



RHENIUM-183

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Re-183
Atomic number (Z): 75
Mass number (A): 183
Neutron number (N): 108

RADIOACTIVE DECAY

Decay modes: Electron capture
Half-life: 70.0 [d]
Decay constant: 1.1461×10^{-7} [1/s]
Daughters: W-183 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.10926 [MeV]
Mean photon energy: 0.15746 [MeV]
Air kerma rate constant, Γ_{10} : 7.570×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 7.570×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.751×10^{-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, $\Delta_{\beta, \beta^+, e^-}$: 1.751×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.523×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

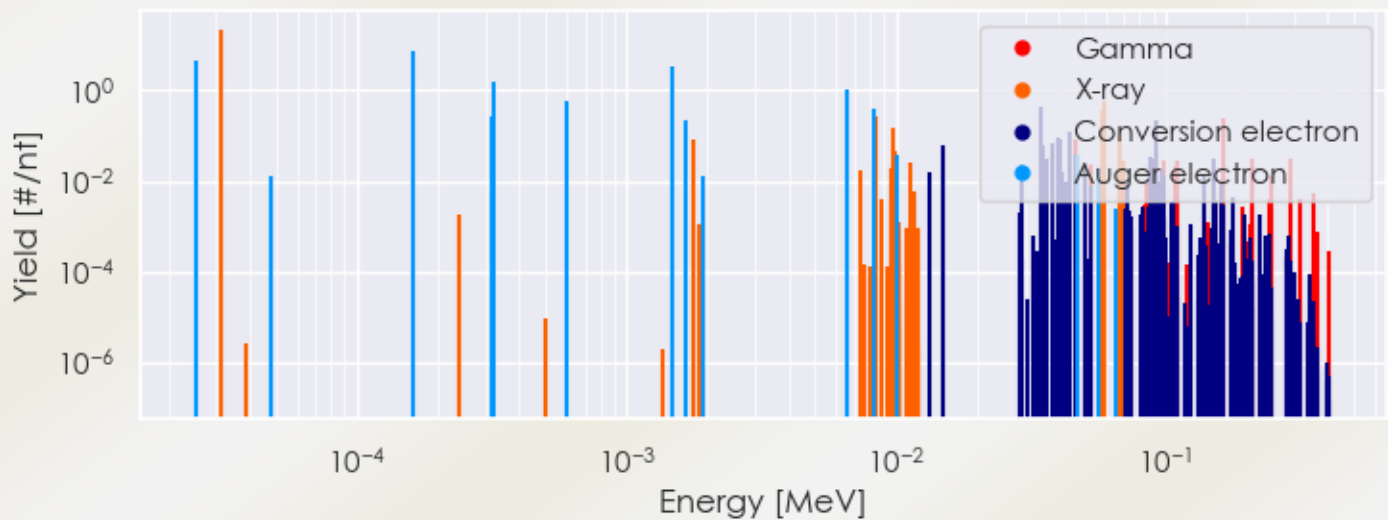
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Re-183 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-183 Summary 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-183 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Re-183%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [# / n ^t] if > 0.01	Radiation type
3.11506e-05	2.225e+01	X-ray
1.77648e-03	8.153e-02	X-ray
7.40950e-03	1.688e-02	X-ray
8.32491e-03	2.867e-02	X-ray
8.38983e-03	2.529e-01	X-ray
9.50920e-03	1.848e-02	X-ray
9.69189e-03	1.405e-01	X-ray
9.80579e-03	2.313e-02	X-ray
9.95868e-03	4.485e-02	X-ray
1.13129e-02	2.615e-02	X-ray
4.64842e-02	7.969e-02	Gamma
5.25962e-02	2.213e-02	Gamma
5.81161e-02	3.452e-01	X-ray
5.94830e-02	5.994e-01	X-ray
6.71212e-02	6.445e-02	X-ray
6.74178e-02	1.245e-01	X-ray
6.92004e-02	1.466e-02	X-ray
6.92695e-02	2.844e-02	X-ray
9.90804e-02	2.691e-02	Gamma
1.07935e-01	2.169e-02	Gamma
1.09730e-01	2.873e-02	Gamma
1.62327e-01	2.330e-01	Gamma
2.08811e-01	2.950e-02	Gamma
2.46062e-01	1.309e-02	Gamma
2.91728e-01	3.052e-02	Gamma
2.53876e-05	4.442e+00	Auger electron
4.82368e-05	1.294e-02	Auger electron

1.61262e-04	7.534e+00	Auger electron
3.18469e-04	2.666e-01	Auger electron
3.20928e-04	1.492e+00	Auger electron
6.02891e-04	5.723e-01	Auger electron
1.47054e-03	3.479e+00	Auger electron
1.65531e-03	2.227e-01	Auger electron
1.91196e-03	1.251e-02	Auger electron
6.53117e-03	1.026e+00	Auger electron
8.29200e-03	3.939e-01	Auger electron
1.00858e-02	3.775e-02	Auger electron
1.32286e-02	1.574e-02	Conversion electron
1.50243e-02	6.292e-02	Conversion electron
2.93914e-02	2.385e-02	Conversion electron
3.44072e-02	4.400e-01	Conversion electron
3.49112e-02	6.386e-02	Conversion electron
3.62782e-02	3.014e-02	Conversion electron
3.82457e-02	6.681e-02	Conversion electron
4.00414e-02	8.902e-02	Conversion electron
4.05192e-02	8.426e-02	Conversion electron
4.10232e-02	1.596e-02	Conversion electron
4.42130e-02	1.235e-01	Conversion electron
4.64842e-02	3.618e-02	Conversion electron
4.71853e-02	3.622e-02	Auger electron
5.03250e-02	2.556e-02	Conversion electron
5.63739e-02	1.899e-02	Auger electron
8.75074e-02	3.314e-02	Conversion electron
8.88744e-02	2.986e-02	Conversion electron
9.26376e-02	2.159e-01	Conversion electron
9.68092e-02	1.668e-02	Conversion electron
9.76534e-02	1.283e-02	Conversion electron
1.39122e-01	1.297e-02	Conversion electron
1.50250e-01	3.085e-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