

Nd:GdVO4 CRYSTALS

Although Nd:YAG was invented in the Sixties last century, it has been and is still the most commonly used solid-state crystal material. Nd:YAG crystals are widely used in all types of solid-state lasers systems-frequency-doubled continuous wave, high-energy Q-switched, and so forth. Its good fluorescent lifetime thermal conductivity and physical strengths makes it suitable for high power lamp pumped laser.

Physical and Optical Properties:

Properties	Values
Chemical Formula	Nd:Y3A15O12
Crystal Structure	Cubic
Lattice Constants	12.01?
Concentration	~ 1.2 x 10 ²⁰ cm ⁻³
Melting Point	1970 °C
Density	4.56 g/cm ³
Mohs Hardness	8.5
Refractive Index	1.82
Thermal Expansion Coefficient	7.8 x 10 ⁻⁶ /K [111], 0 - 250 °C
Thermal Conductivity	14 W/m /K @20 °C, 10.5 W /m /K @100 °C.
Lasing Wavelength	1064 nm
Stimulated Emission Cross Section	2.8x10 ⁻¹⁹ cm ⁻²
Relaxation Time of Terminal Lasing Level	30 ns
Radiative Lifetime	550 ms
Spontaneous Fluorescence	230 ms
Loss Coefficient	0.003 cm ⁻¹ @ 1064 nm
Effective Emission Cross Section	2.8 x 10 ⁻¹⁹ cm ²
Pump Wavelength	807.5 nm
Absorption band at pump wavelength	1 nm
Linewidth	0.6 nm
Polarized Emission	Unpolarized
Thermal Birefringence	High

Our Manufacture Technical Capabilities:

Properties	Values
Nd Dopant Concentration:	0.5-1.2 atm%tolerance within 10% of concentration
Diameter:	3 ~ 14mm
Length:	1- 160mm
Orientation:	<111> crystalline direction (+/-0.5°C)
Wavefront Distortion:	<λ/10 at 632.8nm for 3 ~ 7mm <λ/8 per inch at 632.8nm for ≥7mm
Surface Quality:	better than 20/10 Scratch/Dig per MIL-O-1380A
Parallelism:	< 10 arc seconds

Perpendicularity:	< 5 arc minutes
Surface Flatness:	<1/10 at 632.8nm
Clear Aperture:	Central 90%
Chamfer:	0.15x45o
Damage Threshold:	> 15J/cm2(uncoated) > 700 MW/cm2(coated)
Coatings:	a)AR@1064nm, R<0.1%; b)AR@1064nm, R< 0.1%;HT@808nm, T>95%; c)HR@1064nm, R>99.8%; HT@808nm, T>95%; d)HR@1064nm, R>99.8%; HT@808nm, T>95%; HR@532nm, R>99%

NOTES!

- ➔ Be sure to wear laser safety goggles when checking optical path and adjusting optical axis.