

RTP Crystal

Introduction

RTP (Rubidium Titanyle Phosphate – RbTiOPO₄) is an isomorph of KTP crystal which is used in nonlinear and Electro-Optical applications. It has advantages of high damage threshold (about 1.8 times of KTP), high resistivity, high repetition rate, no hygroscopic and no induced piezo-electric effect with electrical signals up to 60 kHz. Its transmission range is 350nm to 4500nm.

Basic Properties

Crystal structure	Orthorhombic
Cell Parameters	a = 12.96 Å; b = 10.56 Å; c = 6.49 Å
Mohs hardness	About 5
Density (g/cm ³)	3.6
Melting Point:	About 1000 °C
Thermal Expansion Coefficients (/K)	$\alpha_x = 1.01 \times 10^{-5}$, $\alpha_y = 1.37 \times 10^{-5}$ $\alpha_z = -4.17 \times 10^{-6}$
Sellmeier equations (λ in μm)	$n_x^2 = 2.15559 + 0.93307[1 - (0.20994/\lambda)^2] - 0.01452 \lambda^2$ $n_y^2 = 2.38494 + 0.73603[1 - (0.23891/\lambda)^2] - 0.01583 \lambda^2$ $n_z^2 = 2.27723 + 1.11030[1 - (0.23454/\lambda)^2] - 0.01995 \lambda^2$
Thermo-optical coefficients (d λ /dT)	-0.029 nm /°C
Electro-optic constants(Y-cut) (X-cut)	$r_{33} = 38.5$ pm/V $r_{33} = 35$ pm/V, $r_{23} = 12.5$ pm/V, $r_{13} = 10.6$ pm/V
Electrical Resistivity	About 10 ¹¹ -10 ¹² ohm-cm
Static Half Wave Voltage at 1064 nm	4x4x20 mm: 1,600 V 6x6x20 mm: 2,400 V 9x9x20 mm: 3,600 V
Extinction Ratio	>20dB@633nm

Specifications

Growing Orientation	Along Y-axis
Maximum length(5x5mm ² aperture)	25mm
Length tolerance (mm)	+0.5 / -0.1
Width and height tolerance (mm)	±0.1
Parallelism	< 30 "
Perpendicularity	< 15'
Surface quality	20/10
Coating	AR-coatings