

ASI Thin Detectors Data Sheet

Alpha Spectra, Inc.

Grand Junction, Colorado

Thin detectors are used in applications to measure low energy x-rays or gamma rays. These detectors have two important features in common:

- Thin crystal
- Thin energy entrance window.

The thin energy entrance window is typically made of aluminum or beryllium. These low Z materials improve the radiation transmission across the energy entrance window.

The thin crystal will attenuate the low photon energies while the higher energies that can be present will, with high probability, pass through the crystal.

These features optimize the performance of the design at low energies.

Thin crystals are offered in these configurations:

- Open face
- Integral
- Demountable.



Figure 1. Thin integrals with aluminum energy entrance windows.

Thin detector applications include:

- Health Physics Survey Instruments/Hand Held Probes
- Educational Institutions
- Medical Laboratories
- Government Labs
- Industrial Process Measurements
- Atomic Physics Research.

One of our well-known Thin Integral Detectors is the F.I.D.L.E.R. probe. The crystal and PMT diameters are 5 inches thus increasing the count rate by increasing the area of the crystal. The two detector shown here are a special design because we have reduced the weight by decreasing the normal light pipe thickness.



Figure 2. Special F.I.D.L.E.R. Thin Integral Detectors with beryllium energy entrance windows.

The F.I.D.L.E.R. probes are in popular use at DOE and EPA national laboratories.

For ultra-low background low energy counting refer to our **ASI - Ultra Low Background X-Ray Detector Data Sheet.**

Alpha Spectra, Inc. Thin Detector Specifications

Detector Style:	Thin Detector
Crystal Materials:	NaI(Tl), BGO, CsI(Na), CsI(Tl), CaF ₂ (Eu)
Crystal Housings:	Aluminum, stainless steel
Dimensions:	Standard sizes are available in 1/4" increments from 0.5" to 5" in diameter with thicknesses varying from 0.010" to 0.200" thick.
Energy Resolution at 60 KeV:	19.0% or better (typical) depends on design configuration.
Temperature Range during use:	5°C to 50°C
Temperature Range during storage:	-20°C to 50°C
Thermal Shock Gradient:	8°C/hour maximum

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

Alpha Spectra has manufactured over 150,000 detectors in becoming the world's second largest producer of NaI(Tl) scintillation crystals. We are proud of the manner in which our staff has worked together in developing a technology-based company with world class expertise.

Alpha Spectra, Inc. is the only American-owned company in the industry that has its own purification and growth processes. Our manufacturing process begins with exceptionally clean starting material. This material is processed using a growth technique that has been developed in house. Our high-quality detectors are assembled utilizing techniques that have been developed with over 100 years of combined working experience.

Contact Alpha Spectra, Inc. for your scintillation detector requirements and be assured that you will get personal attention.

