

Laser Crystals

NONLINEAR CRYSTALS

LASER CRYSTALS

TERAHERTZ CRYSTALS

RAMAN CRYSTALS

POSITIONERS & HOLDERS

CRYSTAL OVENS

Nd:YAG – NEODYMIUM DOPED YTTRIUM ALUMINIUM GARNET



Nd:YAG crystal is the most popular lasing media for solid-state lasers. EK SMA OPTICS offers standard specifications high optical quality Nd:YAG rods with high damage threshold AR @ 1064 nm coatings.

PROPERTIES OF 1.0% Nd:YAG AT 25 °C

Formula	$Y_{2.97}Nd_{0.03}Al_3O_{12}$
Crystal structure	Cubic
Density	4.55 g/cm ³
Melting point	1970 °C
Mohs hardness	8.5
Transition	$^4F_{3/2} \rightarrow ^4I_{11/2}$ @ 1064 nm
Fluorescence lifetime	230 μs for 1064 nm
Thermal conductivity	0.14 Wcm ⁻¹ K ⁻¹
Specific heat	0.59 Jg ⁻¹ K ⁻¹
Thermal expansion	6.9×10^{-6} °C ⁻¹
$\partial n/\partial t$	7.3×10^{-6} °C ⁻¹
Young's modulus	3.17×10^4 Kg/mm ²
Poisson ratio	0.25
Thermal shock resistance	790 Wm ⁻¹
Refractive index	1.818 @ 1064 nm

STANDARD RODS SIZES

Diameter, mm	Length, mm	Doping, %	Wedge of the ends, deg	Catalogue number	Price, EUR
3	53	0.9	0/0	E-Y-3-0.9-A/A	215
3	65	0.8	0/0	E-Y-3-0.8-A/A	265
3	65	1.1	0/0	E-Y-3-1.1-A/A	325
4	65	0.8	3/3 parallel	E-Y-4-0.8-A/A	530
4	65	1.1	3/3 parallel	E-Y-4-1.1-A/A	530
6.35	85*	1.1	3/3 parallel	E-Y-6.35-1.1-A/A	890
8	85*	1.1	3/3 parallel	E-Y-8-1.1-A/A	1340
10	85*	1.1	3/3 parallel	E-Y-10-1.1-A/A	2200
12	100*	0.8	3/3 parallel	E-Y-12-0.8-A/A	4740
12	100*	1.1	3/3 parallel	E-Y-12-1.1-A/A	4740

* rods with barrel grooving, except 10 mm at both ends of the rod without grooving.

RELATED PRODUCTS

Laser Safety Eyewear
See page 1.17



Visualizator 990-0840
See page 1.17



SPECIFICATIONS OF STANDARD Nd:YAG LASER RODS

Nd Doping Level	0.8% or 1.1%
Orientation	<111> crystalline direction
Surface Quality	10 – 5 scratch & dig (MIL-PRF-13830B)
Surface Flatness	$\lambda/10$ at 633 nm
Parallelism	< 10 arcsec
Perpendicularity	< 5 arcmin for plano/plano ends
Diameter Tolerance	+0 / -0.05 mm
Length Tolerance	+1 / -0.5 mm
Clear Aperture	> 90 % of full aperture
Chamfers	0.1 mm at 45 deg
Coating	both sides coated AR @ 1064 nm, R < 0.2%, AOI = 0 deg
Barrel grooving	all dia 6.35, 8, 10, 12 mm rods with barrel grooving