

## Alpha Spectra, Inc. Data Sheet

### BGO Annular Type Detectors

Grand Junction, Colorado

Alpha Spectra, Inc. offers a wide range of BGO scintillation detectors. Our BGO detectors have been used in numerous applications.

Applications include: x-ray detection in medical diagnostics, density and level gauges in industrial applications, hand held instruments in health physics applications and annular detectors in low background counting applications.

The ASI BGO Annular Type detector is typically used in applications where there is a confined space and maximizing the volume of scintillator around the host detector is important. The detector shown here has an axial through well. The elements are optically isolated and each channel is powered separately. The system is being used with multiple other BGO Compton Suppression detectors with each HPGe detector having a dedicated BGO unit. Notice that the “nose” of the detector has a taper. This taper makes it possible to nest several detectors together. The design and manufacturing team at

ASI has fabricated many unusual configurations that successfully met customer’s requirements.



**Figure 1.** ASI BGO Detector for a Clover Detector System. (ASI photo)

The annular BGO detector shown in Figure 1 consists of a 15.8cm diameter x 13.4cm long segmented with an 8cm diameter through well. The detector is has eight 1” PMTs with voltage dividers. We encourage you to call us about your design requirements.

#### Alpha Spectra, Inc. BGO Annular Type Detector Specifications

<b>Detector Style:</b>	Annular Type
<b>Crystal Material:</b>	Bi <sub>4</sub> G <sub>3</sub> O <sub>12</sub> Bismuth Germanate (BGO)
<b>Density:</b>	7.13 g/cc
<b>Effective Atomic Number:</b>	76
<b>Hygroscopic:</b>	No
<b>Wavelength of Maximum Emission:</b>	505 nm
<b>Principle Decay:</b>	0.30 μsec (at room temperature)
<b>Index of Refraction:</b>	2.15
<b>Light Output Relative to NaI(Tl) as measured on a Bialkali PMT:</b>	0.13 (NaI(Tl) = 1.00)
<b>Energy Resolution at 662 KeV:</b>	18% -20% in the well is typical; however it depends on design configuration.
<b>Dimensions:</b>	As required by customer design
<b>Crystal Housings:</b>	Aluminum, stainless steel
<b>Electronics:</b>	Typically supplied with voltage divider assemblies.

Please contact Alpha Spectra, Inc. so that our design team may help you design a custom detector configuration for your measurement application.