

# Terbium Gallium Garnet (TGG) Crystal

## Introduction

TGG is an excellent magneto-optical crystal used in various Faraday devices (Rotator and Isolator) in the range of 400nm-1100nm, excluding 475-500nm.

## Main Advantages:

- Large Verdet constant (35 Rad T<sup>-1</sup>m<sup>-1</sup>).
- Low optical losses (<0.1%/cm)
- High thermal conductivity (7.4W m<sup>-1</sup>K<sup>-1</sup>).
- High laser damage threshold (>1GW/cm<sup>2</sup>).

## Main Properties:

Chemical Formula	Tb <sub>3</sub> Ga <sub>5</sub> O <sub>12</sub>
Lattice Parameter	a=12.355Å
Growth Method	Czochralski
Density	7.13g/cm <sup>3</sup>
Mohs Hardness	8.0
Melting Point	1725 °C
Refractive Index	1.954 at 1064nm

## CASTECH supply TGG crystal with:

Orientation	[111] within ±15 arc min
Wave Front Distortion	< 1/8 wave
Extinction Ratio	> 30dB
Diameter Tolerance	+0.00mm/-0.05mm
Length Tolerance	+0.2mm/-0.2mm
Chamfer	0.10mm @ 45°
Flatness	< 1/10 wave at 633nm
Parallelism	< 30 arc Seconds
Perpendicularity	< 5 arc min
Surface Quality	10/5 Scratch/Dig
AR Coating	<0.2%