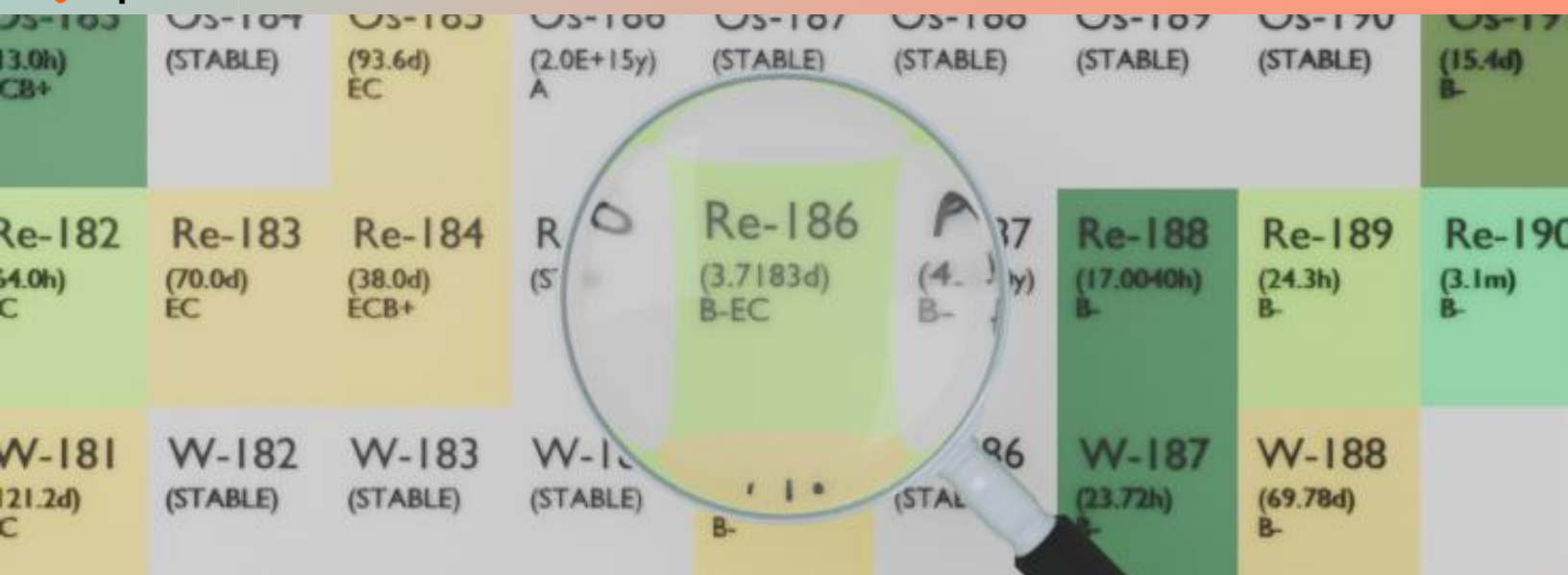




RHENIUM-186

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Re-186
Atomic number (Z): 75
Mass number (A): 186
Neutron number (N): 111

RADIOACTIVE DECAY

Decay modes: β^- , Electron capture
Half-life: 3.718 [d]
Decay constant: 2.1576×10^{-6} [1/s]
Daughters: Os-186 (92.5%), W-186 (7.47%)
Radioactive daughters: Os-186

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.33624 [MeV]
Mean photon energy: 0.02079 [MeV]
Air kerma rate constant, Γ_{10} : 1.632×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 1.632×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 5.387×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 5.387×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.331×10^{-15} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

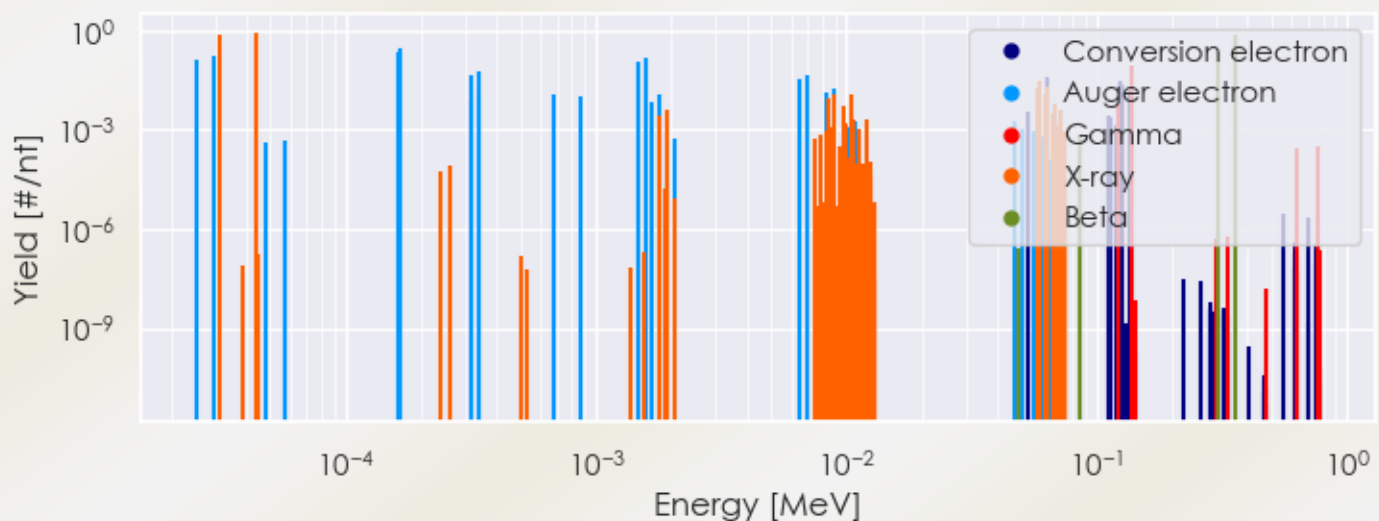
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Re-186 DPK.csv

SUMMARY SPECTRA (PLOT)

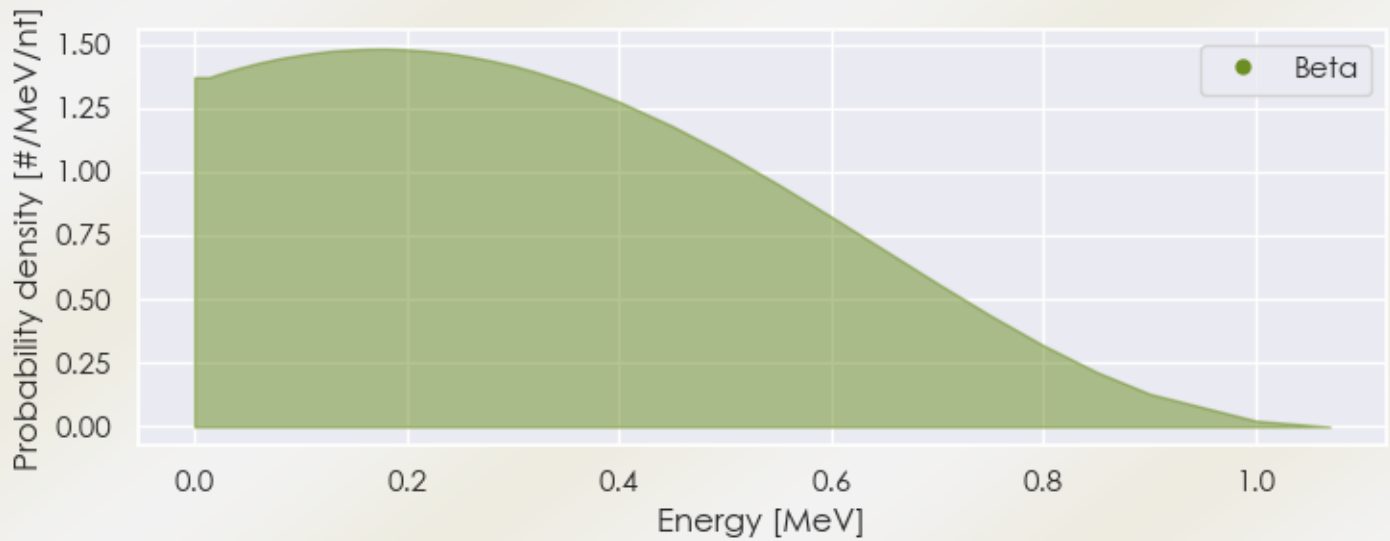
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Re-186 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-186 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-186 Summary Spectrum.csv

Energy [MeV]	Yield [#/(nt)] if > 0.01	Radiation type
3.12573e-05	7.026e-01	X-ray
4.40965e-05	8.997e-01	X-ray
8.90609e-03	1.114e-02	X-ray
1.03795e-02	1.147e-02	X-ray
5.81161e-02	1.730e-02	X-ray
5.94830e-02	3.003e-02	X-ray
6.16420e-02	1.134e-02	X-ray
6.31890e-02	1.954e-02	X-ray
1.37157e-01	9.420e-02	Gamma
3.05981e-01	2.153e-01	Beta

3.59106e-01	7.094e-01	Beta
2.53758e-05	1.393e-01	Auger electron
2.95647e-05	1.749e-01	Auger electron
1.61312e-04	2.386e-01	Auger electron
1.63966e-04	3.001e-01	Auger electron
3.17557e-04	4.634e-02	Auger electron
3.37204e-04	6.024e-02	Auger electron
3.42927e-04	1.206e-02	Auger electron
6.76717e-04	1.119e-02	Auger electron
8.68490e-04	1.031e-02	Auger electron
1.47136e-03	1.110e-01	Auger electron
1.58629e-03	1.422e-01	Auger electron
1.78601e-03	1.119e-02	Auger electron
6.50895e-03	3.477e-02	Auger electron
6.97539e-03	4.467e-02	Auger electron
8.26461e-03	1.333e-02	Auger electron
8.87779e-03	1.778e-02	Auger electron
6.30910e-02	4.080e-02	Conversion electron
1.24733e-01	3.151e-02	Conversion electron
1.26280e-01	2.463e-02	Conversion electron
1.34705e-01	1.553e-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