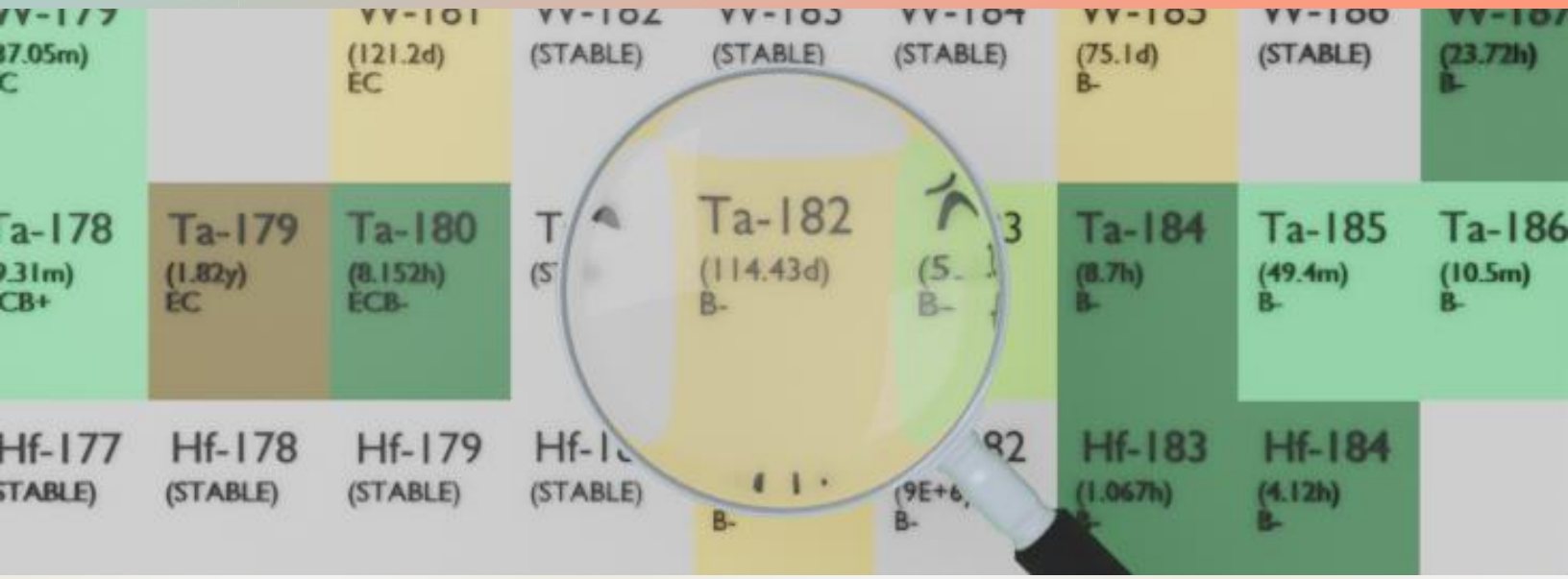


TANTALUM-182

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ta-182
Atomic number (Z): 73
Mass number (A): 182
Neutron number (N): 109

RADIOACTIVE DECAY

Decay modes: β-
Half-life: 114.4 [d]
Decay constant: 7.0109e-08 [1/s]
Daughters: W-182 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

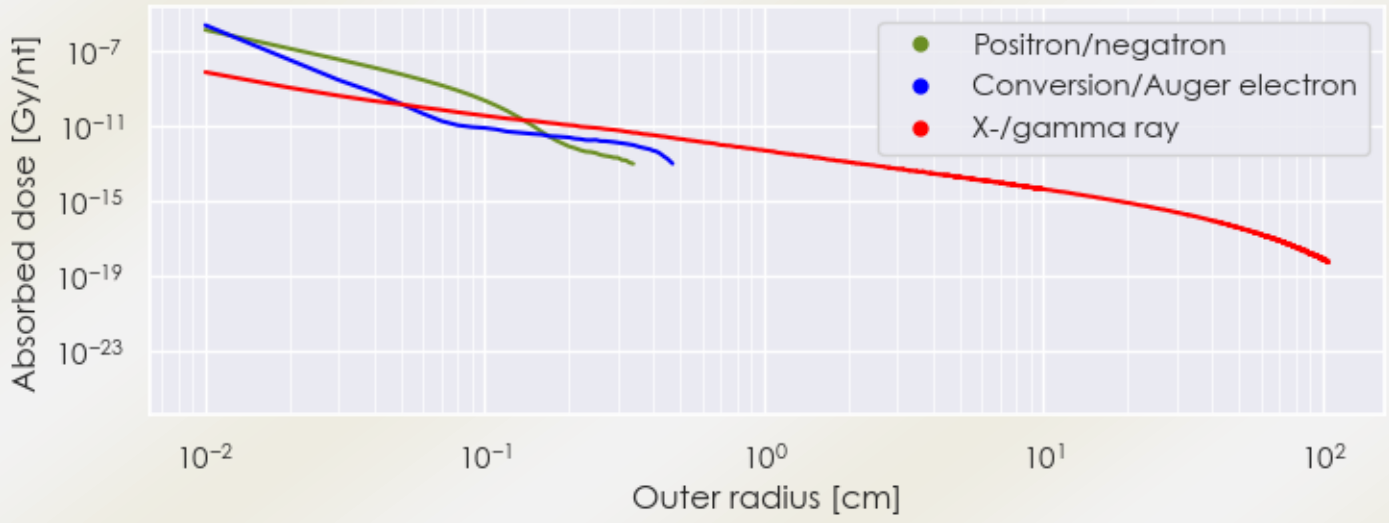
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.21045 [MeV]
Mean photon energy: 1.29183 [MeV]
Air kerma rate constant, Γ_{10}: 4.545e-17 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air}: 4.545e-17 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (a and/or electrons), Δ_{wp}: 3.372e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{a}: 0.000e+00 [Gy·kg/Bq·s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta-,\beta+,e-}$: 3.372e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for photons, Δ_{p}: 2.070e-13 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

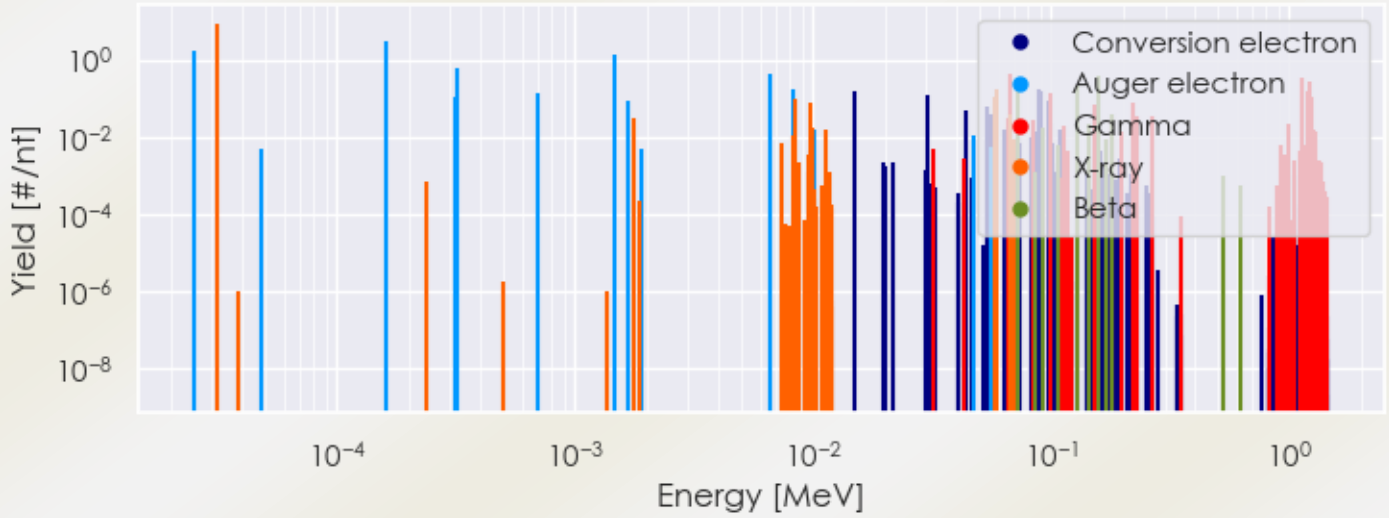
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ta-182 DPK.csv

SUMMARY SPECTRA (PLOT)

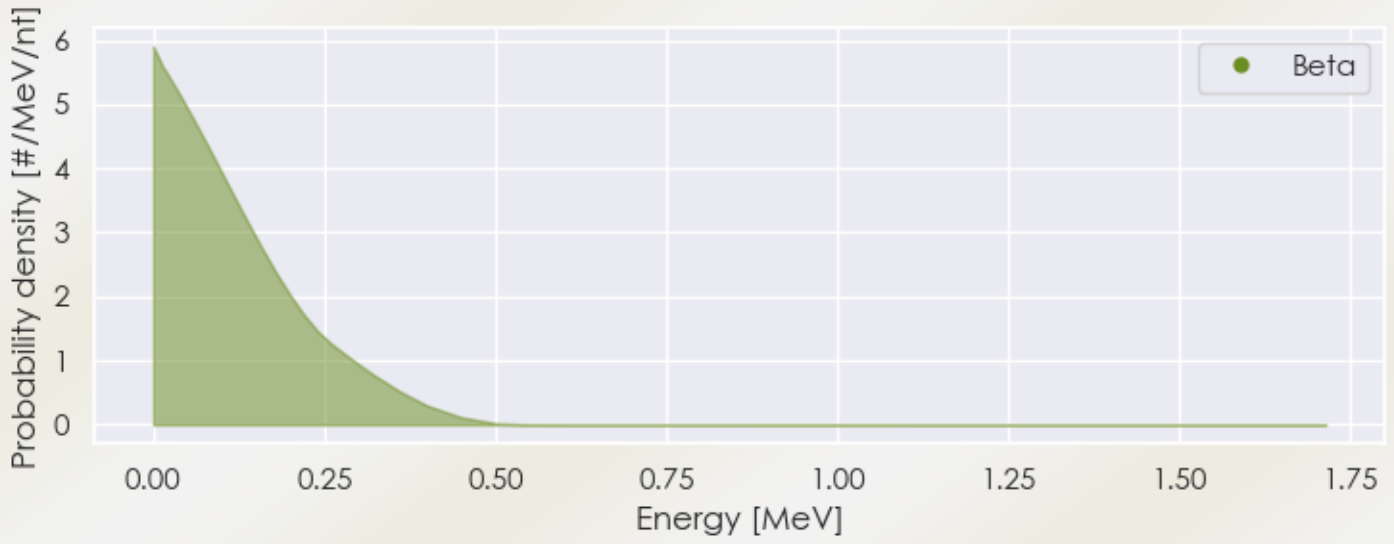
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Ta-182 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/Ta-182 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/Ta-182 Summary Spectrum.csv

Energy [MeV]	Yield [#/nt] if > 0.01	Radiation type
3.12503e-05	8.775e+00	X-ray
1.77758e-03	3.232e-02	X-ray
8.32492e-03	1.131e-02	X-ray
8.38982e-03	9.976e-02	X-ray
9.69189e-03	7.959e-02	X-ray
9.95867e-03	1.769e-02	X-ray
1.13129e-02	1.481e-02	X-ray
5.81161e-02	1.043e-01	X-ray
5.94830e-02	1.812e-01	X-ray
6.57220e-02	2.925e-02	Gamma

6.71212e-02	1.948e-02	X-ray
6.74178e-02	3.764e-02	X-ray
6.77500e-02	4.122e-01	Gamma
8.46808e-02	2.645e-02	Gamma
1.00107e-01	1.410e-01	Gamma
1.13673e-01	1.885e-02	Gamma
1.52431e-01	6.928e-02	Gamma
1.56388e-01	2.642e-02	Gamma
1.79395e-01	3.082e-02	Gamma
1.98353e-01	1.441e-02	Gamma
2.22110e-01	7.486e-02	Gamma
2.29322e-01	3.630e-02	Gamma
2.64075e-01	3.605e-02	Gamma
1.00170e+00	2.066e-02	Gamma
1.12130e+00	3.490e-01	Gamma
1.18905e+00	1.623e-01	Gamma
1.22141e+00	2.698e-01	Gamma
1.23102e+00	1.144e-01	Gamma
1.25742e+00	1.488e-02	Gamma
1.28916e+00	1.349e-02	Gamma
7.22744e-02	2.952e-01	Beta
9.25638e-02	1.814e-02	Beta
1.29308e-01	2.066e-01	Beta
1.43610e-01	2.217e-02	Beta
1.57903e-01	4.000e-01	Beta
1.81453e-01	4.030e-02	Beta
2.53545e-05	1.741e+00	Auger electron
1.61476e-04	2.983e+00	Auger electron
3.15516e-04	1.042e-01	Auger electron
3.20006e-04	5.860e-01	Auger electron
6.93622e-04	1.434e-01	Auger electron
1.47322e-03	1.378e+00	Auger electron
1.65953e-03	8.867e-02	Auger electron
6.55970e-03	4.266e-01	Auger electron
8.31855e-03	1.638e-01	Auger electron
1.01078e-02	1.569e-02	Auger electron
1.49918e-02	1.600e-01	Conversion electron
3.04175e-02	1.229e-01	Conversion electron

4.39835e-02	4.909e-02	Conversion electron
4.71853e-02	1.095e-02	Auger electron
5.36450e-02	5.835e-02	Conversion electron
5.56730e-02	4.044e-02	Conversion electron
5.61770e-02	1.493e-02	Conversion electron
5.75440e-02	1.889e-02	Conversion electron
6.34508e-02	1.580e-02	Conversion electron
6.54788e-02	1.728e-02	Conversion electron
7.26038e-02	2.300e-02	Conversion electron
8.80295e-02	1.352e-02	Conversion electron
8.85335e-02	1.656e-01	Conversion electron
8.99005e-02	1.487e-01	Conversion electron
9.78353e-02	8.327e-02	Conversion electron
1.00107e-01	2.315e-02	Conversion electron
1.09706e-01	1.623e-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