2}$



## Features

- Large nonlinear optical coefficient
- Wide angular bandwidth and small walk-off angle
- Broad temperature and spectral bandwidth
- High electro-optic coefficient and low dielectric constant
- Large figure of merit
- Nonhygroscopic, chemically and mechanically stable

## Application Notes

- SHG and SFG of Nd:YAG lasers
- OPG, OPA and OPO
- E-O device
- Optical waveguide