

Semiflex™ Ionization Chamber, 0.3 cm³, Waterproof Model 30-316



Radiation Oncology



- Suitable for use in water phantoms or solid state phantoms
- Measuring volume is fully vented via the connector
- Fully guarded up to measuring volume
- Touchable parts free of high voltage
- Extension cables up to 100 meters in length are available
- Type tested by PTB Braunschweig 23.21
85.1

The 0.3 cm³ ionization chamber (Model 30-316) is designed for measurements in the useful beam of high energy photon and electron fields. The chamber is waterproof and is used mainly for relative measurements in a water phantom or in an air scanner. The measuring volume is open to the surrounding air via the 4.3 ft (1.3 m) cable and BNC Triax connector. This chamber has a short rigid stem for easy mounting, includes a PMMA buildup cap, and is type tested by PTB Braunschweig.

Specifications

Volume 0.3 cm³

Response $1 \cdot 10^{-8}$ C/Gy

Leakage $\pm 4 \cdot 10^{-15}$ A

Polarizing voltage Maximum 500 V

Cable length 4.3 ft (1.3 m)

Cable leakage 10^{-12} C/(Gy • cm)

Wall material PMMA (C₅H₈O₂)

Wall density 1.19 gm/cm³ (PMMA)

Wall thickness 0.7 mm PMMA

Area density 83.3 mg/cm²

Electrode Aluminum, graphite coated, 1.0 mm Ø, 14.25 mm long

Nominal useful range 30 keV to 50 MeV

Range of temperature 10° to 40°C

Range of relative humidity 20% to 75%

Ion collection time

300 V: 0.10 ms

400 V: 0.08 ms

500 V: 0.06 ms

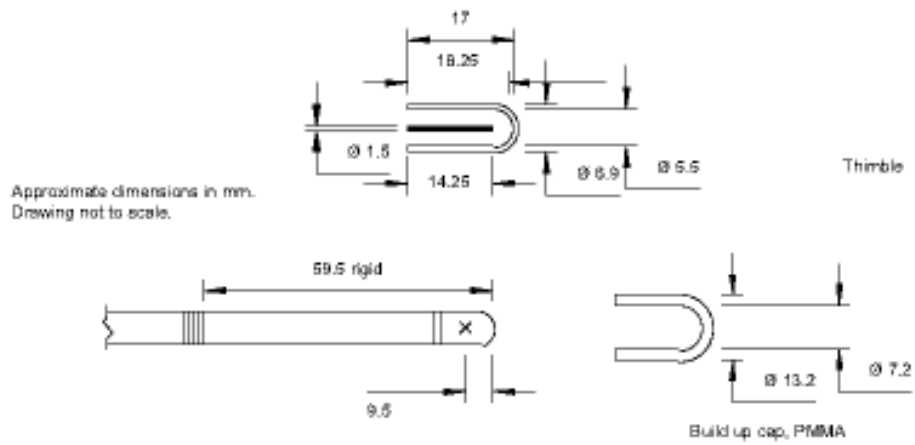
Saturation behavior

Saturation behavior	Polarizing voltage	99.0% saturation	99.5% saturation
Maximum dose rate at continuous irradiation	300 V	17.0 Gy/s	8.5 Gy/s
	400 V	30.0 Gy/s	15.0 Gy/s
	500 V	45.0 Gy/s	23.0 Gy/s
Maximum dose rate per irradiation pulse	300 V	1.0 mGy	0.4 mGy
	400 V	1.3 mGy	0.5 mGy
	500 V	1.7 mGy	0.7 mGy

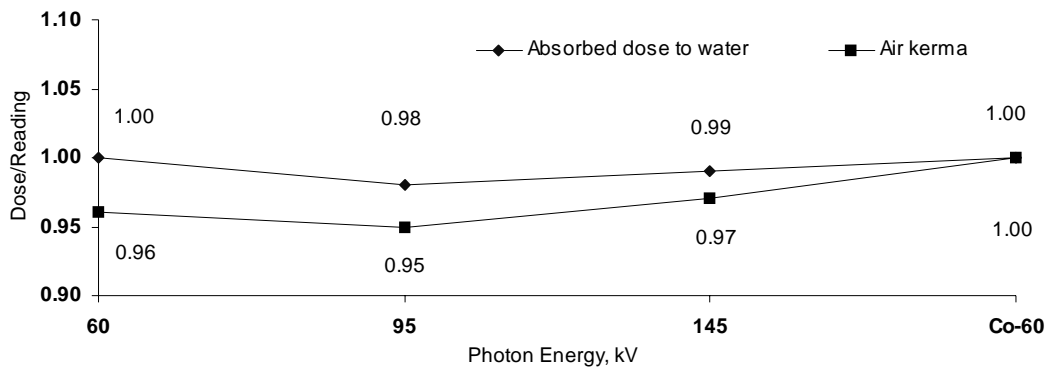
See next page for more specifications.

Specifications (continued)

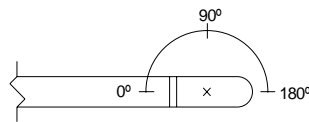
Diagram



Energy dependence



Directional dependence



Reading / Dose, %
in Air

	6°	12°	18°	24°	30°	60°	90°	120°	150°	162°	174°	180°
70 kV	44.1	65.6	80.2	87.5	92.5	99.7	100.0	99.6	96.1	93.0	88.7	85.4
140 kV	68.7	82.9	92.2	95.0	97.4	99.7	100.0	99.4	97.7	96.5	94.5	91.0
280 kV	79.9	87.1	93.1	95.5	97.5	99.5	100.0	99.7	98.5	97.4	96.1	94.9
Co-60	83.2	91.1	94.6	96.0	97.1	99.4	100.0	99.4	97.5	96.8	96.0	94.6

in PMMA

	6°	12°	18°	24°	30°	60°	90°	120°	150°	162°	174°	180°
70 kV	97.2	104.3	106.4	105.9	105.4	103.0	100.0	97.8	98.1	98.8	99.4	97.1
140 kV	109.0	108.0	106.9	106.1	105.3	101.8	100.0	98.8	98.9	99.6	100.3	99.8
280 kV	111.3	107.1	105.0	104.2	103.3	101.2	100.0	99.4	100.0	100.6	101.2	100.6
Co-60	104.0	106.4	104.6	104.0	103.5	101.1	100.0	99.9	100.8	101.3	101.8	101.0

Optional accessories

Check Source, ⁹⁰Sr, 33 MBq (892 μCi) (Model 30-657)

Available model(s)

30-316 Semiflex Ionization Chamber, 0.3 cm³, Waterproof, includes BNC Triax connector, PMMA buildup cap, and rigid stem for mounting

Other types of triaxial cable connectors available