

Erbium: Yttrium Aluminum Garnet - Er:YAG

Er:YAG is a crystal with a wide pump band of 600 - 800 nm. It has numerous applications in a wide range of medical and dental applications.

Advantages Of Er:YAG Include:

- Wide pump band of 600 - 800 nm
- High optical quality
- Operates in a long-wavelength, high water peak region
- Ideal for hard tissue removal

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SYNOPTICS

Standard Specifications

Material Parameters

Host:	Yttrium Aluminum Garnet ($\text{Y}_3\text{Al}_5\text{O}_{12}$)
Dopant:	Erbium (Er^{3+})
Dopant Concentration:	50 Atomic % ($\sim 7 \times 10^{21} \text{ cm}^{-3}$)
Orientation:	[111] crystallographic directions ($\pm 5^\circ$)
Wavefront Distortion:	1/2 wave per inch of length, as measured in a doublepass interferometer operating at 1 micron

Dimensional Tolerances

Diameter:	+0.000" / -0.002"
Length:	+0.040" / -0.000"
Barrel Finish:	55 \pm 5 micro-inch
Chamfer:	0.005" \pm 0.003" at $45^\circ \pm 5^\circ$

End Configuration

Flatness:	within $\lambda / 10$ wave at 633 nm wavelength
Parallelism:	within 30 seconds of arc
Perpendicularity:	within 5 minutes of arc
Surface Quality:	scratch-dig 10 - 5 per MIL-O-13830A

Anti-Reflection End Coatings

Reflectivity:	less than 0.25% at 2.04 microns
Adhesion and Durability:	meets MIL-C-48497A standards
Pulsed Damage Threshold:	greater than 10 J / cm^2

Properties Of Er:YAG

Laser Properties

Lasing Transition:	$^4\text{I}_{11/2}$ to $^4\text{I}_{13/2}$
Stimulated Emission Cross-Section:	$3 \times 10^{-20} \text{ cm}^2$
Pump Bands:	600 - 800 nm

Specifications and information are subject to change without prior notice.
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