



GI-07

GAMMA IRRADIATOR

KEY FEATURES

- Irradiator for up to seven gamma radionuclide sources
- Provides homogeneous collimated beam with dose rate of up to units of Gy/hr
- Low dose rate on the irradiator surface
- Fully automated irradiation process
- Integrated safety system
- ISO 4037:2019
- The sources do not rotate in the transport system

DESCRIPTION

The GI-07 gamma irradiator, when fitted with appropriate radionuclide sources, and optionally equipped with an attenuator set, serves as a reference source of homogeneous collimated gamma ray beam ranging from some tenths of $\mu\text{Gy/hr}$ to Gy/hr . This type of equipment is normally used in metrology laboratories for the calibration of gamma dose rate and dose meters.

The GI-07 Gamma Irradiator consists of:

- a lead shielded rotating container for up to seven radiation sources,
- a beam collimator,
- a control unit,
- safety and alarm systems.

The irradiator and other components are fully remotely controlled from a host PC, which has the DARS control software installed.

When irradiation is commenced, the selected source is lifted to the collimator opening and the irradiation begins. The collimator meets the requirements of ISO 4037:2019.

Lead is used as standard material for the collimator. Optionally, tungsten can be used.

The irradiator is fitted with a safety system that ensures irradiation stops in the case of emergency.

In case of a power failure the exposed source drops into the shielded position by gravity.

Attenuators with a maximum attenuation factor of 5,000 may be installed in front of the irradiator. Attenuators are available with:

- manual control without position indication
- manual control with electronic position indication
- remote control with electronic position indication

The following sets are available:

- set with 2 attenuators
- set with 3 attenuators
- set with 4 attenuators

Note: when attenuators are used, the shielding of the irradiator and collimator needs to be selected accordingly in order to meet the requirements of the ISO 4037:2019 standard.

SPECIFICATIONS

Number of sources	max. 7
Max. source dimensions ($\varnothing \times h$)	34 × 56 mm
Dose rate on the irradiator's surface	See table of models
Standard height of the beam axis	1 500 mm
Accuracy of the source positioning	± 0,5 mm
Power supply	110 / 230 V AC
Communication interface	Ethernet

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MODELS

Model	Recommended maximum activity of the strongest source*	Dose rate in the beam at 1 m	Dose rate on the surface	Dose rate at 30 cm from the surface	Weight [kg]	Dimensions			
						H [mm]	W [mm]	L [mm]	D [mm]
K1771-01	¹³⁷ Cs:								
	100 TBq (2,700 Ci)	6,5 Gy/h	< 0.1 μSv/h	< 0.1 μSv/h					
	⁶⁰ Co:				2,700	1,720	800	845	725
	2.5 TBq (67.6 Ci)	0,6 Gy/h	10 μSv/h	2.7 μSv/h					
K1771-02	¹³⁷ Cs:								
	100 TBq (2,700 Ci)	6,5 Gy/h	0.4 μSv/h	< 0.1 μSv/h					
	⁶⁰ Co:				2,300	1,720	800	830	700
	250 GBq (6.75 Ci)	72 mGy/h	7 μSv/h	1.4 μSv/h					
K1771-03	¹³⁷ Cs:								
	100 TBq (2,700 Ci)	6,5 Gy/h	8 μSv/h	< 1 μSv/h					
	⁶⁰ Co:				1,700	1,720	800	800	580
	25 GBq (675 mCi)	7,2 mGy/h	8 μSv/h	1.4 μSv/h					

* Activities of the inserted sources can be higher than recommended maximum activities if a higher dose rate in the vicinity of the irradiator is acceptable.

Note: The values of the dose rate in the beam and in the vicinity of the irradiator are approximate, in practice they may differ slightly depending on the specific radionuclide source used.

OPTIONAL CONFIGURATIONS

Tungsten collimator

OPTIONAL ACCESSORIES

Laser system for beam axis definition

Set of attenuators

RELATED PRODUCTS

GI-01L Gamma irradiator for one Cs-137 source

GI-01A Gamma irradiator for one Cs-137 source with attenuators

GI-01H Gamma irradiator for one Co-60 source

GI-03 Gamma irradiator for three sources

CB-60 Calibration Bench

DARS Control System for the Calibration Laboratory

