



GAMDAN OPTICS

# Tellurium Dioxide (TeO<sub>2</sub>)



Tellurium dioxide (TeO<sub>2</sub>) is a crystal widely used for making acousto-optic modulators because of its high acousto-optic (A-O) figure of merit—M<sub>2</sub> 793.

It is highly insoluble in water and insoluble in concentrated sulfuric acid. Handle with care; TeO<sub>2</sub> is a possible teratogen.

The Chemical Abstracts Services (CAS) number for tellurium dioxide is [7446-07-3].

## About GAMDAN

GAMDAN Optics synthesizes, custom designs and precision manufactures NLO crystals. Our exclusive **CrystalExpress**<sup>SM</sup> delivers California-grown crystals with exceptional quality in only 10 business days—the fastest in the industry.\*

Gamdans also supplies custom nonlinear, acousto-optic, electro-optic and laser crystals:

- A-O: Tellurium dioxide
- E-O: Rubidium titanyl phosphate (RTP)
- Laser: Neodimium-doped (Nd:YAG, Nd:YVO<sub>4</sub>), ytterbium-doped (Yb:YAG), chromium-doped (Cr:YAG) and titanium-doped (Ti<sup>3+</sup>:Sapphire)

We also provide custom optical components (lenses, mirrors, prisms) and services such as cutting, dicing, polishing and rework.

Gamdans grows boules (ingots of crystals) using specialized processes that have been refined over the past 30 years. Even the crystal synthesizing equipment is custom-engineered by Gamdan scientists.

\*As of January 2008 per GAMDAN market survey. Precision cut and polish BBO and KTP crystals; coating times will vary.

# Tellurium Dioxide

## Main Specifications

	Boule	Wafer
Growth Direction	[100] [110] [111]	[110] [001] [111]
Dimensions	φ 35 ~ 50mm	φ 35 ~ 50mm
Length/Thickness	50 ~ 60mm	0.2 ~ 1.0mm
Flatness		≤ 15 μm
Bow		≤ 15μm

## Physical Properties

Crystal Structure	Tetragonal
Point Group	422
Lattice Parameter (nm)	a 0.4810 c 0.7613
Density	5.99 g/cm <sup>3</sup>
Melting Point	730°C
Mohs Hardness	4.5
Transparency Range (nm)	350 ~ 500
Gradient of Refractive Index(x10 <sup>-15</sup> )/cm	≤5
Refractive Index	n <sub>o</sub> = 2.260 n <sub>3</sub> = 2.142
Transmittivity	70%@632.8nm
Phase Velocity (m/s)	616
Photo-Elastic Coefficient	P <sub>11</sub> =0.074 P <sub>13</sub> =0.340 P <sub>31</sub> =0.091 P <sub>33</sub> =0.240
Figure of Merit ( x10 <sup>-18</sup> S <sup>3</sup> )/g	M <sub>2</sub> 793



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