

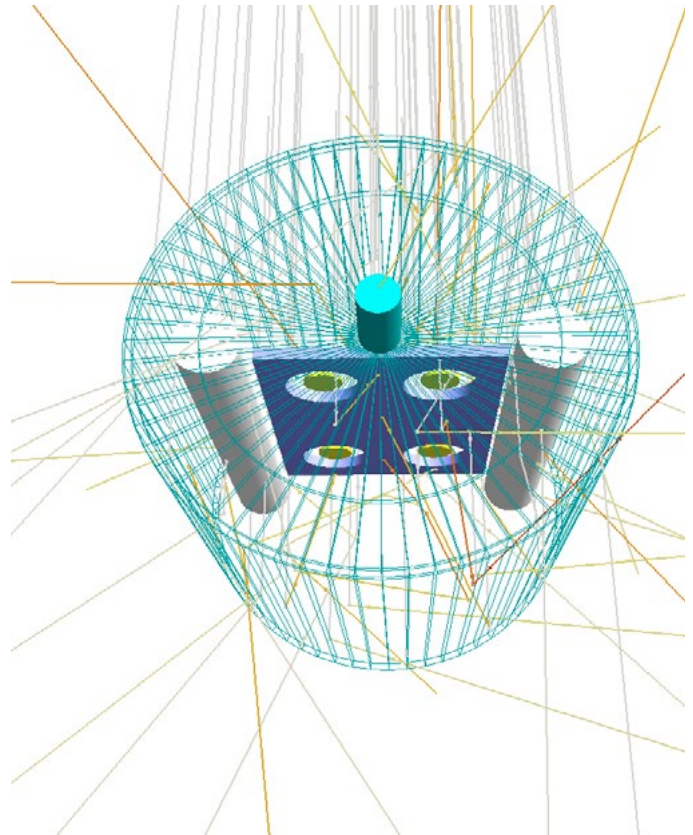
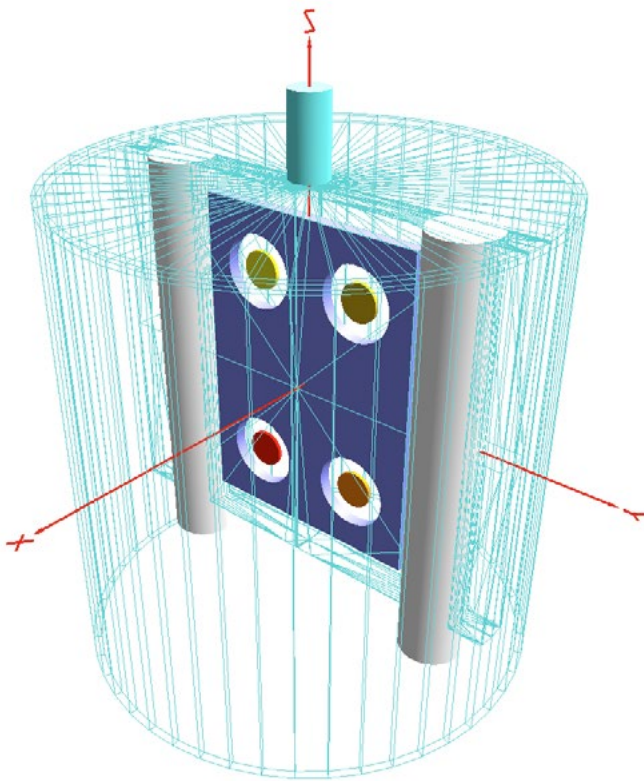
SEIBERSDORF
LABORATORIES



FREQUENTLY ASKED SOLUTIONS



**RADIATION PROTECTION DOSIMETRY
DOSIMETRY SERVICE**



Monte Carlo computer simulation model of the area dosimeter Seibersdorf

AREA AND ENVIRONMENTAL DOSEMETER SEIBERSDORF

The dosimetry service Seibersdorf is an accredited testing laboratory for ionising radiation and radiation protection providing area dosimeters for workplace monitoring and environmental monitoring.

Our passive thermoluminescence dosimeters (TLDs) are routinely used for long-term surveillance of exposure limits according Austrian, European and International radiation protection safety standards.

Dosimeter development and performance optimization are based on Monte Carlo simulations and verification measurements (Radiation Measurements 43, 2008) and international standards (IEC 62387, DIN 25483).

PERFORMANCE CHARACTERISTICS

- measurement of external X-ray and gamma radiation in terms of ambient dose equivalent $H^*(10)$
- dose range 50 μSv to 10 Sv with standard measurement periods of three months
- optimized radiation energy range beyond 30 keV to 7 MeV for all angles of radiation incidence
- inherent secondary electron equilibrium up to several MeV for high energy photon radiation detection
- high measurement accuracy by using TLD detector chips on a detector card protected by a water-tight envelope foil
- robust construction with an inner plastic casing and an Aluminium protection cap
- optionally standing or hanging positioning on specified measurement sites
- excellent performance results at the PTB intercomparisons 2005-2007 and 2011/2012 and the EURADOS intercomparisons 2014 and 2021

AREA DOSEMETER DESIGN

The cylindrical area dosimeter Seibersdorf consists of a powder-coated aluminium protection cap and an inner plastic casing with a central slit. Both parts can be combined and secured by a simple cable tie or an official seal. Main items of the area dosimeter as used and tested by the Dosimetry Service Seibersdorf are coded detection cards containing lithium fluoride TLD chips. The cards are centred within the dosimeters and protected against humidity and contamination by an envelope foil.

- Outer Dimensions: 60 mm diameter, 63 mm height
- Inner slit dimensions: 32 mm x 5 mm x 50 mm
- Reference point: geometrical centre, not marked
- Reference direction: seal towards source
- Reference radiation quality: S-Cs gamma radiation (ISO 4037)



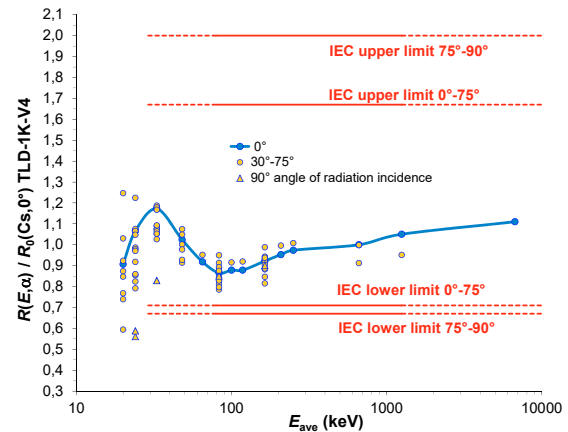
Components of the area dosimeter Seibersdorf

TLD AREA DOSIMETRY

Thermoluminescent dosimetry (TLD) is one of the most reliable methods for detecting ionising radiation covering a wide dose range and measurement periods of several months.

In contrast to personal monitoring, area dosimeter measurements are related to fixed measurement sites assessing potential exposure to individuals. Accurate determination of ambient dose equivalent within restricted areas or in their environment allows safeguarding or improving radiation protection policy.

Ambient dose equivalent (unit microsievert μSv) results include contributions due to natural background radiation and transport, which may be taken into account by the user. Analysis of provided average ambient dose equivalent rates (unit $\mu\text{Sv/h}$) allows comparisons to previous measurement results and exposure limits and estimations of annual dose values.



Combined energy and angular response of the TLD-1K-V4



TLD-2K-V4 used for environmental monitoring

DOSIMETRY SERVICE SEIBERSDORF

The monitoring service of the Seibersdorf Laboratories offers an extensive radiation safety programme for our customers from medical professions, industry, emergency organizations and research institutions. Our highest quality standards are based on many years of experience as one of the first European services using continuously improved and extended thermoluminescence dosimeters.

ISO 9001 certified
ISO/IEC 17025 accredited
approved by the Federal Office
of Metrology and Surveying

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