

LASER CRYSTALS

Yb:YAG Laser Crystal

Product Brochure & Technical Reference

Yb:YAG gain crystals for diode-pumped laser development. Define the dopant concentration, rod, slab or disk geometry, optical quality, coatings and thermal interface.



Reference product image. Shown geometry is illustrative.

Material reference properties / options

Parameter	Typical Value / Option
Material	Yb:YAG
Yb dopant concentration	0.5%-25at%
Orientation	<111> or <100>
Dimensions	Diameter 2-50 mm, length 5-180 mm; custom size available upon request
Clear aperture	Central 95%
Extinction ratio	>30 dB, depending on actual size
Diameter tolerance	+0/-0.04 mm
Anti-reflection coating	R < 0.2% at 1030 nm per surface

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: High-power diode-pumped solid-state lasers; Thin-disk laser systems and power-scaling platforms; Ultrafast and high-energy pulsed laser systems

Specifications of Yb:YAG Laser Crystal

Parameter	Typical Value / Option
Length tolerance	+0.5/-0 mm
Flatness	$<\lambda/10$ at 632.8 nm
Damage threshold	$>700 \text{ MW/cm}^2$ at 10 ns, 10 Hz
Barrel finish	Ground finish, 400# grit
Scratch / dig	10-5, MIL-O-13830A
Parallelism	$<10 \text{ arcsec}$
Perpendicularity	$<5 \text{ arcmin}$
Wavefront distortion	$\lambda/8$ per inch at 632.8 nm

Specifications of Yb:YAG Laser Crystal

Property	Typical Value
Laser transition	2F5/2 to 2F7/2
Laser wavelength	1030 nm
Photon energy	1.93×10^{-19} J at 1030 nm
Emission linewidth	Approx. 9 nm
Emission cross section	Approx. 2.0×10^{-20} cm ²
Fluorescence lifetime	Approx. 1.2 ms
Diode pump band	940 nm or 970 nm
Pump absorption bandwidth	Approx. 8 nm
Index of refraction	Approx. 1.82
Thermal optical coefficient	Approx. 9×10^{-6} /C
Loss coefficient	Approx. 0.003 cm ⁻¹

Prepare your quotation

RFQ Item	Information to Provide
Dopant concentration	Yb doping level or target application if the concentration needs recommendation.
Geometry	Rod diameter and length, slab dimensions, thin-disk geometry, chamfer, and drawing if available.
Orientation and tolerance	<111>, <100>, or custom orientation; dimensional tolerance, parallelism, and flatness.
Coating requirement	AR coating at 1030 nm, pump wavelength coating, dual-band coating, or other optical coating design.
Laser design	Pump wavelength, pump method, cavity design, cooling method, output power, pulse format, and beam size.
Quality and order details	Surface quality, wavefront distortion, damage threshold, inspection requirement, quantity, and 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

sales@atrscintillator.com | +86 17796747312

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