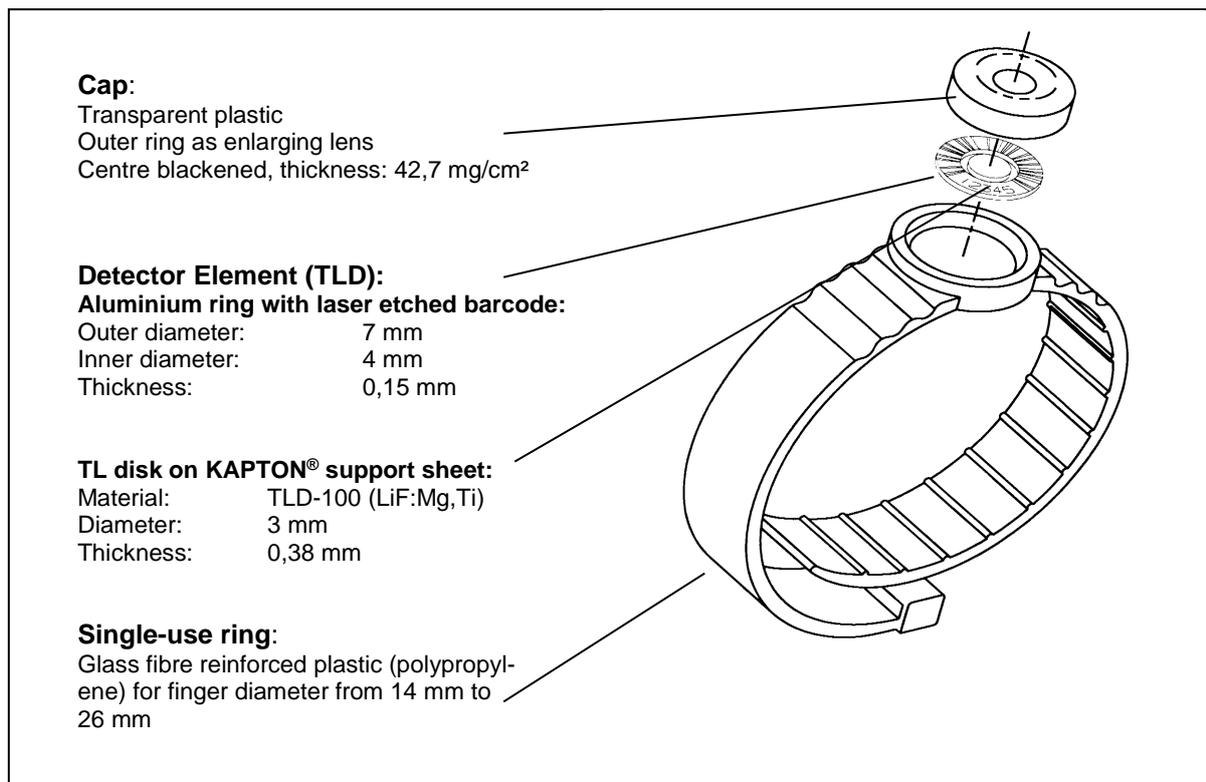


Technical Data Sheet for the Photon Ring Dosemeter

Version: 2026-02-10



Photon Ring Dosemeter

Scope of Application

The ring dosemeter determines representative values of extremity dose of the hands by use of thermo luminescence detectors (TLD, here: lithium fluoride (LiF)). The dosemeter is designed for measuring photon radiation (X-rays and gamma radiation). This device is **not suitable** for measurement of **beta radiation**. For this purpose, special Beta-finger ring dosemeters are available at MPA NRW dosimetry service.

Description of dosemeter

The photon ring dosemeter has been type tested by the Physikalisch-Technische Bundesanstalt (PTB) referred to as "MPA-TKD-01" (Certificate No. DE-26-M-PTB-0002). The design features of the ring can be seen on the images of this data sheet.

Summary of technical data (determined by type test)				
Radiation field:	Photon radiation			
Measurand:	Superficial personal dose $H_p(0,07)$			
Measuring range of dosemeter:				f_{min} ... f_{max}
Dose and Doserate	0,4 mSv	to	10 Sv	- 0,10 ... + 0,05
	0,1 µSv	to	1 Sv/h	
Photon energy and Angle of incidence	12 keV	to	1250 keV	- 0,19 ... + 0,55
	0 °	to	± 60 °	
Ambient temperature and relative air humidity	- 10 °C	to	40 °C	- 0,04 ... + 0,09
	0 %	to	90 %	
Sunlight	0 W/m ²	to	1000 W/m ²	passed
Storage within water	0 h	to	24 h	passed
Free fall	Drop height 1 m			passed
Coefficient of variation	above 1 mSv: < 5 % - below 1 mSv < 11 %			

Handling

The single-use plastic ring is adjusted to the desired finger thickness by pushing the free end of the plastic strip through the eye at the other end by the appropriate length.



Components of the photon ring dosimeter

1. Ring of polypropylene
2. Detector element (TLD)
3. Cap

The dosimeter must be sent back by the user completely mounted (as it had been delivered). It will be disassembled at the dosimetry service.

The ring has to be worn at a representative position with the detector facing the radiation source. The reference point for dose measurement is the centre of the TLD. For cleaning and disinfecting detergent solutions like alcohol, hand sanitizers or ethylene oxide may be used. The detector is encapsulated liquid-tight. Heating to temperatures above 80° C is not allowed. Generally the responsible hygienist has to decide about the applicable disinfection or sterilization methods according to medical considerations (e.g. plasma sterilization is possible).

Organization

Being on continuous monitoring you will receive a new ring for the following wearing period before the end of the current wearing period. Please send the used ring back to the dosimetry service immediately after the end of the wearing period. According to German regulations (Strahlenschutzverordnung and Röntgenverordnung) the legal monitoring period is 1 month. A longer monitoring period is only possible with acceptance of the responsible authority. As passive dosimeters photon rings cannot be switched off. They continuously measure the natural background radiation which leads to increasing uncertainty with the length of wearing and storing time. Therefore any passive dosimeters should not be stored for too long, but be used for the intended wearing period. In addition unnecessary rental rates will arise with storage time.

TLDs may be reused about 50 times, provided that single doses will not exceed 70 mSv and they will not be mechanically damaged or badly soiled. Radioactive contaminations principally have to be avoided. In case of contaminated rings, the user must ensure the decontamination before shipping it back to the dosimetry service. Such an incident has to be notified to the dosimetry service. At a dose above 70 mSv the affected detector have to be replaced. A repeated dose analysis is not possible with TLDs because the dose information is deleted during the first evaluation.

Together with the ring dosimeters you will receive the form "Zuordnungs- und Änderungsbogen" which assigns dosimeter numbers to monitored persons. This form should **only** be filled in and sent back to the dosimetry service if there are any changes or additions to the printed data. Examples are the use of the dosimeter by another person, no personal data or dosimeter numbers was given due to first use or you find any errors within the printed information. Personnel data should be changed by using the free line **underneath** the printed data. For changes of address or radiation protection officer you will find the appropriate fields in the header of the form.

Please **send the form back** to the dosimetry service **immediately** (e.g. with the rings of the previous month) not together with the listed rings. The ring number is visible through the ring cap as white ciphers on black background.

Quality management:

The dosimeter service is accredited in accordance to DIN EN ISO/IEC 17025:2018 [D-PL-11142-01-00]. The dosimetry service participates in national and international intercomparison tests.