



RHENIUM-182M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Re-182m

Atomic number (Z): 75

Mass number (A): 182

Neutron number (N): 107

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture

Half-life: 12.7 [h]

Decay constant: 1.5161×10^{-5} [1/s]

Daughters: W-182 (100.0%)

Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]

Mean electron energy: 0.09222 [MeV]

Mean photon energy: 1.22138 [MeV]

Air kerma rate constant, Γ_{10} : 4.286×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]

Air kerma coefficient, K_{air} : 4.350×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]

Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.478×10^{-14} [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, $\Delta_{\beta, \beta^+, e^-}$: 1.478×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.957×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

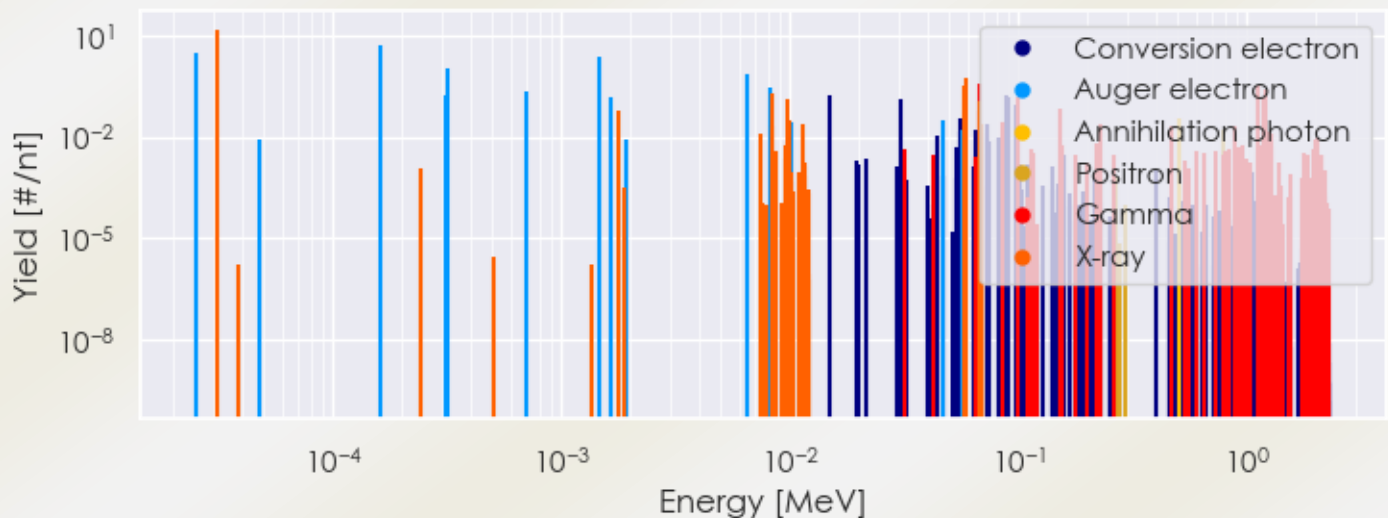
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



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

SUMMARY SPECTRA (PLOT)

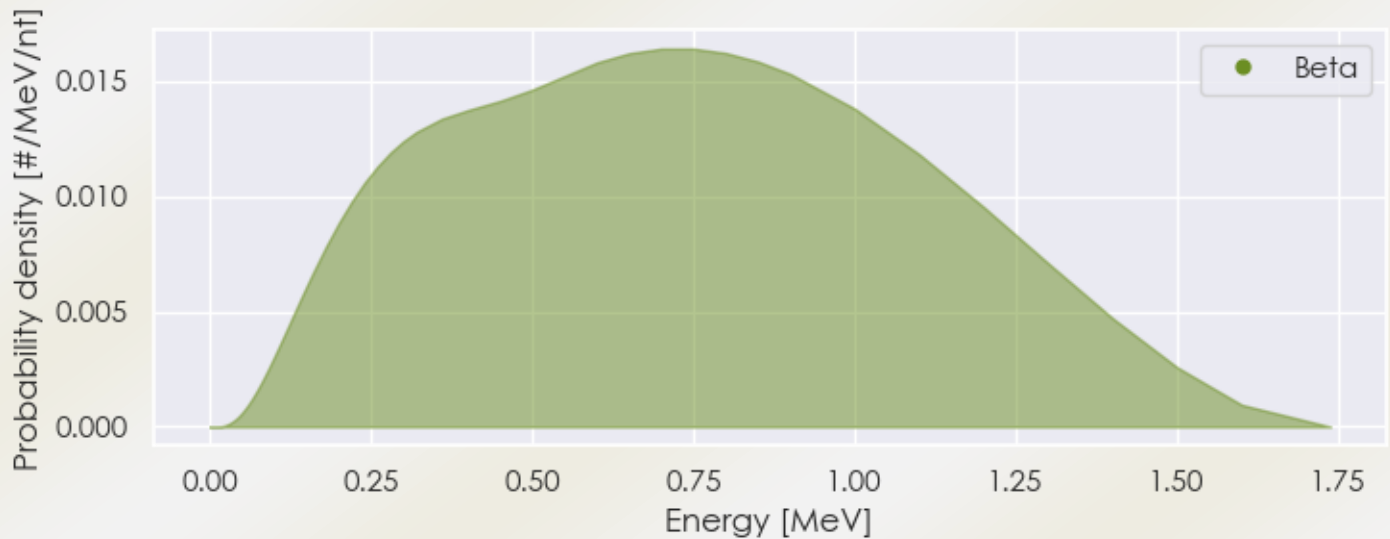
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



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

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
3.12713e-05	1.542e+01	X-ray
1.77687e-03	5.706e-02	X-ray
7.40949e-03	1.242e-02	X-ray
8.32493e-03	2.109e-02	X-ray
8.38982e-03	1.861e-01	X-ray
9.69189e-03	1.336e-01	X-ray
9.95867e-03	3.301e-02	X-ray
1.13129e-02	2.487e-02	X-ray
5.81161e-02	3.093e-01	X-ray

5.94830e-02	5.370e-01	X-ray
6.71212e-02	5.774e-02	X-ray
6.74178e-02	1.116e-01	X-ray
6.77500e-02	3.816e-01	Gamma
6.92004e-02	1.314e-02	X-ray
6.92695e-02	2.548e-02	X-ray
8.46800e-02	2.671e-02	Gamma
1.00120e-01	1.431e-01	Gamma
1.52430e-01	6.996e-02	Gamma
2.29320e-01	2.544e-02	Gamma
4.70260e-01	2.003e-02	Gamma
5.11000e-01	3.343e-02	Annihilation photon
8.94850e-01	2.099e-02	Gamma
1.12140e+00	3.180e-01	Gamma
1.18920e+00	1.504e-01	Gamma
1.22150e+00	2.480e-01	Gamma
1.23110e+00	1.307e-02	Gamma
1.25730e+00	1.396e-02	Gamma
1.28930e+00	1.224e-02	Gamma
7.88796e-01	1.563e-02	Positron
2.53646e-05	3.055e+00	Auger electron
1.61392e-04	5.242e+00	Auger electron
3.14461e-04	1.817e-01	Auger electron
3.18093e-04	1.020e+00	Auger electron
7.03938e-04	2.263e-01	Auger electron
1.47227e-03	2.435e+00	Auger electron
1.65765e-03	1.565e-01	Auger electron
6.52774e-03	7.653e-01	Auger electron
8.28409e-03	2.936e-01	Auger electron
1.00697e-02	2.808e-02	Auger electron
1.49910e-02	1.616e-01	Conversion electron
3.04310e-02	1.247e-01	Conversion electron
4.40110e-02	1.076e-02	Conversion electron
4.71853e-02	3.245e-02	Auger electron
5.56730e-02	3.744e-02	Conversion electron
5.61770e-02	1.383e-02	Conversion electron
5.63739e-02	1.701e-02	Auger electron
5.75440e-02	1.749e-02	Conversion electron

6.54788e-02	1.600e-02	Conversion electron
7.26030e-02	2.322e-02	Conversion electron
8.80430e-02	1.372e-02	Conversion electron
8.85470e-02	1.679e-01	Conversion electron
8.99140e-02	1.508e-01	Conversion electron
9.78488e-02	8.446e-02	Conversion electron
1.00120e-01	2.348e-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/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6