

LASER CRYSTALS

Nd:Ce:YAG Laser Crystal

Product Brochure & Technical Reference

Nd:Ce:YAG laser crystals for the published solid-state laser applications. Define the dopant requirements, pump arrangement, component geometry and optical coating specification.



Reference product image. Shown geometry is illustrative.

Material reference properties / options

Parameter	Typical Value / Option
Material	Nd:Ce:YAG / Nd,Ce:YAG
Dopant concentration	Typical Nd: about 0.9-1.4 at%; Ce: about 0.05-0.1 at% or Ce:Nd ratio to be confirmed
Orientation	[111] within 5 degrees
Wavefront distortion	$\leq 0.2 \lambda/\text{inch}$
Extinction ratio	$\geq 28 \text{ dB}$
Rod size	Diameter 3-6 mm, length 40-100 mm; custom size available upon request
Dimensional tolerance	Diameter $\pm 0.05 \text{ mm}$, length $\pm 0.5 \text{ mm}$
AR coating reflectivity	$\leq 0.25\%$ at 1064 nm

Reference values and options for selection. Confirm the material grade, geometry, test conditions and acceptance criteria for the quoted configuration.

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Configuration & quotation

Define the component around your application

Application examples: Flashlamp-pumped 1064 nm solid-state lasers; Pulsed laser rods and high-energy laser cavities; Range finding and distance measurement laser systems

Specifications of Nd:Ce:YAG Laser Crystal

Parameter	Typical Value / Option
Barrel finish	Ground finish with 400# grit or polished finish
Parallelism	≤ 10 arcsec
Perpendicularity	≤ 5 arcmin
Flatness	$\lambda/10$ at 632.8 nm
Surface quality	10-5, MIL-O-13830A
Damage threshold	About 700 MW/cm ² , 10 ns, 1 Hz at 1064 nm

Specifications of Nd:Ce:YAG Laser Crystal

Property	Typical Value
Laser wavelength	1.064 μm / 1064 nm
Emission linewidth	Approx. 4.5 Å at 1064 nm
Stimulated emission cross section	Reported supplier range: approx. $2.7\text{--}8.8 \times 10^{-19} \text{ cm}^2$ for Nd 1at%; confirm test basis for final specification
Fluorescence lifetime	Approx. 230 μs for Nd 1at%
Index of refraction	Approx. 1.8197 at 1064 nm
Lattice parameter	12.01 Å
Melting point	Approx. 1970 C
Mohs hardness	8.5
Density	4.56 $\pm$ 0.04 g/cm ³
Specific heat	Approx. 0.59 J/(g K), 0-20 C
Thermal expansion coefficient	[111] direction: approx. $7.8 \times 10^{-6}/\text{C}$, 0-250 C
Thermal conductivity	14 W/(m K) at 20 C; 10.5 W/(m K) at 100 C

Prepare your quotation

RFQ Item	Information to Provide
Dopant requirement	Nd concentration, Ce concentration or Ce:Nd ratio, or target laser application if recommendation is needed.
Rod geometry	Diameter, length, chamfer, clear aperture, barrel finish, and drawing if available.
Optical specification	Orientation, flatness, wavefront distortion, parallelism, perpendicularity, and surface quality.
Coating requirement	AR coating at 1064 nm, pump wavelength coating, dual-band coating, or other cavity coating design.
Laser design	Flashlamp or diode pump source, pulse width, repetition rate, output energy, cooling method, and cavity layout.
Order information	Prototype quantity, recurring demand, inspection criteria, packaging requirement, and expected delivery schedule.

Reference values and options for selection. Confirm the material grade, geometry, test conditions and acceptance criteria for the quoted configuration.

Send drawings for engineering review

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