

Farmer-Type Ionization Chamber, 0.6 cm³, Waterproof Model 30-351



- Completely waterproof, does not require protective sleeve
- Can be safely used in water phantoms and solid state phantoms
- Open volume, vented at connector
- Fully guarded up to the measuring volume
- Touchable parts free of high voltage
- Extension cables up to 100 meters in length are available

The waterproof 0.6 cm³ ionization chamber (Model 30-351) is designed for absolute dosimetry in radiation therapy. Since the chamber is waterproof, it may be used in water phantoms and does not require a protective sleeve. It is rugged in construction and has a PMMA/graphite thimble and an aluminum electrode. This chamber includes a 3.3 ft (1 m) cable, BNC Triax connector, and a PMMA buildup cap.

Specifications

- Volume** 0.6 cm³
- Response** 2 • 10⁻⁸ C/Gy
- Leakage** ± 4 • 10⁻¹⁵ A
- Polarizing voltage** Maximum 500 V
- Cable length** 3.3 ft (1 m)
- Cable leakage** 10⁻¹² C/(Gy • cm)
- Wall material** PMMA (C₅H₈O₂), Graphite (C)
- Wall density** 1.19 gm/cm³ (PMMA), 1.85 gm/cm³ (C)
- Wall thickness** 0.335 mm PMMA, 0.09 mm C
- Area density** 56.5 mg/cm²
- Electrode** Aluminum, 1.1 mm Ø, 21.2 mm long
- Nominal useful range** 30 keV to 50 MeV
- Range of temperature** 10° to 40°C
- Range of relative humidity** 10% to 80%

Ion collection time

- 300 V: 0.18 ms
- 400 V: 0.14 ms
- 500 V: 0.11 ms

Saturation behavior

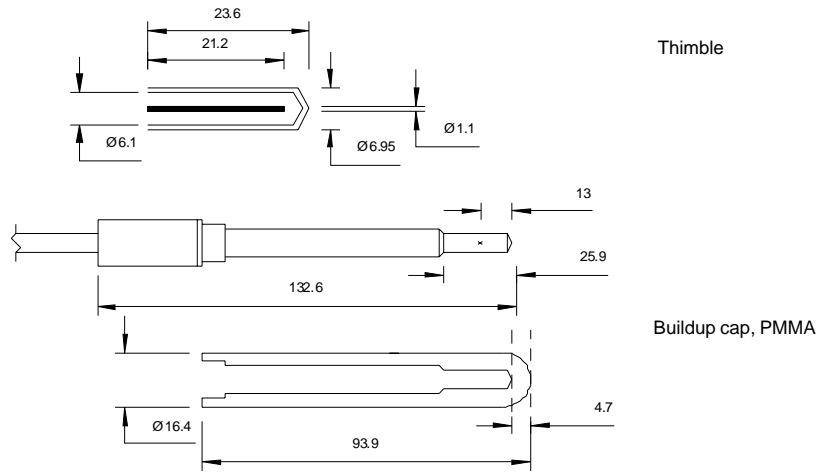
Saturation behavior	Polarizing voltage	99.0% saturation	99.5% saturation
Maximum dose rate at continuous irradiation	300 V	5.70 Gy/s	2.80 Gy/s
	400 V	10.00 Gy/s	5.00 Gy/s
	500 V	16.00 Gy/s	7.80 Gy/s
Maximum dose rate per irradiation pulse	300 V	0.69 mGy	0.34 mGy
	400 V	0.91 mGy	0.46 mGy
	500 V	1.14 mGy	0.57 mGy

See next page for more specifications.

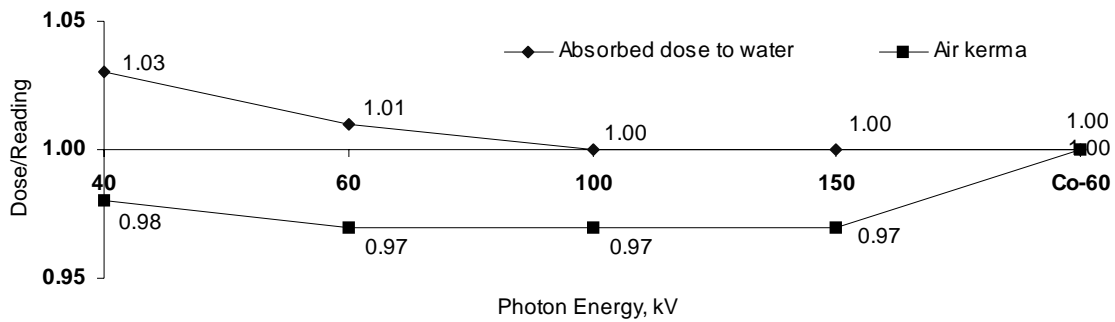
Specifications (continued)

Diagram

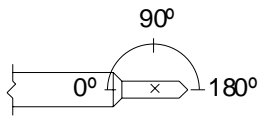
Approximate dimensions in mm.
Drawing not to scale.



Energy dependence



Directional dependence



Reading / Dose, %

in Air

	6°	12°	18°	24°	30°	60°	90°	120°	150°	162°	174°	180°
70 kV	20	48	69	81	88	99	100	100	98	96	91	88
140 kV	36	66	82	90	94	100	100	100	100	98	96	94
280 kV	57	80	90	94	96	100	100	100	100	99	98	97
Co-60	67	85	91	95	97	100	100	100	100	99	99	98

in PMMA

	6°	12°	18°	24°	30°	60°	90°	120°	150°	162°	174°	180°
70 kV	78	88	96	100	101	100	100	100	100	101	102	102
140 kV	90	97	101	102	103	101	100	100	99	100	102	102
280 kV	100	102	103	103	103	101	100	100	100	101	102	102
Co-60	102	101	101	101	101	100	100	100	101	102	102	102

Optional accessories

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

Available model(s)

30-351 Farmer-Type Ionization Chamber, 0.6 cm diameter, waterproof, includes BN-C Triax connector and PMMA buildup cap

Other types of triaxial cable connectors available