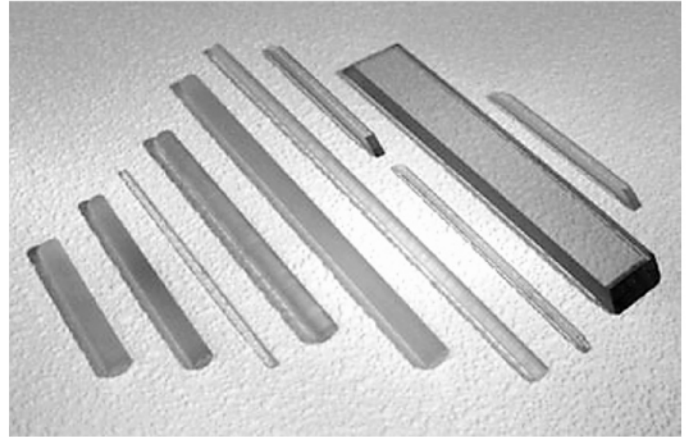


Nd:YAG (1064nm)

(Neodymium doped Yttrium Aluminum Garnet)

Advantages

- High gain, low threshold, high efficiency,
- Low loss at 1064 nm, high optical quality.
- Good mechanical and thermal properties
- Mechanical strength
- High optical quality
- Material characteristics that allow for various modes of operation (CW, pulsed, Q-switched, mode locked, and cavity dumped)



Specifications

Nd Concentration Range	0.6% - 1.3%
Wavefront Distortion (per inch of rod length)	<7mm dia. : $\lambda/10$ ≥7mm dia. : $\lambda/8$
Parallelism	<10 arc seconds
Perpendicularity	<5 arc minutes
Barrel finish	Ground or polished
Damage threshold	15 J/cm ²

Dimensional / Mechanical Specifications

Diameter	2mm to 12.5mm (+0.0, -0.025mm)
Length	1mm to 180mm (±0.5mm)
Max. slab size	up to 7mm x 15mm
Chamfer	0.13 ± 0.08mm@45°
Clear aperture	95%
Surface Flatness	$\lambda/10@632.8\text{nm}$
Surface Quality	10/5 (scratch-dig)

Material Properties (1%Nd)

Formula	$\text{Y}_{2.97}\text{Nd}_{0.03}\text{Al}_5\text{O}_{12}$
Crystal Structure	Cubic [111]
Moh Hardness	8-8.5
Melting Point	1950°C (3540°F)
Density	4.55 g/cm ³
Thermal Conductivity	0.14 W cm ⁻¹ K ⁻¹
Thermal Expansion	6.9 x 10 ⁻⁶ °C ⁻¹
dn/dT	7.3 x 10 ⁻⁶ °C ⁻¹
Index of Refraction	1.8197 at 1.0 μm
Poisson Ratio	0.25
Fluorescence Lifetime	230 μs
Cross Section	7.6 x 10 ⁻¹⁹ cm ²
Young's Modulus	3.17 x 10 ⁴ kg/mm ²
Thermal Shock Resistance	790 Wm ⁻¹

