NEW SOURCE TECHNOLOGY LLC

LASER CRYSTALS
Nd:YAG

Advantages

- High Gain
- Low Threshold
- High Efficiency
- Low Loss at 1.06µm
- High Optical Quality
- Good Mechanical and Thermal Properties
- Suitable for High Average Power Lasers

New Source Technology is a major supplier of Nd:YAG rods for Industrial, Medical, and Scientific laser applications. We maintain the highest standards of quality and can deliver products to your exact specifications from our Pleasanton, California location. You are assured of the highest possible consistency and precision every time. For more information, please contact us at sales@newsourcetechnology.com.

A) Nd concentrations offered are:
0.6 ± 0.1 at %
0.8 ± 0.1 at %
1.1 ± 0.1 at %
1.3 ± 0.1 at %
B) Wavefront distortion is determined by use of a Zygo interferometer system. Wavefront distortion shall be within a maximum λ / 4 per inch of rod length (λ = 632.8 nm) standard and λ / 16 per inch of rod length for Premum Grade.
C) Extinction ratio 25 db minimum.
D) Dimensional / mechanical specifications:
- Diameter tolerance +.000" / -.002"
- Length tolerance +.040" / -.000"
- Rod end polished flat to λ / 10
- Rod end faces are parallel to within 10 arc seconds
- Rod end surfaces are perpendicular to the rod axis to within 5 arc minutes
- Chamfer 0.005" ± 0.003" x 45°
- Surface Quality 10 - 5 scratch-dig per MIL-O-13830A
- Rod barrel is fine ground to 55 ± 5 microinches (other barrel finishes available upon request)

E) Rod end faces are anti-reflection coated for a reflectivity of less than 0.25%. Durability per MIL-C-48497. Total reflective or partial reflective coatings available upon request. Coating damage threshold exceeds 10 J / cm^2.

Refractive Index of YAG

Wavelength (µm)	Index n (25°C)
.8	1.8245
.9	1.8222
1.0	1.8197
1.2	1.8152
1.4	1.8121

YAG Physical and Chemical Properties

Formula:	$Y_3Al_5O_{12}$
Molecular Weight:	596.7
Crystal Structure:	Cubic
Moh Hardness:	8 - 8.5
Melting Point:	1950°C (3540°F)
Density:	4.55 g / cm^{-3}

Properties of Nd:YAG at 25°C (1.0 at % Nd)

Property	Value
Formula:	$Y_{2.97}Nd_{0.03}Al_5O_{12}$
Weight % Nd:	0.725
Nd Atoms / cm3:	1.38 x 10^{20}
Wavelength:	1.064 mm
Transition:	$^4F_{3/2}$ —> $^4I_{11/2}$
Fluorescent Lifetime:	230 µsec
Thermal Conductivity:	0.14 W cm^{-1} K^{-1}
Specific Heat:	0.59 Jg^{-1} K^{-1}
Thermal Expansion:	6.9 x 10^{-6}°C^{-1}
dn / dt:	7.3 x 10^{-6}°C^{-1}
Young's Modulus:	3.17 x 10^4 Kg / mm^{-2}
Poisson Ratio:	0.25
Thermal Shock Resistance:	790 Wm^{-1}

Other laser crystals:

-CTH:YAG
-Er:YAG
-Alexandrite
-KTP
-LBO

You may also be interested in:

-Laser Pump Chambers
-Flashlamps
-Resonator Mirrors
-Other Laser Optics
-Safety Eyewear

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