Ruggedized Detector Data Sheet
Alpha Spectra, Inc.
Grand Junction, Colorado

The Ruggedized Detector or "R-style" scintillation detector is used in wireline logging applications where severe thermal shock, mechanical shock and mechanical vibration are important considerations. Alpha Spectra's R-style detectors are capable of withstanding temperatures up to 175°C. The R-style detector is capable of withstanding mechanical shock up to 125 g's.

For less severe applications we recommend our E-style configuration.

R-style detectors are offered in both an open face "RX-style in which the customer can supply the PMT and the "RD-style" with a demountable PMT. The detectors are custom built to meet the customer's desired diameter and length.

Some examples of our ruggedized detector configurations are shown in Figure 1 and Figure 2.

Figure 1. An assortment of ASI's R-style detectors.

The NaI(Tl) scintillation crystals are grown and machined at our crystal growth facility in Grand Junction, Colorado. A high temperature solder glass-to-metal seal and stainless steel crystal housing are featured in our design.

Figure 2. ASI's RD-style detectors.

Our manufacturing process uses multiple heat cycle tests and multiple hermetic seal tests on the detector package in order to validate expected performance. The heat cycle tests confirm that the crystal to glass and glass to PMT interfaces are maintained during extreme temperature excursions. In order to ensure seal reliability, each detector is leak checked with a helium leak check test. Multiple leak tests confirm that the detector has a reliable hermetic seal.

Our in process and final testing ensures that ASI will deliver a detector that meets specifications that are demanded in the rigorous borehole environment.

Alpha Spectra, Inc. Ruggedized Detector Specifications

Detector Style:	R-style, Open Face (no PMT) RD-style, Demountable PMT
Crystal Material	NaI(Tl)
Crystal Housing:	Stainless steel crystal body; stainless steel light shield
Photomultiplier:	Ruggedized for High temperature
Sizes:	Diameter: 0.5” to 2.5” Length: 0.5” to 12” Custom made to meet the customer’s needs
Temperature Range:	-55°C to 175°C
Thermal Shock Gradient:	3°C/minute maximum
Mechanical Shock:	25g to 125g @ 11ms – 3 per axis (X and Z axis)
Detector Pulse Height Resolution:	8.5% or better at 662 KeV (Cs-137) (typical), as tested on and in house ASI 2” PMT at 25°C.

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 100,000 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.

Alpha Spectra, Inc.
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