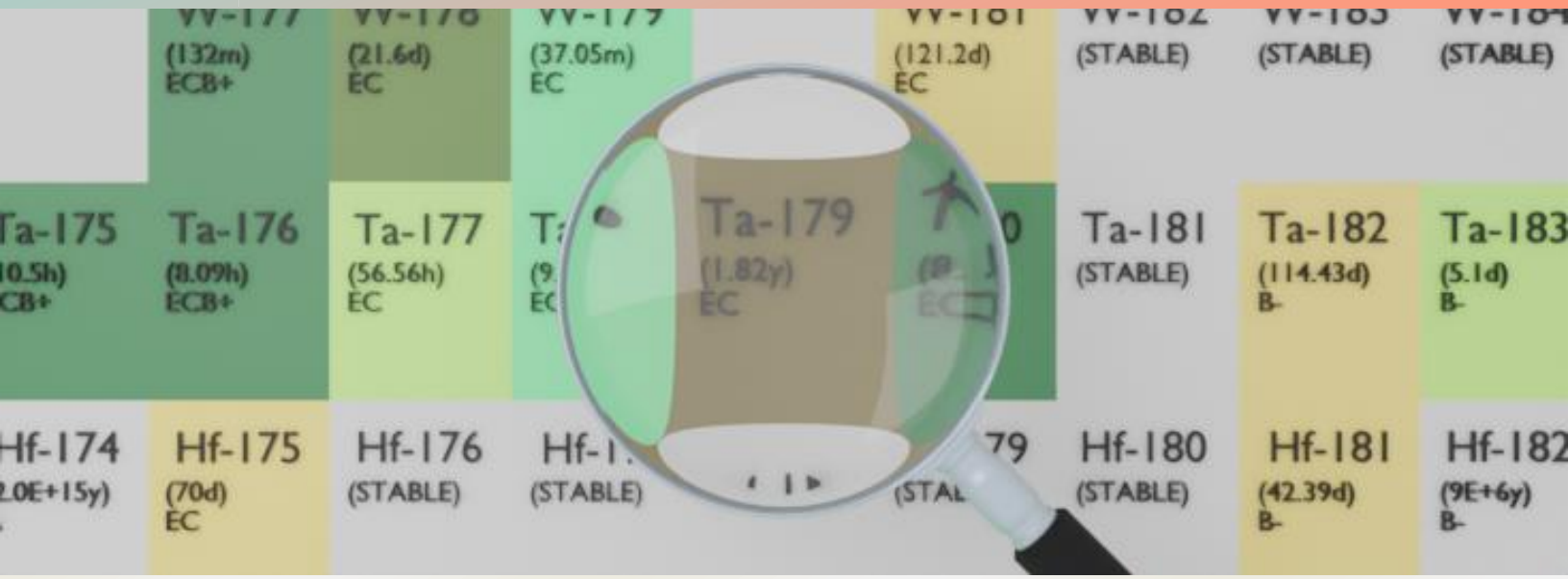


TANTALUM-179

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ta-179
Atomic number (Z): 73
Mass number (A): 179
Neutron number (N): 106

RADIOACTIVE DECAY

Decay modes: Electron capture
Half-life: 1.82 [y]
Decay constant: 1.2069e-08 [1/s]
Daughters: Hf-179 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

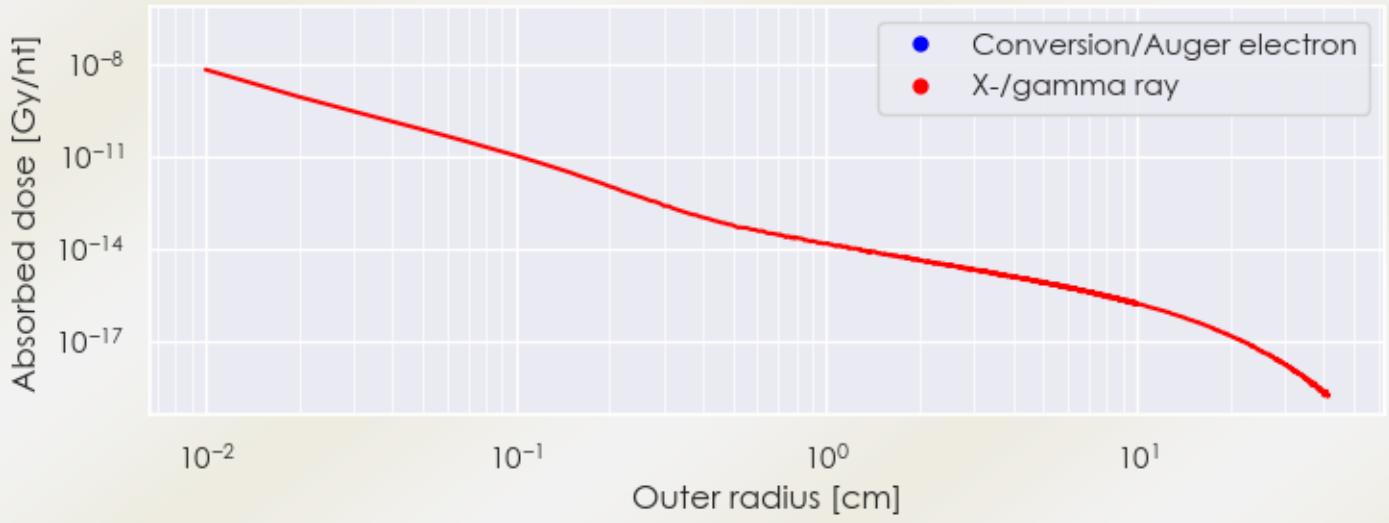
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.0078 [MeV]
Mean photon energy: 0.0256 [MeV]
Air kerma rate constant, Γ_{10}*:* 1.758e-18 [Gy·m^2/Bq·s]
Air kerma coefficient, K_{air}*:* 1.758e-18 [Gy·m^2/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (a and/or electrons), Δ_{wp}*:* 1.250e-15 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{a}*:* 0.000e+00 [Gy·kg/Bq·s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta-,\beta+,e-}$: 1.250e-15 [Gy·kg/Bq·s]
Equilibrium dose constant for photons, Δ_{p}: 4.102e-15 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

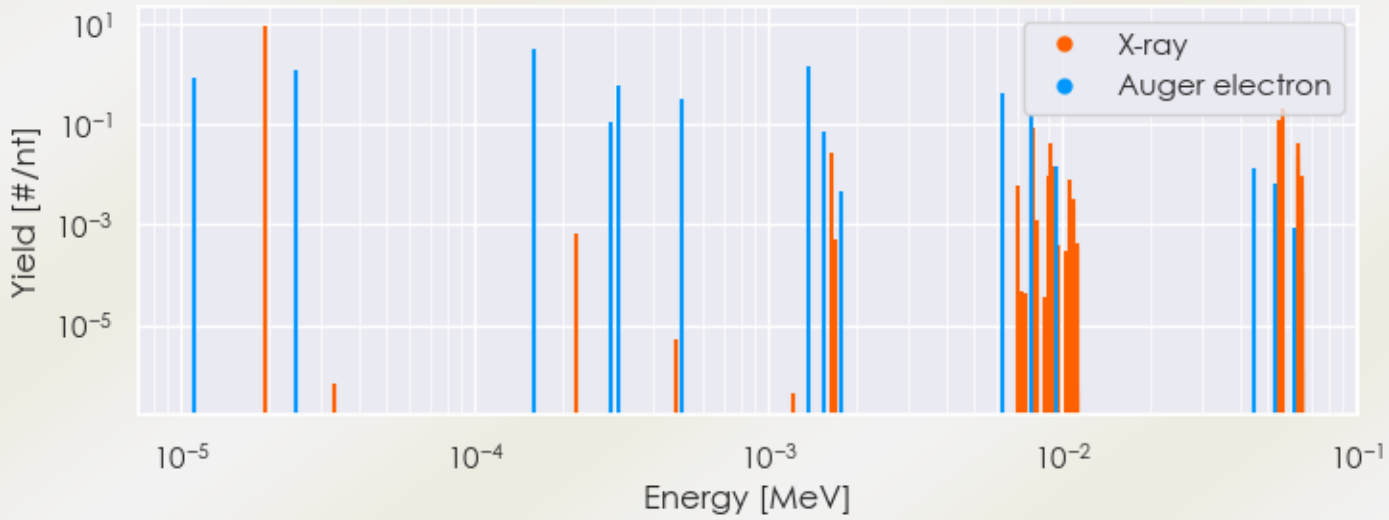
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ta-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/Ta-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/Ta-179 Summary Spectrum.csv

Energy [MeV]	Yield [#/nt] if > 0.01	Radiation type
1.92934e-05	9.439e+00	X-ray
1.63880e-03	2.756e-02	X-ray
7.88958e-03	8.602e-02	X-ray
9.03750e-03	4.292e-02	X-ray
9.14599e-03	1.246e-02	X-ray
9.34357e-03	1.495e-02	X-ray
5.47191e-02	1.196e-01	X-ray
5.59237e-02	2.093e-01	X-ray
6.31238e-02	2.228e-02	X-ray
6.33831e-02	4.306e-02	X-ray
1.09846e-05	8.410e-01	Auger electron
2.44632e-05	1.182e+00	Auger electron
1.59544e-04	3.275e+00	Auger electron
2.90766e-04	1.076e-01	Auger electron
3.07833e-04	5.897e-01	Auger electron
5.07928e-04	3.190e-01	Auger electron
1.36352e-03	1.384e+00	Auger electron
1.54516e-03	7.292e-02	Auger electron
6.20378e-03	4.074e-01	Auger electron
7.83354e-03	1.515e-01	Auger electron
9.49815e-03	1.422e-02	Auger electron
4.45280e-02	1.327e-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/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6