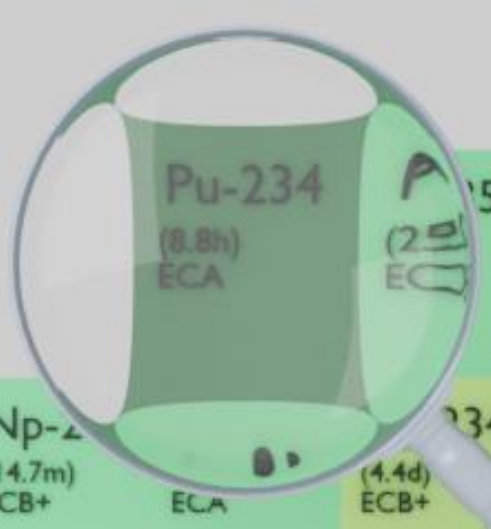




Pu-232 (33.7m) ECA	Pu-234 (8.8h) ECA Pu-234 (8.8h) ECA	Pu-236 (2.858y) A SF	Pu-237 (45.2d) ECA	Pu-238 (87.7y) A SF
Np-234 (14.7m) ECB+		Np-235 (396.1d) ECA	Np-236 (1.54E+5y) ECB-A	Np-237 (2.144E+6y) A

PLUTONIUM-234

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pu-234
 Atomic number (Z): 94
 Mass number (A): 234
 Neutron number (N): 140

RADIOACTIVE DECAY

Decay modes: α , Electron capture
 Half-life: 8.8 [h]
 Decay constant: 2.1880×10^{-5} [1/s]
 Daughters: Np-234 (94.0%), U-230 (6.0%)
 Radioactive daughters: Np-234, U-230

DOSIMETRIC CONSTANTS

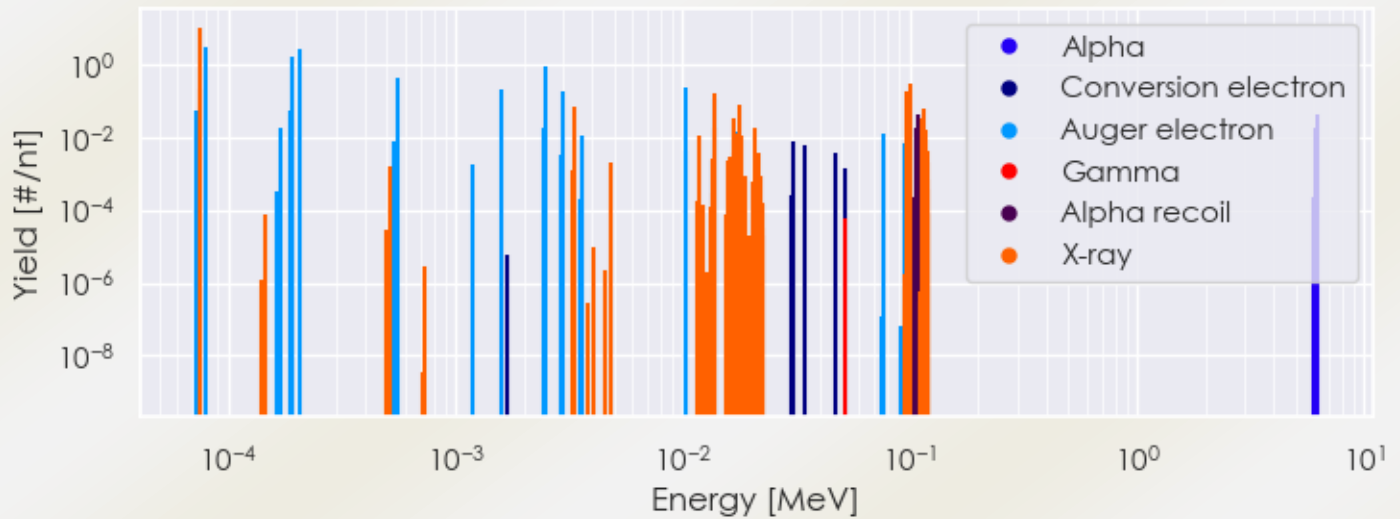
Mean alpha energy: 0.3775 [MeV]
 Mean electron energy: 0.01137 [MeV]
 Mean photon energy: 0.06933 [MeV]
 Air kerma rate constant, Γ_{10} : 1.087×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
 Air kerma coefficient, K_{air} : 1.087×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
 Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 6.230×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
 Equilibrium dose constant for alphas, Δ_{α} : 6.048×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta+,e-}$: 1.822e-15 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.111e-14 [Gy·kg/Bq·s]

SUMMARY SPECTRA (PLOT)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Pu-234 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pu-234%20Summary%20Spectrum.csv)

TABULATED DATA

SUMMARY SPECTRA (TABLE)

Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**

Note: Radiations with yield < 0.01 are excluded from the table, but are available in the linked *.csv data.

Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Pu-234 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pu-234%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
7.44242e-05	1.064e+01	X-ray
7.55228e-05	1.986e-01	X-ray
3.34653e-03	6.700e-02	X-ray
1.19138e-02	1.087e-02	X-ray
1.37668e-02	1.749e-02	X-ray
1.39579e-02	1.536e-01	X-ray

1.68587e-02	3.246e-02	X-ray
1.70745e-02	1.258e-02	X-ray
1.78427e-02	8.221e-02	X-ray
1.80184e-02	1.064e-02	X-ray
2.08890e-02	1.879e-02	X-ray
9.74979e-02	1.804e-01	X-ray
1.01574e-01	2.871e-01	X-ray
1.13834e-01	3.320e-02	X-ray
1.14778e-01	6.499e-02	X-ray
1.18129e-01	1.692e-02	X-ray
7.21842e-05	5.348e-02	Auger electron
7.90129e-05	3.110e+00	Auger electron
1.69889e-04	1.850e-02	Auger electron
1.86382e-04	5.240e-02	Auger electron
1.90288e-04	1.620e+00	Auger electron
1.92479e-04	3.010e-02	Auger electron
2.08457e-04	2.796e+00	Auger electron
5.59521e-04	4.356e-01	Auger electron
1.59994e-03	2.030e-01	Auger electron
2.44405e-03	1.728e-02	Auger electron
2.48729e-03	9.184e-01	Auger electron
2.98673e-03	1.797e-01	Auger electron
3.62416e-03	1.070e-02	Auger electron
1.03291e-02	2.281e-01	Auger electron
1.37583e-02	1.170e-01	Auger electron
1.72232e-02	1.411e-02	Auger electron
7.72522e-02	1.218e-02	Auger electron
6.15123e+00	1.912e-02	Alpha
6.20207e+00	4.064e-02	Alpha
1.07048e-01	1.912e-02	Alpha recoil
1.07932e-01	4.064e-02	Alpha recoil

USEFUL LINKS

Isotope decay characteristics are periodically updated as better measurements can be made - changes that may not be reflected on this page. Please see useful links:

National Nuclear Data Center (NNDC): <https://www.nndc.bnl.gov/nudat3/mird/>

International Atomic Energy Agency (IAEA) Livechart: <https://www-nds.iaea.org/relnsd/vcharthtml/VChartHTML.html>

REFERENCE LINKS

ICRP Report 107: <https://www.icrp.org/publication.asp?id=ICRP%20Publication%20107>

Graves et al. Dose Point Kernels: <https://doi.org/10.1002/mp.13789>

MIRD Decay Schemes 2nd Edition: https://sites.snmmi.org/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6