



RÉPUBLIQUE
FRANÇAISE

Liberté
Égalité
Fraternité

IRSN [DOSIMÉTRIE

INSTITUT DE RADIOPROTECTION
ET DE SÛRETÉ NUCLÉAIRE

PASSIVE RPL DOSIMETER



RPL DOSIMETER:
GIVING YOU PEACE OF MIND



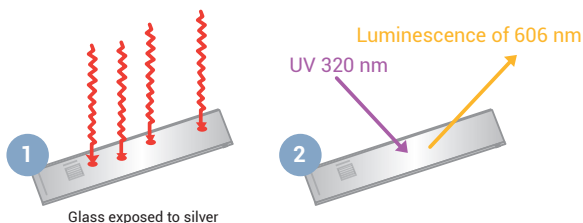
IRSN's passive RPL dosimeter is the most-used dosimeter in France. It is THE device for the dosimetric monitoring of workers. RPL technology is comprised of a glass detector which is highly sensitive to ionising radiation. It takes a precise measurement of the dose received by the worker, from 0.05 mSv. This performance enabled IRSN's laboratory to become the first lab in France to receive COFRAC1 accreditation to conduct personal dose equivalent Hp(10) and environmental dose equivalent H*(10) measurements at the same time according to the requirements of standard ISO 17025.

RPL PHENOMENON

(radio-photoluminescence)

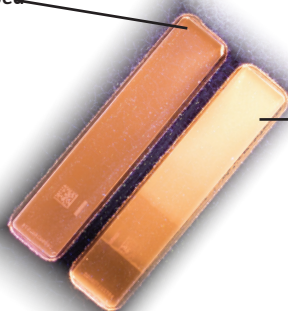
1 - The «radio» in RPL indicates that the electron excitation at the origin of the luminescence phenomenon is caused by the interaction of ionising radiation with the atoms making up the glass.

Ionising radiation



2- Photoluminescence is the phenomenon of light emission observed under RPL glass when it is placed under the action of a 320 nm source of UV.

> Dosimeter exposed to cobalt 60.



> Dosimeter exposed to 33 keV X-rays.

> uminescence observed on irradiated glass.
Light intensity varies according to radiation reduction behind the different filters.

PERFORMANCE

- ⊕ The only passive dosimeter to integrate 5 filters able to discriminate the type of radiation and obtain an optimum response in terms of angle and energy.
- ⊕ The only dosimeter with non-destructive reading able to routinely take measurements at 50 points per dosimeter.
- ⊕ The only passive dosimeter able to very rapidly obtain images of the dose, information about the radiation type and energy and the exposure conditions.
- ⊕ Proven European-scale performance which is recognised by the major European laboratories, who choose the institute's dosimeter (see intercomparison results).

ASSESSMENT WITH THE RPL DOSIMETER

- ⊕ It provides you with information if there is uncertainty regarding the type of radiation the worker is exposed to as well as the static or dynamic nature of the exposure.
- ⊕ **We alert you in the event of abnormal exposure** of the dosimeter without waiting for the legal limit to be exceeded.



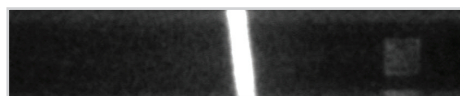
28 keV x-ray in static position



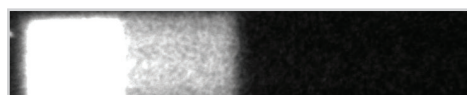
Contaminated dosimeter



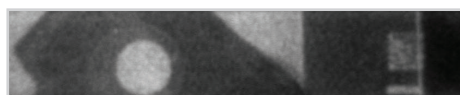
28 keV x-ray in dynamic use



Dosimeter left on the scanner table



Beta radiation (Kr-85)



Dosimeter placed behind a metal clip

WORKSTATION STUDY

The RPL dosimeter is also available for workstation studies. With a detection limit of just a few microsieverts, you know the precise dose equivalent received at the workstation, Without a threshold and without background noise removal.

TECHNICAL BENEFITS

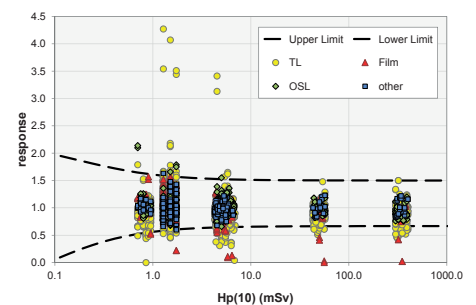
- ⊕ The RPLs are calibrated in IRSN's accredited facilities on an ISO slab phantom for the operational quantity Hp(10).
- ⊕ Its recording threshold is **0.05 mSv (0.01 mSv for workstation studies)**.
- ⊕ Its measurement is guaranteed for **12 months without fading from 0.05 mSv²**

	Detected energy range ^(A)	Dose range ^(B)
Photons (X,γ)	From 16 keV to 6.6 MeV	From 0.05 mSv to 10 Sv
Beta	From 100 keV to 3 MeV	From 0.05 mSv to 10 Sv

(A) - **IMPORTANT:** These values are in no way operating limits, but correspond to the minimum and maximum energies available in the reference facilities which enabled the tests to be conducted.

(B) - In laboratory conditions, the detection limit is a few μ Sv only.

EURADOS INTERCOMPARISON 2018



> EURADOS 2018 European intercomparison: Among all the techniques used, RPL appears among the best results.

ERGONOMIC BENEFITS

- ⊕ Light (12 g) and thin (8 mm).
- ⊕ Clear worker identification, a colour code for recognising the wearing period.
- ⊕ It complies with hygiene regulations due to a removable thermoplastic film covering the dosimeter unit.
- ⊕ It attaches to work clothing with a crocodile clip or is worn on a lanyard.

NEW : RPL +

The shock-resistant «PLUS» option!

For challenging working conditions there is a shock-resistant RPL with an integrated and detachable rear clip.



1 - French Accreditation Committee (COFRAC) accreditation reference 1 – 5031 (available on the cofrac.fr website).

2 - See European EURADOS intercomparison 2010 graph above.

3 - According to the requirements of standard IEC 62387-1, 2012.