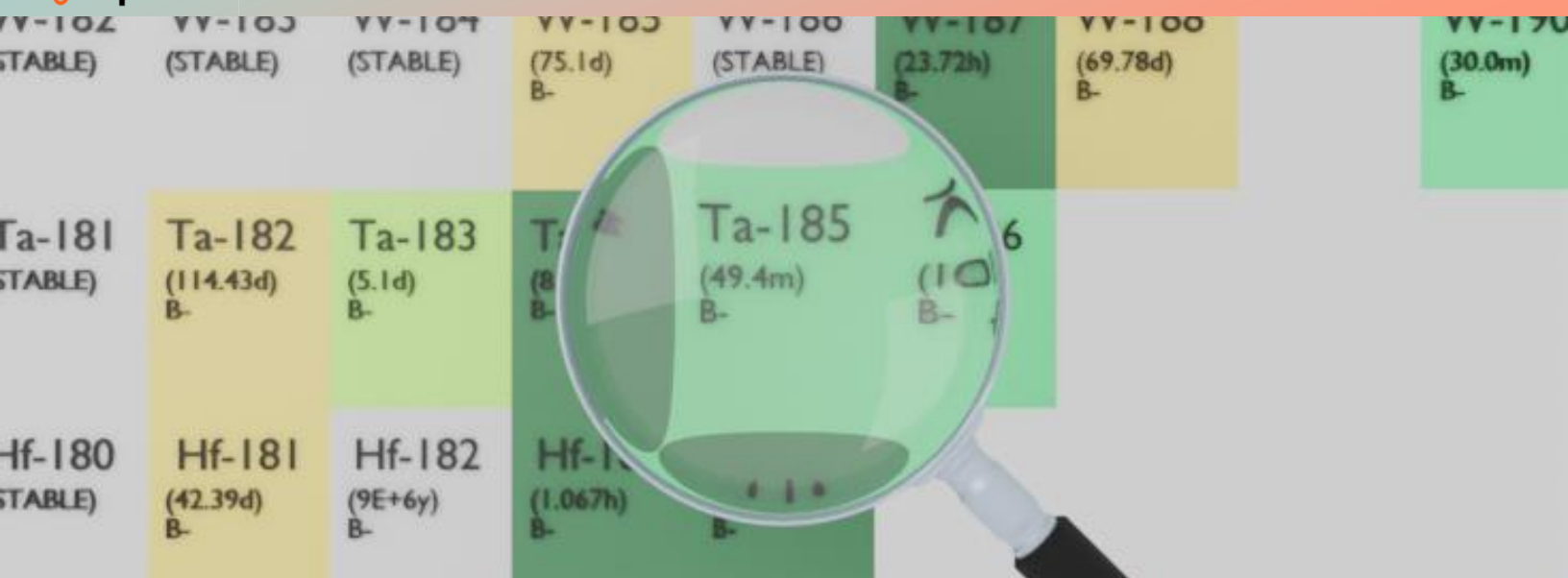




TANTALUM-185

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ta-185
Atomic number (Z): 73
Mass number (A): 185
Neutron number (N): 112

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 49.4 [m]
Decay constant: 2.3386×10^{-4} [1/s]
Daughters: W-185 (100.0%)
Radioactive daughters: W-185

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.74155 [MeV]
Mean photon energy: 0.15474 [MeV]
Air kerma rate constant, Γ_{10} : 6.408×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 6.408×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.188×10^{-13} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

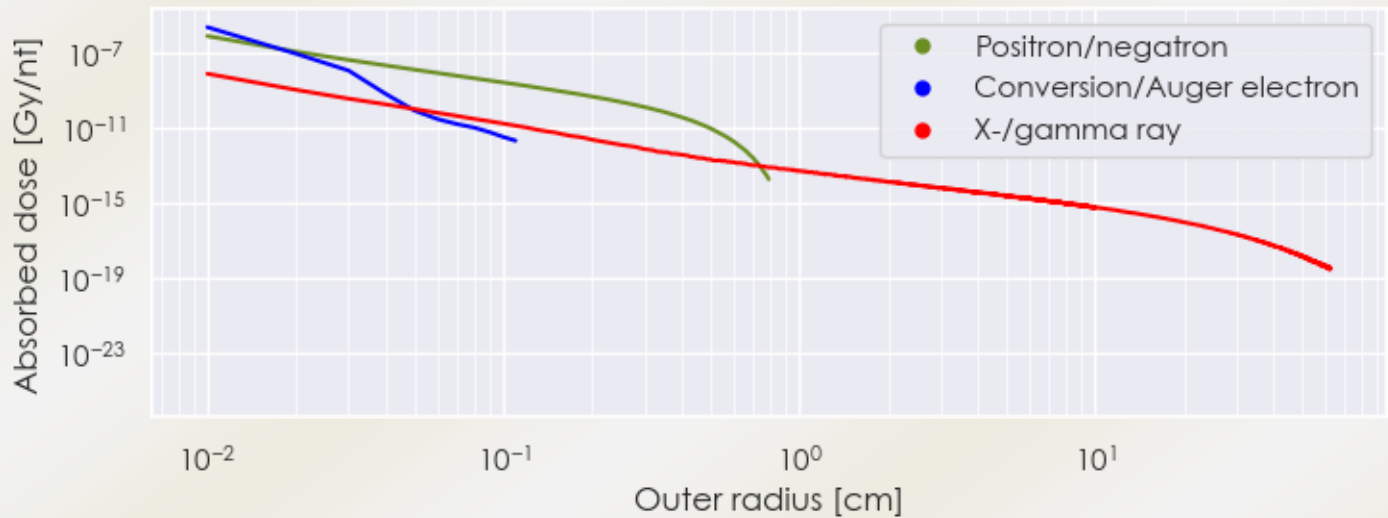
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 1.188×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.479×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

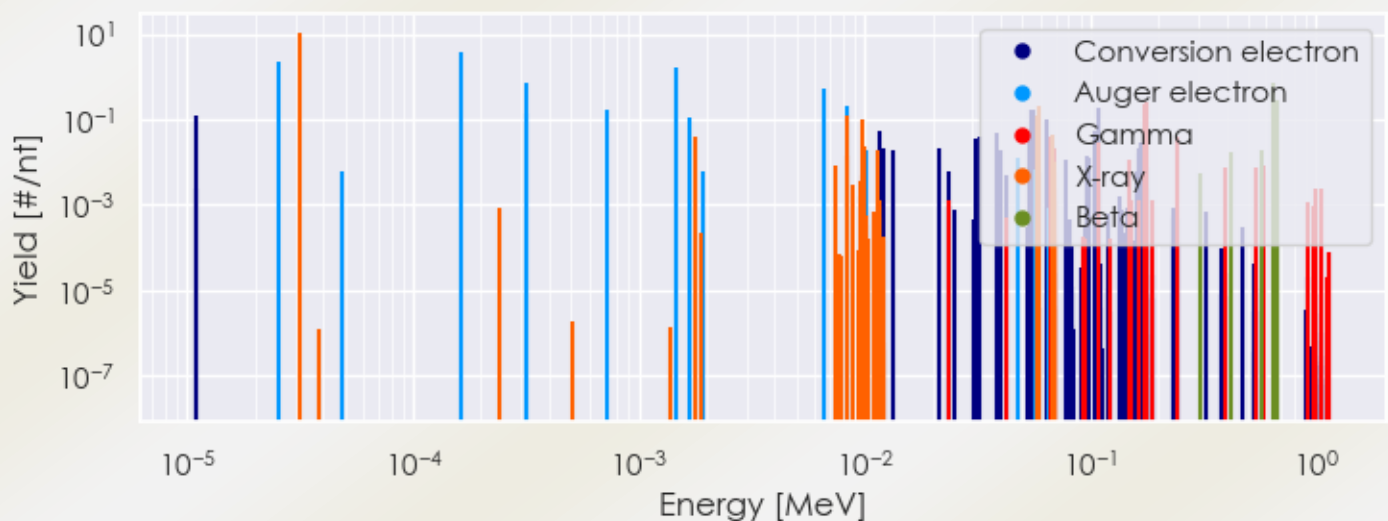
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ta-185 DPK.csv

SUMMARY SPECTRA (PLOT)

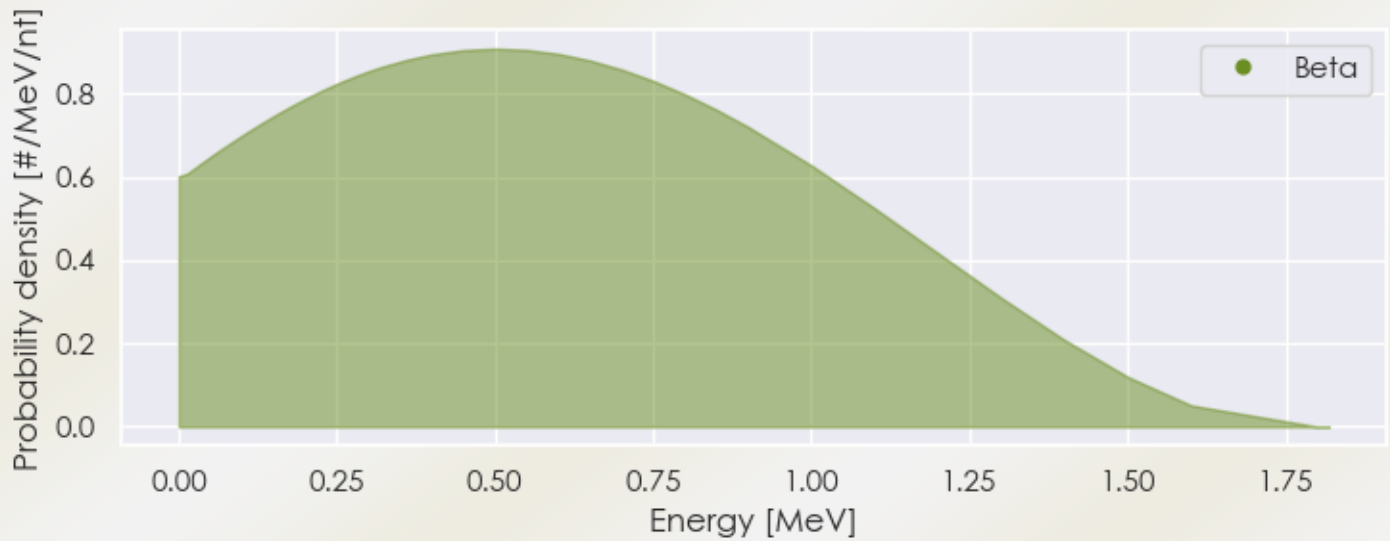
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Ta-185 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-185 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-185 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
3.12665e-05	1.094e+01	X-ray
1.77767e-03	4.032e-02	X-ray
8.32492e-03	1.423e-02	X-ray
8.38982e-03	1.255e-01	X-ray
9.69189e-03	1.025e-01	X-ray
9.95867e-03	2.226e-02	X-ray
1.13129e-02	1.908e-02	X-ray
5.81161e-02	1.240e-01	X-ray
5.94830e-02	2.152e-01	X-ray
6.61000e-02	3.855e-02	Gamma

6.71212e-02	2.314e-02	X-ray
6.74178e-02	4.472e-02	X-ray
6.92695e-02	1.021e-02	X-ray
6.97000e-02	2.005e-02	Gamma
1.07800e-01	2.750e-02	Gamma
1.47300e-01	1.182e-02	Gamma
1.73910e-01	2.262e-01	Gamma
1.77590e-01	2.570e-01	Gamma
2.43700e-01	3.752e-02	Gamma
4.15046e-01	1.705e-02	Beta
5.77340e-01	1.906e-02	Beta
6.39476e-01	6.820e-01	Beta
6.69143e-01	2.708e-01	Beta
1.10045e-05	1.266e-01	Conversion electron
2.53515e-05	2.168e+00	Auger electron
1.61491e-04	3.720e+00	Auger electron
3.14923e-04	1.295e-01	Auger electron
3.19623e-04	7.300e-01	Auger electron
7.18718e-04	1.600e-01	Auger electron
1.47354e-03	1.719e+00	Auger electron
1.66004e-03	1.107e-01	Auger electron
6.55741e-03	5.367e-01	Auger electron
8.31550e-03	2.061e-01	Auger electron
1.01034e-02	1.972e-02	Auger electron
1.15230e-02	5.274e-02	Conversion electron
1.20270e-02	2.000e-02	Conversion electron
1.33940e-02	1.905e-02	Conversion electron
2.13288e-02	2.168e-02	Conversion electron
3.09270e-02	3.460e-02	Conversion electron
3.22940e-02	3.868e-02	Conversion electron
3.81110e-02	4.972e-02	Conversion electron
4.02288e-02	1.862e-02	Conversion electron
4.71853e-02	1.301e-02	Auger electron
5.40230e-02	3.904e-02	Conversion electron
5.45270e-02	1.759e-01	Conversion electron
5.58940e-02	1.748e-01	Conversion electron
5.76230e-02	1.851e-02	Conversion electron
6.38288e-02	9.801e-02	Conversion electron

6.61000e-02	2.727e-02	Conversion electron
7.76110e-02	1.152e-02	Conversion electron
9.62270e-02	1.404e-02	Conversion electron
9.75940e-02	1.193e-02	Conversion electron
1.04221e-01	5.547e-02	Conversion electron
1.07901e-01	1.944e-01	Conversion electron
1.62337e-01	2.192e-02	Conversion electron
1.63704e-01	1.603e-02	Conversion electron
1.65513e-01	2.797e-02	Conversion electron
1.71639e-01	1.107e-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