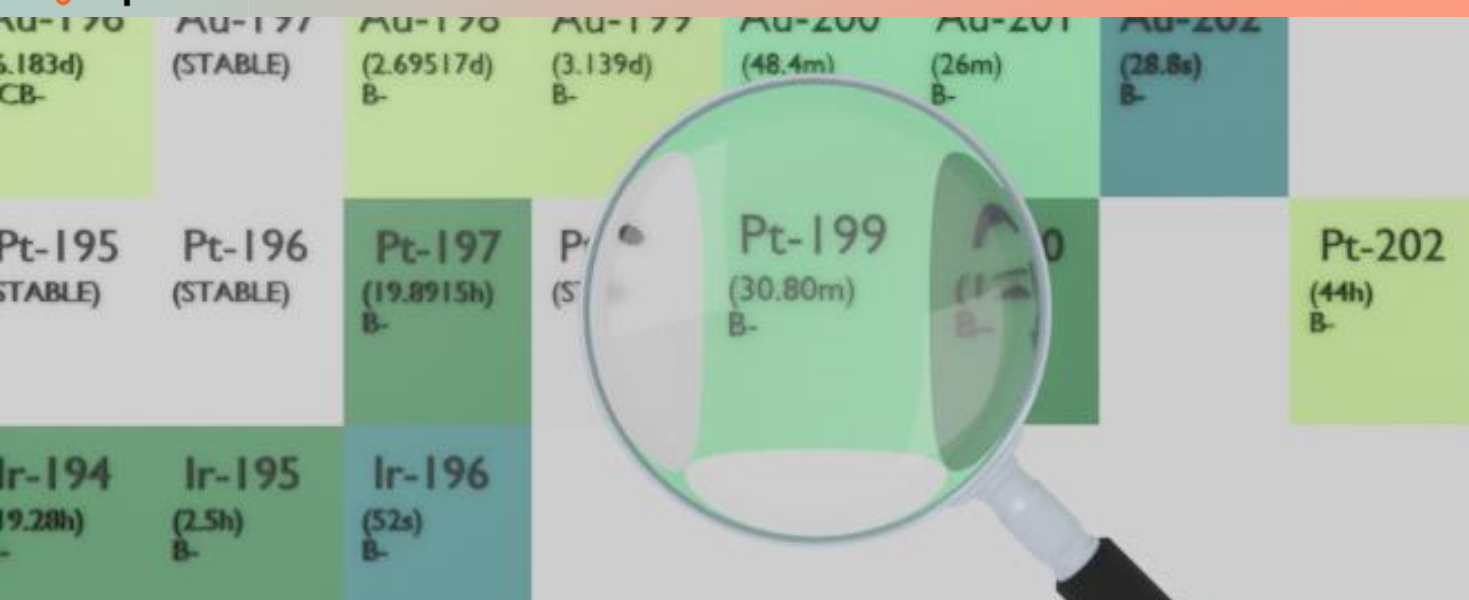




PLATINUM-199

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Pt-199
Atomic number (Z): 78
Mass number (A): 199
Neutron number (N): 121

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 30.8 [m]
Decay constant: 3.7508×10^{-4} [1/s]
Daughters: Au-199 (100.0%)
Radioactive daughters: Au-199

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.54552 [MeV]
Mean photon energy: 0.19951 [MeV]
Air kerma rate constant, Γ_{10} : 8.310×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 8.310×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 8.740×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

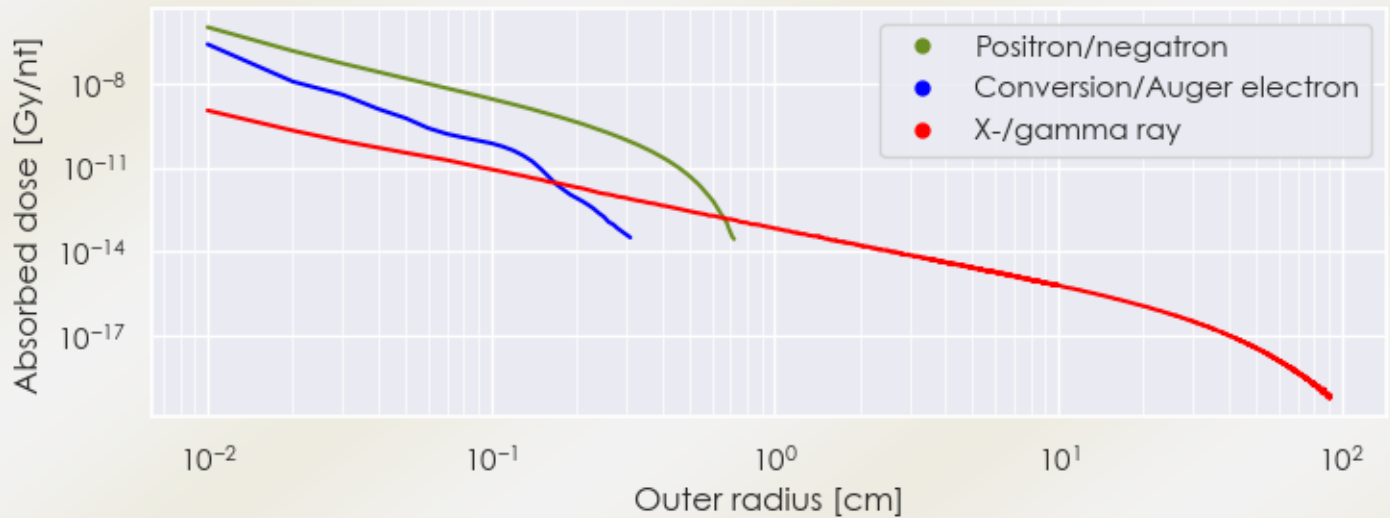
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 8.740×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.197×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

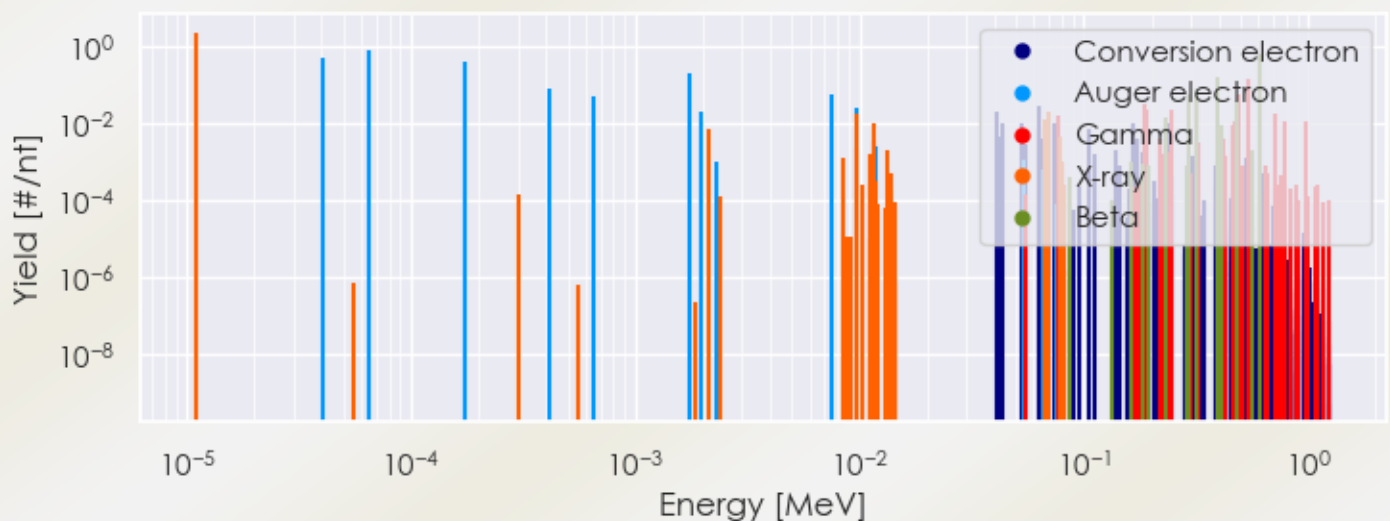
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Pt-199 DPK.csv

SUMMARY SPECTRA (PLOT)

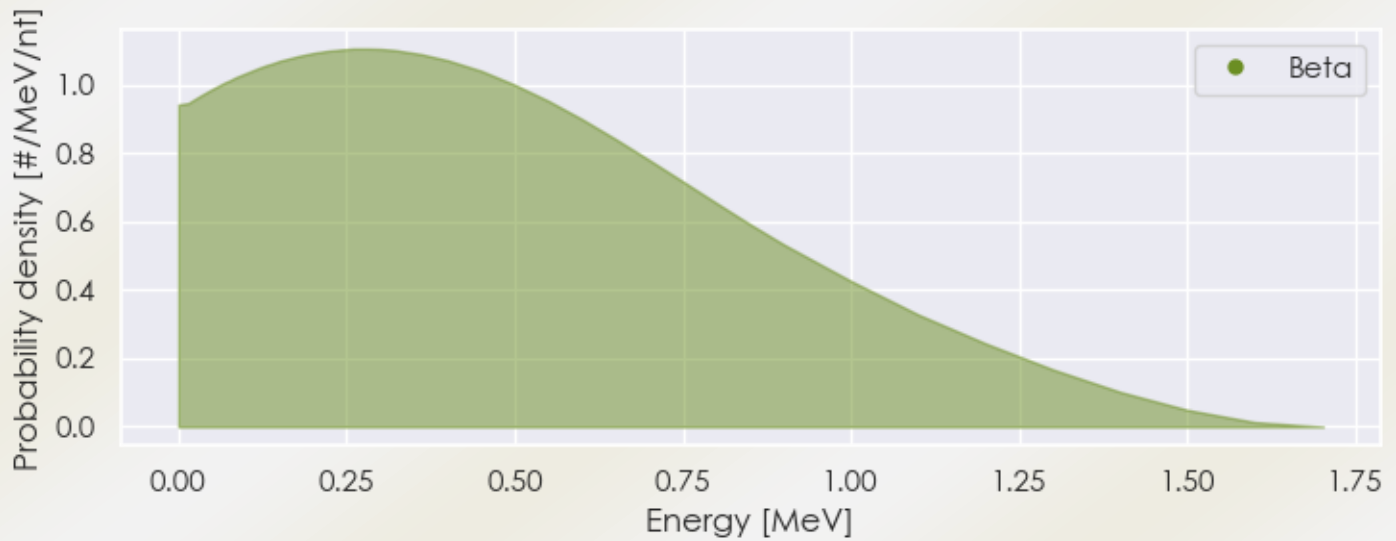
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Pt-199 Summary Spectrum.csv

BETA SPECTRA (PLOT)

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



Download tabulated beta spectra file here: www.mirdsoft.org/products/MIRDspecs/Pt-199 Beta 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/Pt-199 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.11004e-05	2.306e+00	X-ray
9.70979e-03	1.874e-02	X-ray
6.71839e-02	1.235e-02	X-ray
6.90380e-02	2.101e-02	X-ray
7.72000e-02	1.499e-02	Gamma
1.85800e-01	3.322e-02	Gamma
1.91690e-01	2.337e-02	Gamma
2.46460e-01	2.234e-02	Gamma
3.17030e-01	4.954e-02	Gamma
4.74680e-01	1.147e-02	Gamma

4.93750e-01	5.586e-02	Gamma
5.42980e-01	1.470e-01	Gamma
7.14550e-01	1.837e-02	Gamma
7.91740e-01	1.073e-02	Gamma
9.68320e-01	1.073e-02	Gamma
2.30565e-01	1.396e-02	Beta
2.95972e-01	5.384e-02	Beta
3.17647e-01	7.876e-02	Beta
3.92053e-01	1.496e-01	Beta
4.79726e-01	1.894e-02	Beta
4.82371e-01	4.187e-02	Beta
6.12734e-01	6.281e-01	Beta
4.01535e-05	5.086e-01	Auger electron
6.44094e-05	7.765e-01	Auger electron
1.74511e-04	4.094e-01	Auger electron
4.16965e-04	8.228e-02	Auger electron
6.57251e-04	4.859e-02	Auger electron
1.75323e-03	2.041e-01	Auger electron
1.97346e-03	2.107e-02	Auger electron
7.48189e-03	5.638e-02	Auger electron
9.61687e-03	2.371e-02	Auger electron
4.08140e-02	2.106e-02	Conversion electron
4.32280e-02	1.012e-02	Conversion electron
6.28640e-02	2.894e-02	Conversion electron

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