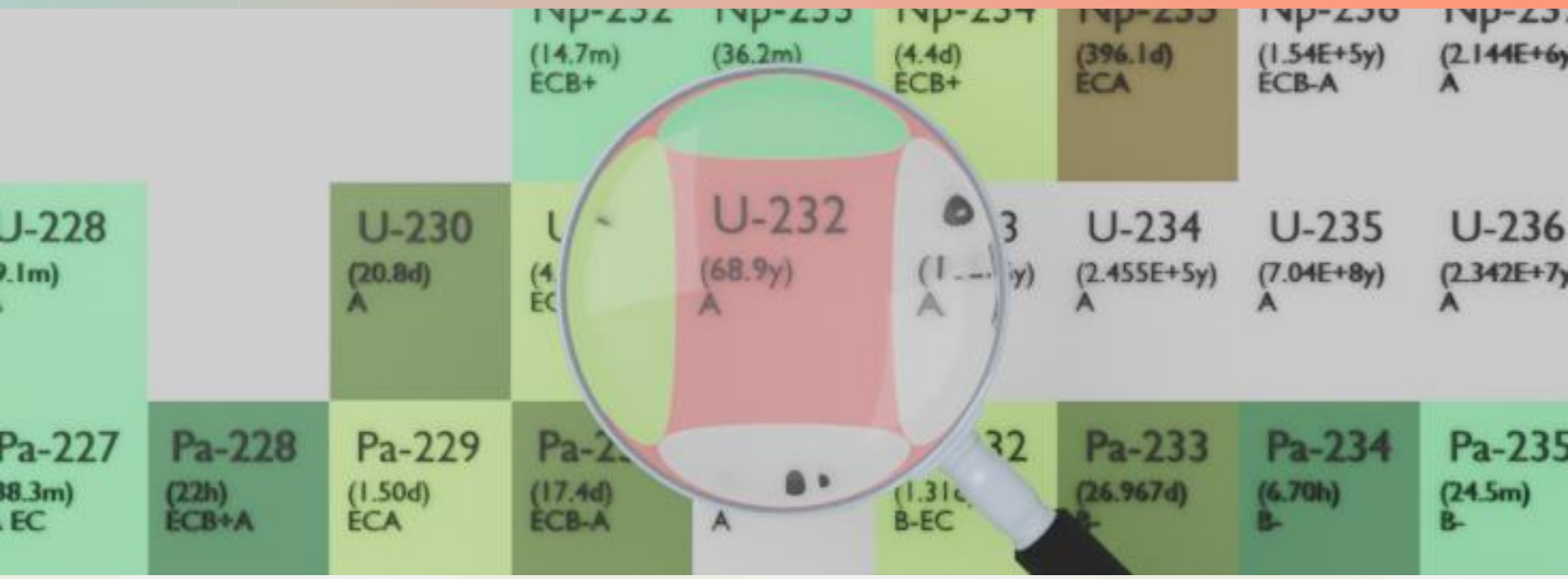


URANIUM-232

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: U-232
Atomic number (Z): 92
Mass number (A): 232
Neutron number (N): 140

RADIOACTIVE DECAY

Decay modes: α
Half-life: 68.9 [y]
Decay constant: 3.1879e-10 [1/s]
Daughters: Th-228 (100.0%)
Radioactive daughters: Th-228

DOSIMETRIC CONSTANTS

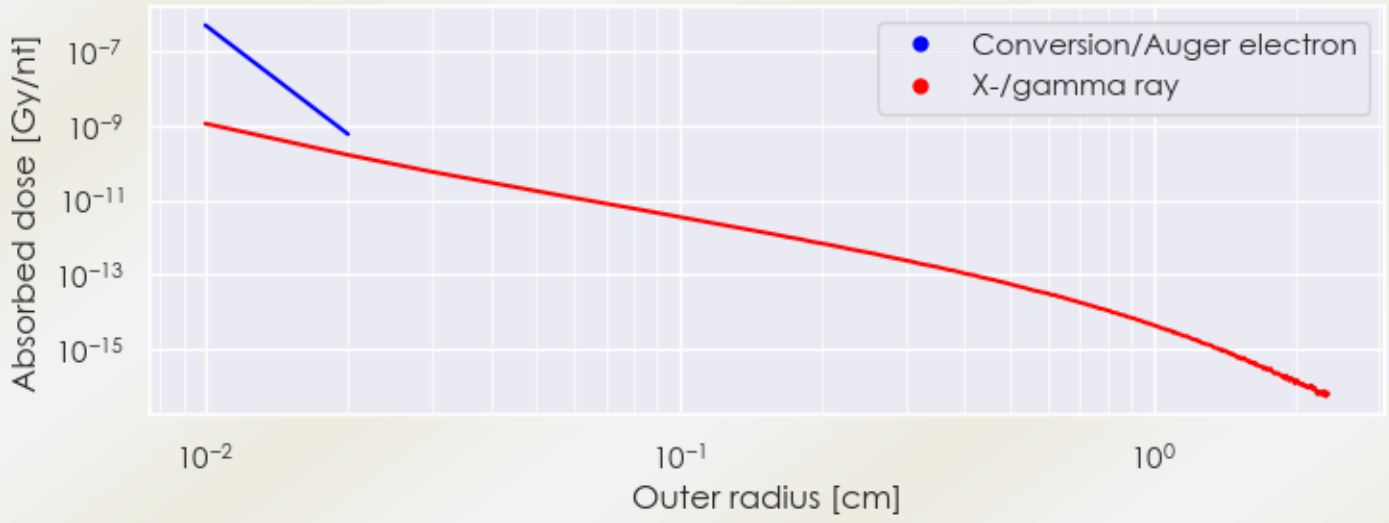
Mean alpha energy: 5.3948 [MeV]
Mean electron energy: 0.01638 [MeV]
Mean photon energy: 0.00231 [MeV]
Air kerma rate constant, Γ_{10}: 3.038e-18 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air}: 3.038e-18 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp}: 8.670e-13 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α}: 8.643e-13 [Gy·kg/Bq·s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta^-,\beta^+,e^-}$: 2.624e-15 [Gy·kg/Bq·s]
Equilibrium dose constant for photons, Δ_p: 3.701e-16 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

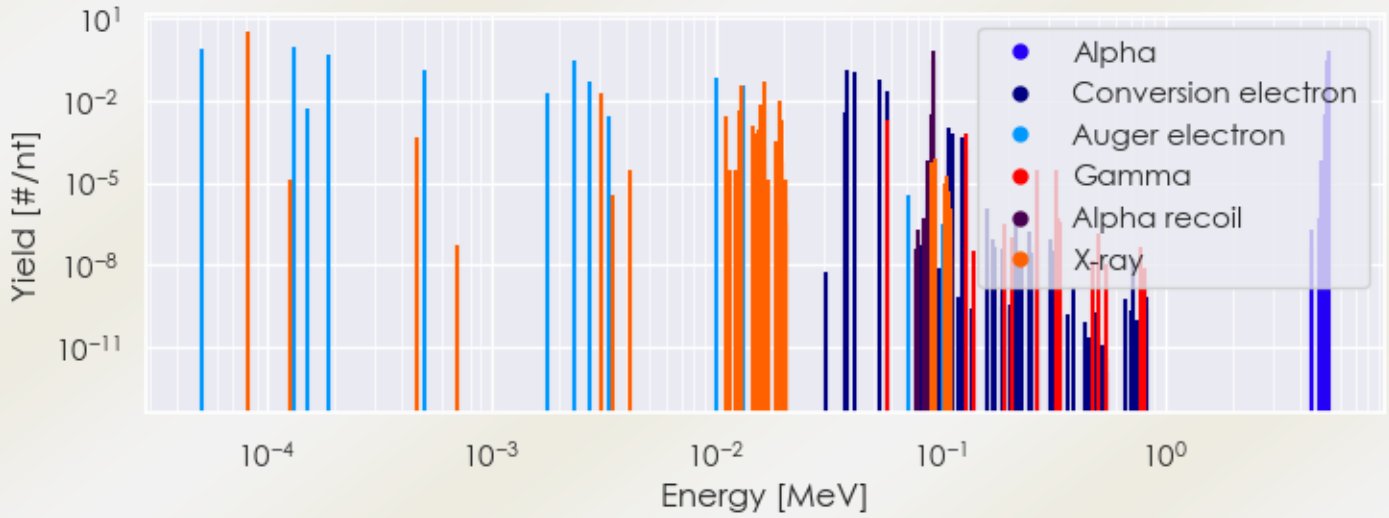
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/U-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/U-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/U-232 Summary Spectrum.csv

Energy [MeV]	Yield [#/nt] if > 0.01	Radiation type
8.23207e-05	3.218e+00	X-ray
3.07129e-03	1.781e-02	X-ray
1.29764e-02	3.678e-02	X-ray
1.62776e-02	4.612e-02	X-ray
1.90652e-02	1.025e-02	X-ray
5.13354e-05	7.749e-01	Auger electron
1.33228e-04	8.574e-01	Auger electron
1.88162e-04	4.920e-01	Auger electron
4.99166e-04	1.262e-01	Auger electron
1.77674e-03	2.041e-02	Auger electron
2.32738e-03	2.789e-01	Auger electron
2.74528e-03	4.810e-02	Auger electron
9.97005e-03	7.406e-02	Auger electron
1.31067e-02	3.694e-02	Auger electron
3.80000e-02	1.215e-01	Conversion electron
4.14650e-02	1.031e-01	Conversion electron
5.37438e-02	6.286e-02	Conversion electron
5.77800e-02	2.170e-02	Conversion electron
5.26347e+00	3.155e-01	Alpha
5.32023e+00	6.815e-01	Alpha
9.24015e-02	3.155e-01	Alpha recoil
9.33981e-02	6.815e-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/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6