

Fiber Optic Crystals

Marketch International, Inc., a leading supplier of birefringent crystals to the fiber optic market, has available high quality **YVO₄** and **TiO₂** (rutile) crystals. Because of its large birefringence and wide transparency range, **YVO₄** is an ideal choice for optical polarizing components such as fiber optic isolators, circulators, and beam displacers. Rutile or **TiO₂** is a more chemically resistant and physically robust crystal with a high index of refraction and large birefringence. This make rutile suitable for beam displacers and optical isolators.

Property/Crystal	Yttrium Vanadate	Rutile
Chemical Formula	YVO ₄	TiO ₂
Crystal Structure	Tetragonal	Tetragonal
Lattice Constants - •	a = b = 7.12 c = 6.29	a = 4.5936 c = 2.9852
Growth Method	Czochralski (CZ)	Vernull
Melting Point- °C	1825	1840
Density - g/cm ³	4.22	4.26
Harness - Mohs	5	7
Thermal Expansion – x 10 ⁻⁶ /°C	a = 4.43 c = 11.37	a = 7.14 c = 9.19
Thermal Conductivity W/(m,k)	a = 5.32 c = 5.10	a = 9.0 c = 13.0
Thermal Optic Coefficient Dh _a /dt x 10 ⁻⁶ /°C Dh _c /dt x 10 ⁻⁶ /°C	8.5 3.0	-0.72 -0.42
Refractive Index @ l = 1.3 mm	h _o = 1.9500 h _e = 2.1554 Dh = 0.2054 r = 5.72°	n _o = 2.47 n _e = 2.73
Transmission Range - nm	400 to 4000	500 to 4500
Zero Dispersion Wavelength, um		2.8
Debye Temperature, K		760
Dielectric Constant - 10 ⁴ - 10 ⁷ Hz		200 - 160
Bandgap, eV		3.3