



TUNGSTEN-179

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: W-179
Atomic number (Z): 74
Mass number (A): 179
Neutron number (N): 105

RADIOACTIVE DECAY

Decay modes: Electron capture
Half-life: 37.05 [m]
Decay constant: 3.1181×10^{-4} [1/s]
Daughters: Ta-179 (100.0%)
Radioactive daughters: Ta-179

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.03257 [MeV]
Mean photon energy: 0.05539 [MeV]
Air kerma rate constant, Γ_{10} : 4.168×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 4.168×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 5.218×10^{-15} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

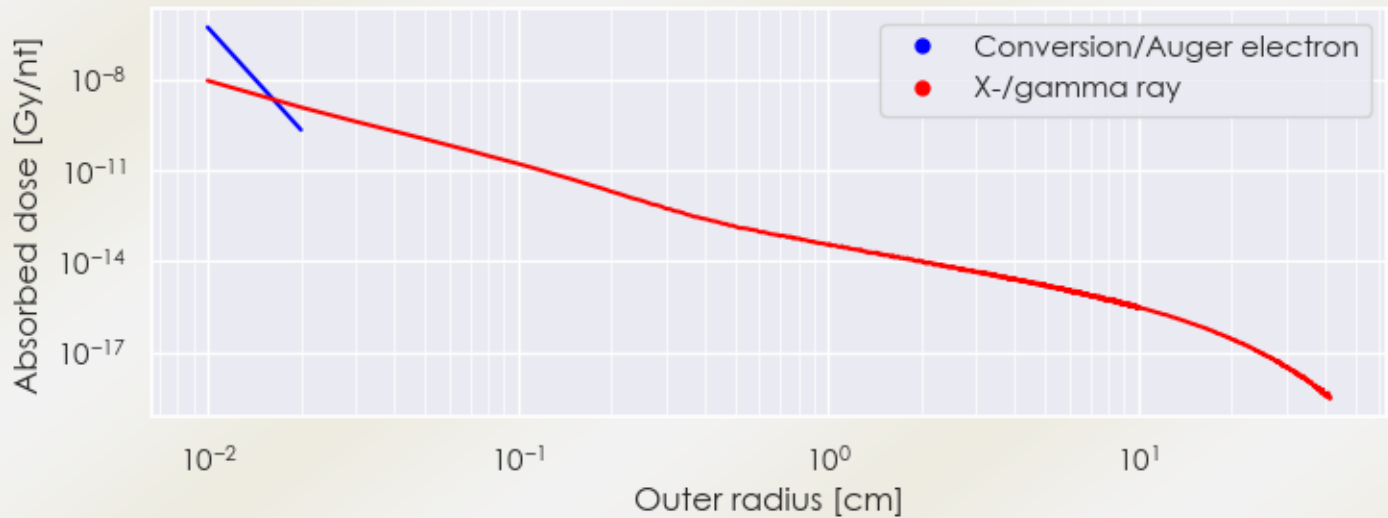
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 5.218×10^{-15} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 8.874×10^{-15} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

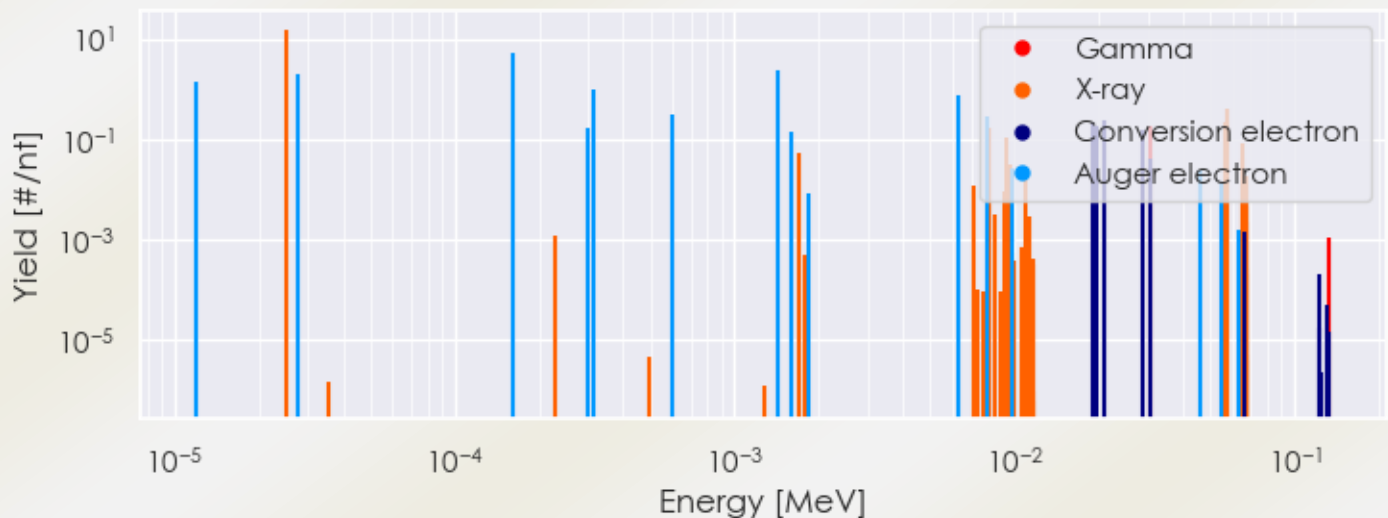
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/W-179 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/W-179 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/W-179 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/W-179%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [#/(nt)] if > 0.01	Radiation type
2.49950e-05	1.565e+01	X-ray
1.70636e-03	5.212e-02	X-ray
7.19450e-03	1.173e-02	X-ray
8.07690e-03	1.971e-02	X-ray
8.13762e-03	1.740e-01	X-ray
9.36070e-03	1.065e-01	X-ray
9.47190e-03	1.128e-02	X-ray
9.64848e-03	3.054e-02	X-ray
1.09205e-02	1.960e-02	X-ray
3.07000e-02	1.800e-01	Gamma
5.64020e-02	2.245e-01	X-ray
5.76858e-02	3.912e-01	X-ray
6.51037e-02	4.187e-02	X-ray
6.53809e-02	8.090e-02	X-ray
6.71676e-02	1.834e-02	X-ray
1.19707e-05	1.364e+00	Auger electron
2.73580e-05	1.933e+00	Auger electron
1.60448e-04	5.322e+00	Auger electron
3.00321e-04	1.747e-01	Auger electron
3.11293e-04	9.942e-01	Auger electron
6.00136e-04	3.150e-01	Auger electron
1.41705e-03	2.410e+00	Auger electron
1.59730e-03	1.395e-01	Auger electron
6.34062e-03	7.491e-01	Auger electron
8.02967e-03	2.826e-01	Auger electron
9.74980e-03	2.675e-02	Auger electron
1.90440e-02	2.216e-01	Conversion electron

1.95370e-02	1.765e-01	Conversion electron
2.08208e-02	2.410e-01	Conversion electron
2.85159e-02	1.487e-01	Conversion electron
3.07000e-02	4.014e-02	Conversion electron
4.58458e-02	2.390e-02	Auger electron
5.47234e-02	1.245e-02	Auger 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/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6