ORTEC

PINS3-CF

Chemical and explosives identification with a ^{252}Cf neutron source

Portable system for non-destructive identification of unknown chemicals and explosives in munitions, tanks, shielded containers and drums, even inside thick steel containers. A ^{252}Cf source excites the nuclei in the object and the gamma spectrum is measured by a mechanically cooled trans-SPEC-N HPGe spectrometer; the software identifies the substance automatically. The neutron source is not included.



Relative efficiency
>50% typical (ANSI/IEEE 325-1996) [1]

Energy resolution at 122 keV
<1600 eV FWHM (warranted at optimum settings and depending on detector type) [1]

Energy resolution at 1.33 MeV
≤2.5 keV FWHM at 1,332 keV (warranted at optimum settings a nd depending on detector type) [1]

Specifications

DETECTOR

Neutron source	^{252}Cf, 5 µg (2.5 mCi, 92.5 MBq), Frontier Technology Corporation Model 100; mean neutron energy 2.1 MeV; not included	[1]

PERFORMANCE

Relative efficiency	>50% typical (ANSI/IEEE 325-1996)	[1]
Energy resolution at 122 keV	<1600 eV FWHM (warranted at optimum settings and depending on detector type)	[1]
Energy resolution at 1.33 MeV	≤2.5 keV FWHM at 1,332 keV (warranted at optimum settings and depending on detector type)	[1]

COOLING

Cooling	Stirling cooler, approx. 30 W; initial cool-down <10 hours at 25 °C	[1]

SOFTWARE & DATA

Analysis	Automatic chemical analysis every 10 seconds: peak fitting, energy recalibration and decision-tree logic	[1]

POWER & BATTERY

Battery life	Spectrometer: >3 hours internal at 25 °C with cold detector; up to 12 hours with external battery	[1]
Power supply	Spectrometer: 10–17 V DC at 30 W; internal battery, external battery, vehicle battery (12 V DC) or line power with automatic switchover	[1]

MECHANICAL

Dimensions	Spectrometer: 39.4 × 16.3 × 34.9 cm (L × W × H)	[1]

Weight	Spectrometer 11.1 kg; laptop 3.7 kg	[1]

GENERAL

Measurement technique	PINS: neutrons from a ^{252}Cf source excite the nuclei and the characteristic gamma rays are measured with an HPGe spectrometer	[1]
Spectrometer	RTEC trans-SPEC-N, mechanically cooled HPGe (Stirling cooler, no liquid n itrogen) with built-in digital MCA, up to 16k channels	[1]
Automatically identified substances	Chemical warfare agents: BR-2, CG, CK, GB, HD, HN, VX, WL; riot agents: CA, CNB, CNS; practice fills: bleach, POP, sand, water-antifreeze; smoke c hemicals: FM, FS, HC, WP	[1]
Use	Munitions (artillery, mortar, rockets, bombs, land mines), containers (gas cylinders, storage tanks, bags, brief cases, parcels) and chemicals (chemical war heads, explosives, gases, smoke)	[1]
Control computer	Panasonic Toughbook CF-31, Windows 7, 320 GB; 25 m connecting cables	[1]

Sources

[1] **PINS3-CF Chemical and Explosives Identification System**
RTEC (AMETEK) · product-page · How It Works; trans-SPEC-N; Specifications – Gamma-Ray HPGe Spectrometer; Specifications – Gamma-Ray H PGe Spectrometer · checked 2026-10-16
https://web.archive.org/web/20261016000000/https://www.ortec-online.com/products/systems/chemical-weapons-id...

Every value is taken from the manufacturer's own document; the number after the value refers to the source list. Always check against the latest datasheet before ordering.

The data comes from the manufacturer's published documents. Manufacturers may change specifications; the current configuration and performance are confirmed in the quotation.