



Model 44D Well Chamber for LDR, HDR and IVB

The 44D is a hermetically-sealed re-entrant well ion chamber, requiring no air density corrections. The fill gas is pure argon at an absolute pressure of 23.5 psi, which provides three distinct benefits. First, through photoelectric absorption, argon enhances the response at low energies emitted from ¹²⁵I and ¹⁰³Pd. Second, because of its low electron attachment coefficient, argon provides a higher ion collection efficiency, making it more suitable for 10 Ci HDR ¹⁹²Ir sources. Third, the positive pressure provides long term constancy measurements with the ability to verify the chamber seal.

The 44D is fully guarded into the chamber and is equipped with a 1.5 meter triaxial cable. It may be connected to any precision, dosimetry-grade electrometer. To cover the entire range of clinical sources from ¹²⁵I seeds to HDR ¹⁹²Ir, the electrometer should be capable of resolving at least 10 fA and measure up to 2000 nA or 20,000 nC.

Features:

- ▶ Sealed - no air density correction required
- ▶ Filled with argon
 - Assures high collection efficiency at high doses
 - Enhances response at low energy gammas, 0.5 mCi ¹²⁵I source yields 19 pA
- ▶ Compact - 5 in diameter x 10 in high

Compatible Electrometers	LDR	HDR
Physics Workstation	0.01 pA - 400 nA (unlimited integration)	
206 (with appropriate input module)	0.01 - 19,999 pA	0.001 - 1999.9 nA
	.0001 - 199.99 nC	0.01 - 19999 nC
1100/1150	0.001 - 19.999 nC	1 - 19999 nC
MK614SBR	.001 pA - 1999.9 nA	
K-602	.001 pA - 1200 mA	
UNIDOS, UNIDOS-E	.200 fA - 1 μA, 2 pC - 65 mC	
MAX4000	0.01p C - 999,999 pC	0.01 nC - 999,999 nC
	0.001 pA - 1999.9 pA	
35040	0.01 pC - 20 mC, 0.1 pA - 1 μA	

Specifications

Active volume: 1200 cc
 Nominal response factors: (not to be used to calibrate source strength)
 ¹²⁵I 38 nA/Ci | ¹⁰³Pd 9.7 nA/Ci
 ¹⁹²Ir LDR 30 nA/Ci | ¹⁹²Ir HDR 28.7 nA/Ci
 ⁹⁰Sr 150 pA/30 mm | ¹³⁷Cs tube 19.6 nA/Ci
 ⁹⁰Sr 204 pA/40 mm | ²⁴¹Am 9.3 nA/Ci
 ⁹⁰Sr 300 pA/60 mm | ¹⁹⁸Au 13.8 nA/Ci
 Axial response: "sweet spot" defined as ±0.5% of response, nominal length is 40 mm ±5 mm, center located between 36 and 46 mm from the bottom of the well
 Ion collection efficiency: >99.8% with 10 Ci of ¹⁹²Ir
 Leakage current: guard to collector, <3 fA
 Background: 1 fA per 1 μR of background rad.
 Stability: <1% per year, long term
 Maximum bias: guard to HV electrode, 500 V
 Well opening: 7.2 cm dia. x 16.7 cm deep
 Cable: 1.5 meter triaxial with BNC conn.
 Dimensions: 12.7 dia. x 25.4 cm high (5 in x 10 in)
 Weight: 2.6 kg (5.7 lb)

Accessories

44D-1 Holder for Tube and Seed Sources
 44D-1SL Holder for Single Linear Seed Sources
 44D-2 Holder for Flexible Ribbon Sources
 44D-3 Holder for seed batch assay
 44D-4 Mick cartridge holder
 44D-6 Indigo Express seeding cartridge holder
 44D-7 Holder for Novoste ⁹⁰Sr source
 44D-CASE Carrying Case for 44D
 AAPM ADCL Calibration: HDR: ¹⁹²Ir
 LDR: ¹⁹²Ir, ¹²⁵I, ¹³⁷Cs, ¹⁰³Pd
 IVB: ⁹⁰Sr seed trains