

# $Y_3Al_5O_{12}$

## Undoped YAG Crystal and Substrate

Undoped YAG ( $Y_3Al_5O_{12}$ ) is a new substrate and window material for both UV and IR optics. It is particularly useful for high temperature and high-energy applications. YAG shows no trace absorption in 2-3micron region where glasses tend to be highly absorbent due to the strong H<sub>2</sub>O band. The Yang's mechanical and chemical stability is similar to sapphire, but YAG is no birefringence and has higher optical homogeneity.

Growth Method	CZ
Crystal Structure	Cubic: $a = 12.01 \text{ \AA}$
Crystal Purity	> 99.999%
Melt Point	1970 °C
Density	4.56 g/cm <sup>3</sup>
Hardness	8.5 ( Mohs)
Thermal Expansion	$6.9 \times 10^{-6} / ^\circ\text{C}$ at 0- 250 °C
Thermal Conductivity,	143 W/(m.k) @ 20 °C
$dn / dt$	$7.4 \times 10^{-6} / ^\circ\text{C}$
Transmission Range	250 ~ 5000 nm without absorption in 2000 - 3000 nm
<b>Standard Products</b>	
As - grown boules <100 > or <111> ori. ± 0.5°	10 - 50 mm diameter
As-cut blanks <100> or <111> ori. ± 0.5°	2" dia x 0.7 mm thickness 1" dia x 0.7 mm thickness
Epi -polished substrates <100> or <111> ori. ± 0.5° 1 or 2 sides polished Ra < 10 Å	2" dia x 0.5 mm 1" dia x 0.5 mm 10x10x0.5 mm

*Special size and orientation are available upon request.*



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