



0.3 cm³ Semiflex Chamber

Type 31013

Therapy chamber for scanning systems and for absolute dosimetry

Features

- ▶ Waterproof, semiflexible design for easy mounting in scanning water phantoms
- ▶ Increased sensitive volume for low level measurements
- ▶ Sensitive volume 0.3 cm³, vented to air
- ▶ Radioactive check device (option)

The 31013 semiflexible chamber is ideal for precise dose measurements and for the measurement of dose distributions in scanning water phantom systems. The chamber is used as an alternative for the 31010 chamber in cases where increased signal levels are required and spatial resolution along the axis of the chamber can be compromised.

Specification

Type of product	vented cylindrical ionization chamber
Application	absolute dosimetry in radiotherapy beams
Measuring quantities	absorbed dose to water, air kerma, exposure
Reference radiation quality	⁶⁰ Co
Nominal sensitive volume	0.3 cm ³
Design	waterproof, vented, fully guarded
Reference point	on chamber axis, 9.5 mm from chamber tip
Direction of incidence	radial
Nominal response	10 nC/Gy
Long-term stability	≤ 1 % per year
Chamber voltage	400 V nominal ± 500 V maximal
Polarity effect at ⁶⁰ Co	< 1 %
Photon energy response	≤ ± 2 % (140 kV ... 280 kV) ≤ ± 4 % (100 kV ... ⁶⁰ Co)
Directional response in water	≤ ± 0.5 % for rotation around the chamber axis and for tilting of the axis up to ± 10°
Leakage current	≤ ± 4 fA
Cable leakage	≤ 1 pC/(Gy·cm)

Materials and measures:

Wall of sensitive volume	0.55 mm PMMA, 1.19 g/cm ³ 0.15 mm graphite, 0.82 g/cm ³
Total wall area density	78 mg/cm ²
Dimension of sensitive volume	radius 2.75 mm length 16.25 mm
Central electrode	Al 99.98, diameter 0.9 mm
Build-up cap	PMMA, thickness 3 mm

Ion collection efficiency at nominal voltage:

Ion collection time	80 μs
Max. dose rate for ≥ 99.5 % saturation	14 Gy/s
≥ 99.0 % saturation	28 Gy/s
Max. dose per pulse for ≥ 99.5 % saturation	0.8 mGy
≥ 99.0 % saturation	1.5 mGy

Useful ranges:

Chamber voltage	± (100 ... 400) V
Radiation quality	100 kV ... 50 MV photons (10 ... 45) MeV electrons (50 ... 270) MeV protons
Field size	(4 x 4) cm ² ... (40 x 40) cm ²
Temperature	(10 ... 40) °C (50 ... 104) °F
Humidity	(10 ... 80) %, max 20 g/m ³
Air pressure	(700 ... 1060) hPa

Ordering Information

- TN31013 Semiflex chamber 0.3 cm³, connecting system BNT
- TW31013 Semiflex chamber 0.3 cm³, connecting system TNC
- TM31013 Semiflex chamber 0.3 cm³, connecting system M

Options

- T48012 Radioactive check device ⁹⁰Sr
- T48002.1.004 Chamber holding device for check device