

Ludlum 2360 248144	Ludlum 43-68 216857	Active Probe Area 125 cm ²	α HDP Efficiency 2.9%	α Cal. Efficiency N/A	β HDP Efficiency 10.0%	β Cal. Efficiency N/A
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TOTAL WEIGHTED INSTRUMENT EFFICIENCY CALCULATION

Radionuclide	Radiation	Maximum Energy (MeV)	Instrument Efficiency (ϵ_i)	Surface Efficiency (ϵ_s)	Yield 100%	Activity Fraction	Weighted Efficiency
Am-241	Alpha	5.6	0.0289	0.25	1.00	2.682E-03	1.94E-05
Np-237	Alpha	5.0	0.0289	0.25	1.00	5.573E-05	4.03E-07
Pu-239	Alpha	5.2	0.0289	0.25	1.00	2.027E-06	1.46E-08
Tc-99	Beta	0.294	0.1001	0.25	1.00	2.829E-03	7.08E-05
Th-232	Alpha	4.1	0.0289	0.25	1.00	3.214E-03	2.32E-05
Ra-228	Beta	0.046	0.1001	0.00	1.00	3.214E-03	0.00E+00
Ac-228	Beta	2.13	0.1001	0.50	1.00	3.214E-03	1.61E-04
Th-228	Alpha	5.5	0.0289	0.25	1.00	3.214E-03	2.32E-05
Ra-224	Alpha	5.8	0.0289	0.25	1.00	3.214E-03	2.32E-05
U-234	Alpha	4.9	0.0289	0.25	1.00	8.270E-01	5.98E-03
U-235	Alpha	4.7	0.0289	0.25	1.00	3.720E-02	2.69E-04
Th-231	Beta	0.390	0.1001	0.25	1.00	3.720E-02	9.31E-04
U-238	Alpha	4.3	0.0289	0.25	1.00	1.270E-01	9.18E-04
Th-234	Beta	0.270	0.1001	0.25	1.00	1.270E-01	3.18E-03
Pa-234m	Beta	2.20	0.1001	0.50	1.00	1.270E-01	6.36E-03

Total Weighted Instrument Efficiency = \sum Weighted Instrument Efficiency for all Nuclides of Concern $\Sigma =$ 1.79%

Weighted Instrument Efficiency = $\epsilon_i * \epsilon_s * \text{Yield} * \text{Activity Fraction}$

ϵ_i = 2 Pi Instrument Efficiency for Nuclide of Concern

ϵ_s = Surface Efficiency for Nuclide of Concern

Meter
43-68