



The UK Health Security Agency's (UKHSA) Personal Dosimetry Service provides eye dosimetry based on alternative forms of thermoluminescent dosimeter (TLD). These are the whole-body TLD and the headband dosimeter.

The dosimeters are designed to measure doses from gamma and X-radiations to the lens of the eye in terms of the radiation quantity $H_p(3)$, the dose equivalent at a depth of 3mm, as required by the Health & Safety Executive (HSE). In addition, the headband type measures doses from beta radiations.

Specification overview

The dosimeters are issued as part of the UKHSA TLD dosimetry service, which is approved by the HSE under Regulation 36 of the Ionising Radiations Regulations 2017.

The dosimeter elements are produced by Harshaw TLD™, part of Thermo Fisher Scientific, and are individually bar coded.

Headband dosimeters are available in a single, adjustable format.

The dosimeter element is of the Harshaw EXTRAD™ type and is enclosed behind a 1.5mm PTFE filter in a sealed PVC pocket. The headband is fastened by means of Velcro™ strips which can be trimmed to length. The headband dosimeter measures $H_p(3)$ from both photons and betas and should be preferred if:

- the radiation field in the vicinity of the eyes is not well known or
- doses may arise from beta radiations

Thermoluminescent materials store the energy they absorb from ionising radiation until they are heated to approximately 250°C, when the energy is released as light. The amount of light released is proportional to the radiation dose. The results are provided to the customer through our fully automated system.

The dosimeters must be used facing in the correct direction. In the case of the whole-body TLD, the open windows should face the predominant radiation source. In the case of the headband dosimeter, the white PTFE filter (not the bar code) should face the source.

Whole-body TLDs for measuring doses to the whole body and skin are described in a separate data sheet. However, they can also measure doses to the lens of the eye if:

- they are worn on the collar and
- the radiation field is known to be the same at the collar as it is at the eyes and
- doses are only from photons (gamma and X-radiations)



Headband dosimeter



Whole-body TLD

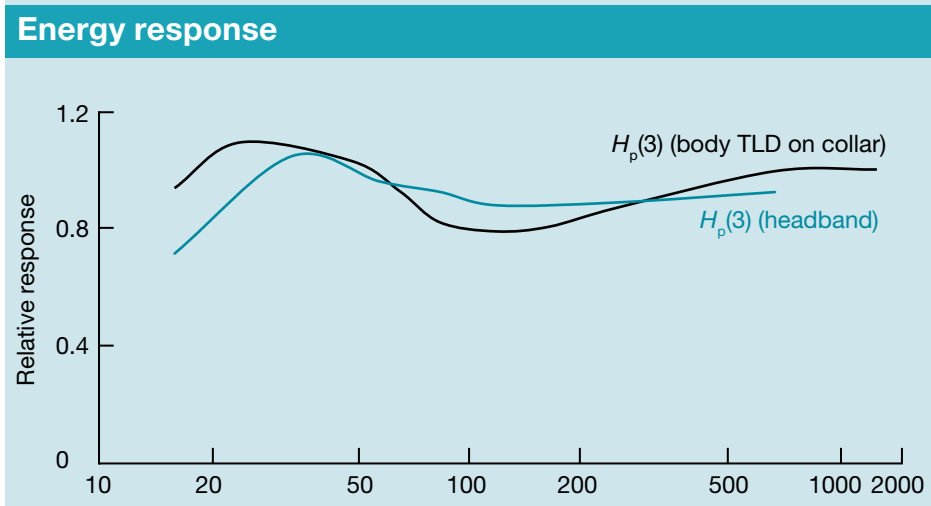
Eye dosimeters are provided as part of the range of approved dosimetry services offered by the UK Health Security Agency and can be linked to our dose record keeping service via an automated system. The processing laboratory is based at our centre in Oxfordshire. For further information or to place an order please contact:
 Tel: +44 (0)1235 825240
 Email: personaldosimetry@phe.gov.uk or personaldosimetry@ukhsa.gov.uk
www.ukhsa-protectionservices.org.uk/pds

Technical specification		
Material	^7LiF (Mg,Cu,P)	
Change interval	Standard periods of 1, 2 or 3 months Periods of 2, 4, 8 or 13 weeks also available	
	Whole body TLD	Headband dosimeter
Radiation types	γ (gamma) and X-radiations	γ , β (beta) and X-radiations
Dose range	0.05 mSv to 10 Sv	0.05 mSv to 10 Sv
Energy range (photons)	16 keV to at least 662 keV	16 keV to at least 662 keV
Energy range (betas, E_{max})	NA	1.7 MeV to at least 3.5 MeV
Angle of incidence range	0° to 60° from normal	0° to 45° from normal

Special features

Environmental effects
 The dosimeters may be worn in all normally encountered environments. In tests, no effect was found for 48 hours' exposure at 40°C and 90% relative humidity. Prolonged exposure to strong ultraviolet light (including sunlight) should be avoided.

Size to suit all
 The headband dosimeter is adjustable, to suit a wide range of users.



Measurement uncertainties

The dosimeters are subject to measurement uncertainties which comply with the recommendations given in European Commission report 'Radiation Protection 160: Technical Recommendations for Monitoring Individuals Occupationally Exposed to External Radiation'.