

NEUTRAK®

CONCENTRATED PERFORMANCE !

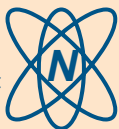
NEUTRAK is a passive dosimeter for the measurement of all neutron spectra, from thermal to intermediate and fast neutrons.

The NEUTRAK dosimeter uses a solid state track detector comprising a hard plastic plate made from PADC (poly-allyl diglycol carbonate), known as CR-39.



IPLUS®
with integrated NEUTRAK

Know at a glance
that a NEUTRAK
dosimeter is present
thanks to its icon!



PACKED WITH PERFORMANCE

- Unsensitive to x, gamma or beta radiation
- Low energy dependance
- Highly sensitive detector
- Performance complies with standard ISO 21909-1:2015



Criticality dosimeter
integrating IPLUS and NEUTRAK

IPLUS wrist
with integrated NEUTRAK



Select an accredited service!

The NEUTRAK is part of our scope of our COFRAC accreditation scope.

Accreditation in accordance with the recognised international standard NF EN ISO/IEC 17025 demonstrates the technical competence of the laboratory for a defined scope and the proper operation in this laboratory of an appropriate management system.



ACCREDITATION
N°1-1545
SCOPE
AVAILABLE ON
WWW.COFRAC.FR

IPLUS, guaranteed high quality neutron monitoring

More than 200,000 readings per year

CONCENTRATED PERFORMANCE

Two in one dosimeter

No need for an extra case: the NEUTRAK dosimeter is incorporated into your whole body and wrist dosimeters. The dosimeter is compact and more comfortable to wear!

Ready to use

Another advantage is that the NEUTRAK dosimeter requires no assembly before distribution and no disassembly when returned. Saving time every day!

Low Energy Dependence

Unlike Albedo dosimeters, Neutrak exhibits a low energy dependence. Location specific calibration factors do not need to be established.

Holders



Alligator clip



Slotted clip
Two options available:



Necklace



Clamp tie

ADOPT THE MARKET REFERENCE

Performance in accordance with the requirements of the ISO neutron standard ISO 21909-1:2015

The NEUTRAK dosimeter complies to the ISO standard ISO 21909-1:2015 requirements. Its characterisation by an independent laboratory demonstrates better metrological performance than the standard requirements, with excellent response linearity and an angular response of $\pm 60^\circ$ (report available upon request).

Highly sensitive CR-39

LANDAUER in house designed detector provides high sensitivity and low level dose reporting.

Proof of their manufacturing quality and sensitivity, many certified dosimetry laboratories worldwide have chosen to use our products to monitor their employees. LANDAUER produces more than a million CR-39 detectors per year throughout the world.

3 dosimeters for all your requirements



NEUTRAK-J

Measurement of intermediate and rapid neutrons

Workstations excluding moderately strong neutron beams



NEUTRAK-T

Measurement of thermal, intermediate and rapid neutrons

All workstations



NEUTRAK + Criticality*

Measurement of neutrons at very high doses

Personnel exposed to nuclear fissile materials in fuel manufacturing and processing plants with a critical risk

*Please note, our criticality dosimeter can be delivered without a name and in a simple sleeve. It can thus be used by different people for a two year period.

LANDAUER, the leading European laboratory for neutron dose monitoring.



HOW DO YOU ASSESS THE PERFORMANCE OF NEUTRON MEASUREMENT?

The performance of a dosimetric measurement system depends on the detector design, the efficiency of the reading systems and the quality of detector manufacture and the analysing processes.

For low dose measurement, CR-39 performance is mainly related to the quality of the measured signal and the level of noise inherent to the detector. LANDAUER uses a very highly sensitive material with no other products that may affect measurement. This choice, validated by strict quality inspections throughout the measurement chain, provides you with compact, efficient detectors, conform to the criteria of ISO standard ISO 21909-1:2015 from 0.1 mSv.

LANDAUER has been accredited for neutron dose measurement using CR-39 for more than 10 years.



TECHNICAL PERFORMANCE

Dosimètre	Neutrak-T	Neutrak -J
Type of radiation measured	Neutrons	
Dose equivalent	$H_p(10)$ chest and wrist	
Detector	CR-39, PADC (Poly-Allyl-Diglycol-Carbonate)	
Technology	SSNTD (solid-state nuclear track detector) - Etched track detector	
Minimum reporting value	0,1 mSv	
Converter	Polyethylene and Teflon® doped with Boron 10	Polyethylene
Linearity response	0.1 to 10 mSv in the thermal range 0.1 to 250 mSv (144 keV to 16.5 MeV)	0.1 to 250 mSv (144 keV to 16.5 MeV)
Energy response and related angular response	Thermal neutrons and from 144 keV to 16.5 MeV from 0° to ±60 °	from 144 keV to 16.5 MeV from 0° to ±60 °

ENVIRONMENTAL RESISTANCE CHARACTERISTICS

Operating and storage temperature	No effect on detector sensitivity up to 40 °C
Hygrometry	No effect on detector sensitivity up to 90 % humidity
Exposure to light	No effect on detector sensitivity

GENERAL CHARACTERISTICS

Manufacturer	Dosimeter manufactured according to LANDAUER's own specifications.
Types of radiation measured	NEUTRAK-J: intermediate and fast neutrons NEUTRAK-T: thermal, intermediate and fast neutrons
Detector	CR-39, solid state nuclear track detector (SSNTD)
Material	PADC (poly-allyl diglycol carbonate)
Radiator	NEUTRAK-J: 100% polyethylene NEUTRAK-T: one part made from polyethylene, one part made from Teflon® loaded with boron 10
Mechanical properties	Weight: 0.44 g Total surface area of the detector: 9 x 19 mm ²



NEUTRAK-J
and radiator



NEUTRAK-T
and radiator

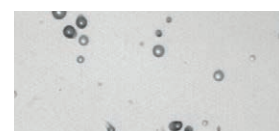
MEASUREMENT METHOD

NEUTRAK laboratory is fully engineered by LANDAUER.

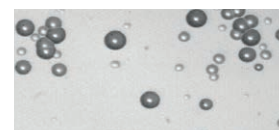
- Measurement of intermediate and fast neutrons - Use of a polyethylene radiator
The neutrons interact with the hydrogen nuclei contained in this radiator with the emission of recoil protons that leave tracks in the CR-39.
- Measurement of thermal neutrons - Use of boron-loaded Teflon® radiator
The thermal neutrons interact with the boron causing the emission of alpha particles that leave tracks in the CR-39.

The CR-39 is analysed after immersion in a sodium bath. This process reveals the tracks produced in the material.

Reading method: the tracks left on the detector are counted using high resolution and fully automated microscope.



Fast and intermediate
neutron tracks



Thermal neutron
tracks

COMPLIANCE WITH STANDARDS

ISO 21909-1:2015 - Passive personal dosimeters for neutrons - Performance and test requirements

QUALIFICATIONS OF OUR LABORATORY

- Participation in national and international inter-comparisons
- Dosimeter characterisation carried out by an independent reference laboratory: National Physical Laboratory (NPL) in the UK
- Quality management system under NF ISO 17025