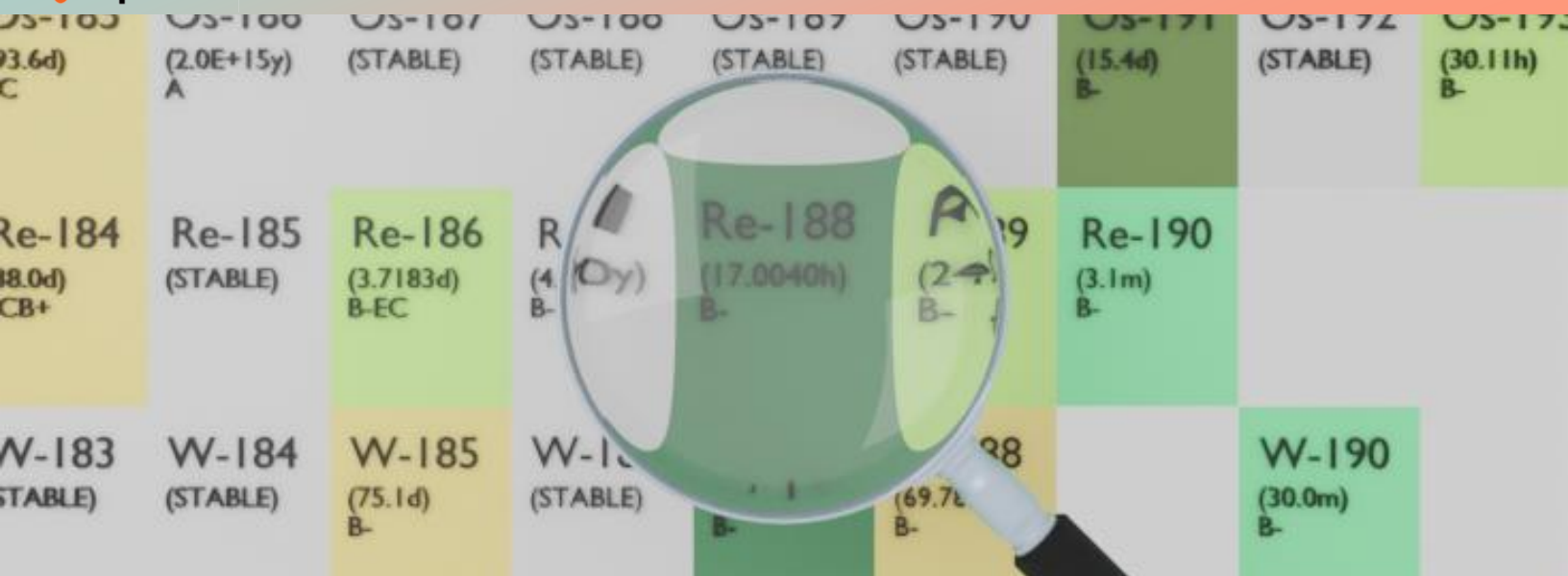




RHENIUM-188

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Re-188
Atomic number (Z): 75
Mass number (A): 188
Neutron number (N): 113

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 17.0 [h]
Decay constant: 1.1323×10^{-5} [1/s]
Daughters: Os-188 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.77934 [MeV]
Mean photon energy: 0.06125 [MeV]
Air kerma rate constant, Γ_{10} : 3.047×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 3.047×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.249×10^{-13} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

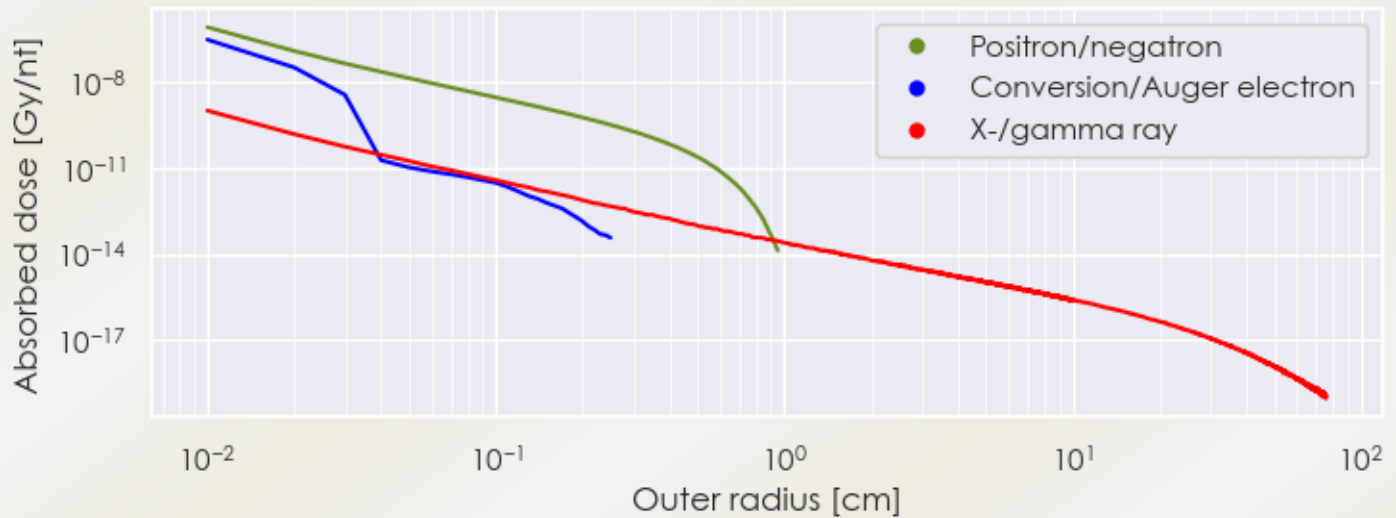
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 1.249×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 9.813×10^{-15} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

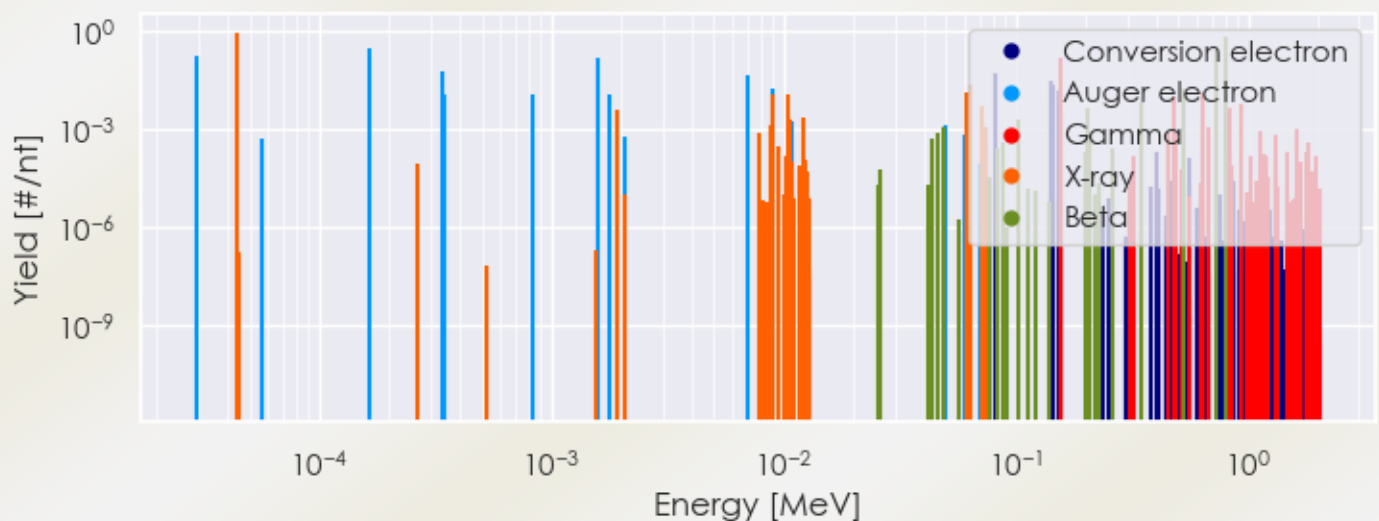
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Re-188 DPK.csv

SUMMARY SPECTRA (PLOT)

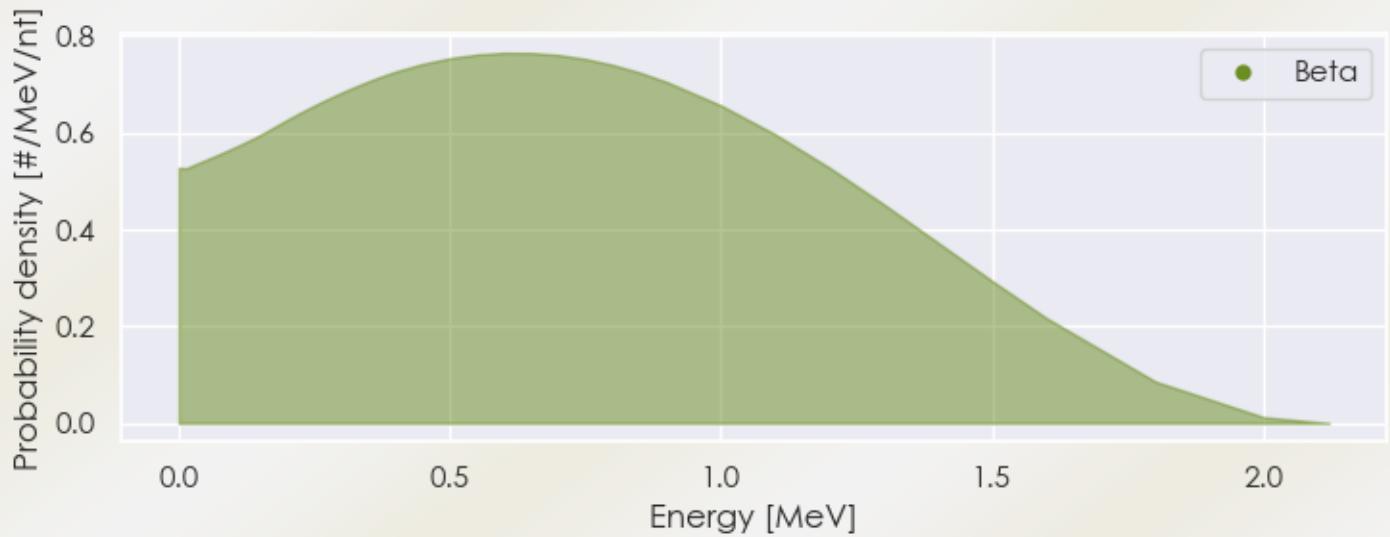
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Re-188 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-188 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-188 Summary Spectrum.csv

Energy [MeV]	Yield [# /nt] if > 0.01	Radiation type
4.40960e-05	9.604e-01	X-ray
8.90609e-03	1.201e-02	X-ray
1.03795e-02	1.196e-02	X-ray
6.16420e-02	1.419e-02	X-ray
6.31890e-02	2.445e-02	X-ray
1.55041e-01	1.561e-01	Gamma
4.77992e-01	1.081e-02	Gamma
6.32983e-01	1.374e-02	Gamma
5.27639e-01	1.751e-02	Beta
7.28745e-01	2.634e-01	Beta

7.95242e-01	7.010e-01	Beta
2.95685e-05	1.867e-01	Auger electron
1.63934e-04	3.202e-01	Auger electron
3.36805e-04	6.416e-02	Auger electron
3.42910e-04	1.286e-02	Auger electron
8.33991e-04	1.171e-02	Auger electron
1.58582e-03	1.520e-01	Auger electron
1.78520e-03	1.195e-02	Auger electron
6.96773e-03	4.770e-02	Auger electron
8.86985e-03	1.898e-02	Auger electron
8.09750e-02	5.057e-02	Conversion electron
1.42617e-01	3.017e-02	Conversion electron
1.44164e-01	2.246e-02	Conversion electron
1.52589e-01	1.488e-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