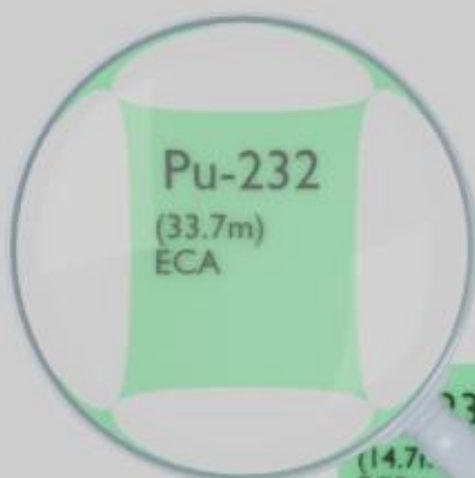




PLUTONIUM-232

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pu-232
Atomic number (Z): 94
Mass number (A): 232
Neutron number (N): 138

RADIOACTIVE DECAY

Decay modes: α , Electron capture
Half-life: 33.7 [m]
Decay constant: 3.4280×10^{-4} [1/s]
Daughters: Np-232 (77.0%), U-228 (23.0%)
Radioactive daughters: Np-232, U-228

DOSIMETRIC CONSTANTS

Mean alpha energy: 1.5402 [MeV]
Mean electron energy: 0.00868 [MeV]
Mean photon energy: 0.06334 [MeV]
Air kerma rate constant, Γ_{10} : 9.075×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 9.075×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 2.482×10^{-13} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 2.468×10^{-13} [Gy $\cdot$ kg/Bq $\cdot$ s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta+,e-}$: $1.391\text{e-}15$ [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : $1.015\text{e-}14$ [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

Dose point kernel source: **Graves, et al. Medical Physics. 2019 Nov.; 46(11):5284-5293.**

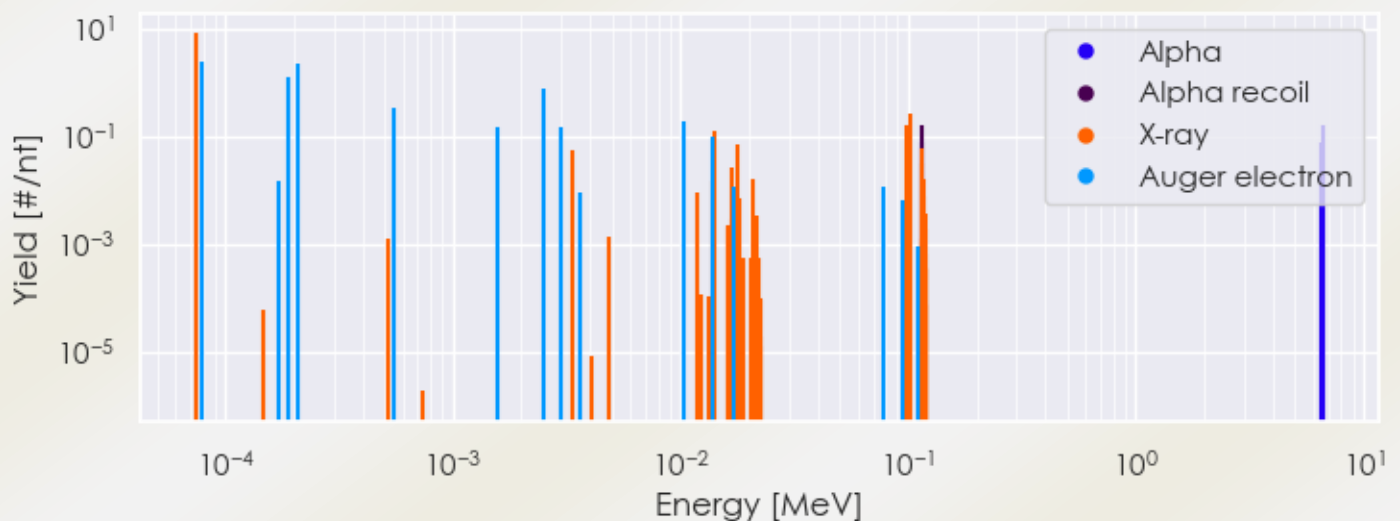
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Pu-232 DPK.csv

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-232 Summary Spectrum.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-232 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Pu-232%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [#]/nt] if > 0.01	Radiation type
7.44306e-05	8.548e+00	X-ray
3.34575e-03	5.417e-02	X-ray
1.37668e-02	1.462e-02	X-ray
1.39579e-02	1.285e-01	X-ray
1.68587e-02	2.714e-02	X-ray
1.78427e-02	7.232e-02	X-ray
2.08890e-02	1.653e-02	X-ray
9.74979e-02	1.670e-01	X-ray
1.01574e-01	2.657e-01	X-ray
1.13834e-01	3.073e-02	X-ray
1.14778e-01	6.014e-02	X-ray
1.18129e-01	1.566e-02	X-ray
7.90306e-05	2.497e+00	Auger electron
1.69850e-04	1.486e-02	Auger electron
1.89970e-04	1.304e+00	Auger electron
2.07953e-04	2.248e+00	Auger electron
5.50164e-04	3.410e-01	Auger electron
1.57361e-03	1.419e-01	Auger electron
2.48643e-03	7.428e-01	Auger electron
2.98492e-03	1.453e-01	Auger electron
1.02950e-02	1.886e-01	Auger electron
1.37198e-02	9.672e-02	Auger electron
1.71773e-02	1.166e-02	Auger electron
7.72522e-02	1.127e-02	Auger electron
6.54215e+00	7.590e-02	Alpha
6.60013e+00	1.541e-01	Alpha
1.14849e-01	7.590e-02	Alpha recoil

1.15867e-01

1.541e-01

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/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6