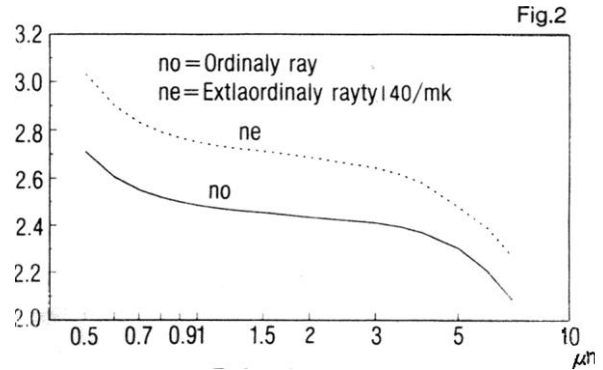
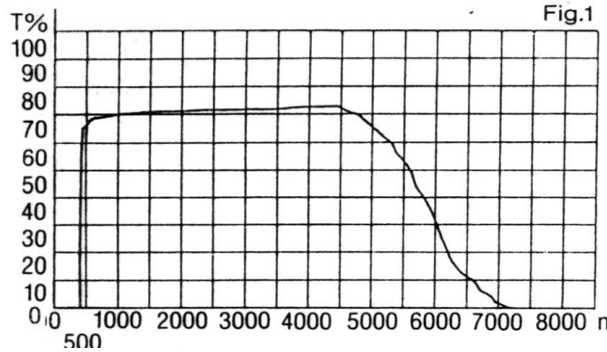


# RUTILE

## Optical Grade TiO<sub>2</sub> single crystal

**Rutile (TiO<sub>2</sub>)** single crystal is one of the most suitable materials for spectral prisms and polarizing devices such as optical isolators and beam displacers because it has a large birefringence with a high refractive index. Compared to YVO<sub>4</sub>, TiO<sub>2</sub> crystal is more stable chemically and physically. Our high quality rutile single crystal boule and polished components have been widely used for optical isolators and special prisms.

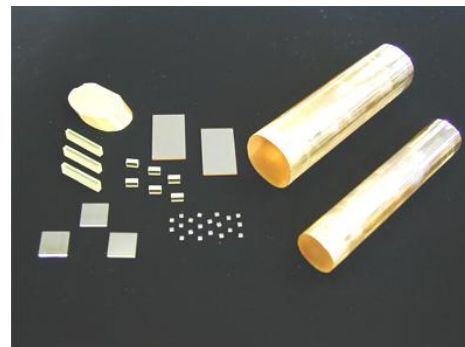


<b>Typical Properties</b>	
Crystal Structure	Tetragonal a=4.5936 Å, c= 2.9582 Å ,
Growth Method	floating zone (FZ)
Melting Point	1840 °C
Density	4.26 g/cm <sup>3</sup>
Hardness	Mohs 7
Specific Heat capacity	0.17 ( 25°C) Cal. / (g. Deg)
Linear expansion Coefficient	a: 7.14x10 <sup>-6</sup> c: 9.19x10 <sup>-6</sup>
Refractive Index	n <sub>o</sub> = 2.47 n <sub>e</sub> = 2.73 at λ = 1.3 μm
Transmittance	0.5- 4.5 μm
Thermal optical Coefficient	d <sub>n</sub> /dT: a: -0.72 x10 <sup>-6</sup> /K c: -0.42x10 <sup>-6</sup> /K
Crystal boule dimension	~25 mm dia x 35 mm length ( conical )
Typical polished components	<b>2.6x2.6 x10 mm, 4x4x10 mm, 10x10x0.5 mm or any custom size</b> Dimension: +/- 0.02 mm Roughness: < 5-10 Å

The refractivity of RUTILE can be obtained from the following equations (λ, wavelength in Å):

$$(n(O))^2 = 5.913 + \frac{2.441 \times 10^7}{\lambda^2 - 0.803 \times 10^7}$$

$$(n(E))^2 = 7.197 + \frac{3.332 \times 10^7}{\lambda^2 - 0.843 \times 10^7}$$



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