

**CSI(TL) SCINTILLATION CRYSTAL BLANK SPECIFICATIONS**

**Physio-Chemical Properties**

Chemical Name:	Cesium Iodide (Thallium Activated)
Chemical Formula:	CsI(Tl)
Density (g/cm <sup>3</sup> )	4.52599 (X-ray); 4.52593 (Weigh-Expt.)
Effective Atomic No.	54
Type	Single Crystal
Structure	Cubic, Body Centered (BCC)
Optical Quality	Clear
Index of Refraction	1.795 @ $\lambda_{MAX}$
Mechanical Behavior at Room Temp.	Malleable, Soft
Cleavage	None
Hardness (Mho)	Approx. 2.0
Rugged	Yes
Hygroscopic	Slightly
Melting Point (°C)	621

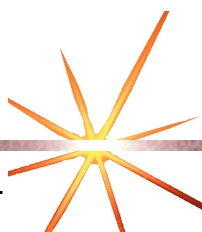
**Radiation-Scintillation Properties**

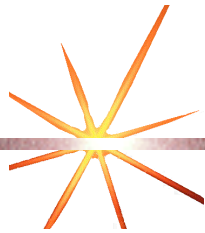
Relative light yield, PH (%) -PMT	>25 usually 25-45 (compared to NaI(Tl))
Photon Yield/Mev (PMT Sensor)	56,000
Photon Yield/Mev (Si-PD Sensor)	52,000
Is/Id(amps)PMT-Relative to NaI(Tl)	85

$\Delta E/E$ -% FWHM for Dia. = Ø3.0" x 3.0" L	<b>≤ 7.6 BEST MEASURED</b>
Emission Peak Wavelength (nm)	550
Decay Constant At Room Temp. (ns)	1100
Afterglow at 6 msec (%)	0.1—0.8

Linear Attenuation Coeff. (cm <sup>-1</sup> )	0.4452 (for 500 Kev)
Radiation Length (cm)	1.86
Radiation Hardness To $\gamma$ Ray (rad)	>45

0





## BGO CRYSTAL BLANK SPECIFICATIONS

Dimensions: Length\_\_\_\_\_ Width\_\_\_\_\_ Height\_\_\_\_\_

OR

Diameter\_\_\_\_\_ Length\_\_\_\_\_

OR For Other Geometries Attach a Drawing or Sketch

Tolerances: All dimensions  $+.25/-0.00\text{mm}$  ( $+.010"/-.000"$ )

Resolution: For **Dia. = Ø2.0" x 2.0" Length ≤** to 9% FWHM @ 662Kev for Cs137\*

Appearance: Crystal blanks are to be water white with NO visual imperfections. Such imperfections typically include flock & inclusions, striae, edge cracks due to heat fractures, etc. - The crystal blank should be free from these defects.

\*As measured with a catalog spec. Hamamatsu R-1306 2" PMT or equivalent

It is not necessary to measure each and every blank. A representative sample cut from the same boule or ingot-section should meet this performance criteria.

All surfaces supplied be at minimum industry-standard scintillation polish, unless otherwise specified.

