



OSMIUM-181

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Os-181
Atomic number (Z): 76
Mass number (A): 181
Neutron number (N): 105

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 105.0 [m]
Decay constant: $1.1002\text{e-}04$ [1/s]
Daughters: Re-181 (100.0%)
Radioactive daughters: Re-181

DOSIMETRIC CONSTANTS

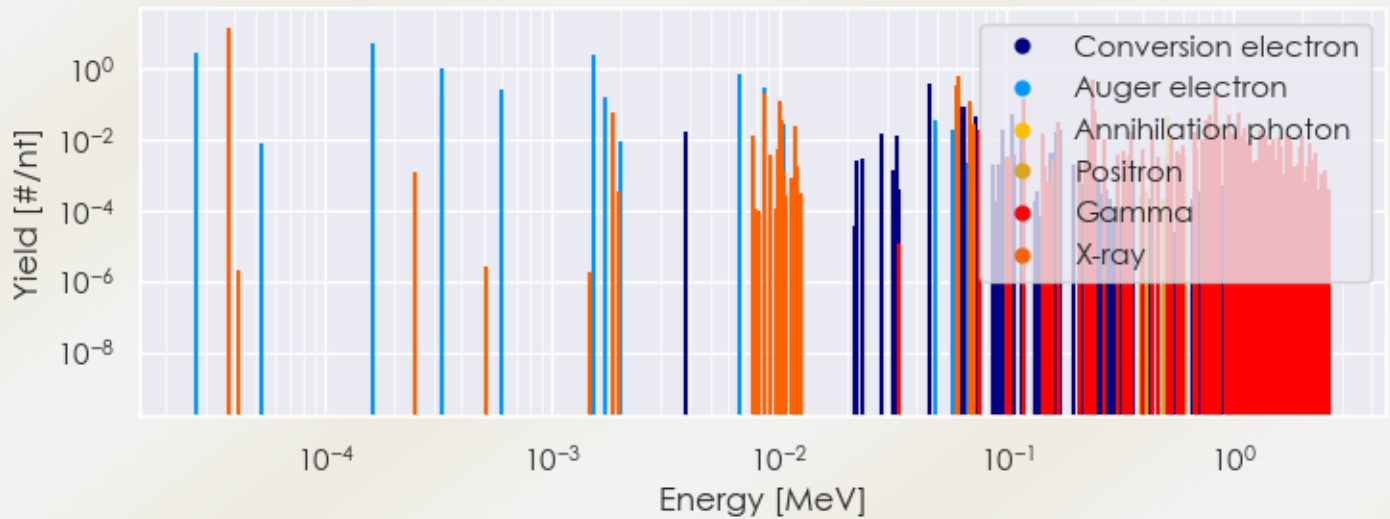
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.09182 [MeV]
Mean photon energy: 1.3835 [MeV]
Air kerma rate constant, Γ_{10} : $5.864\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $5.948\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $1.471\text{e-}14$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [Gy $\cdot$ kg/Bq $\cdot$ s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta+,e-}$: 1.471e-14 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.217e-13 [Gy·kg/Bq·s]

SUMMARY SPECTRA (PLOT)

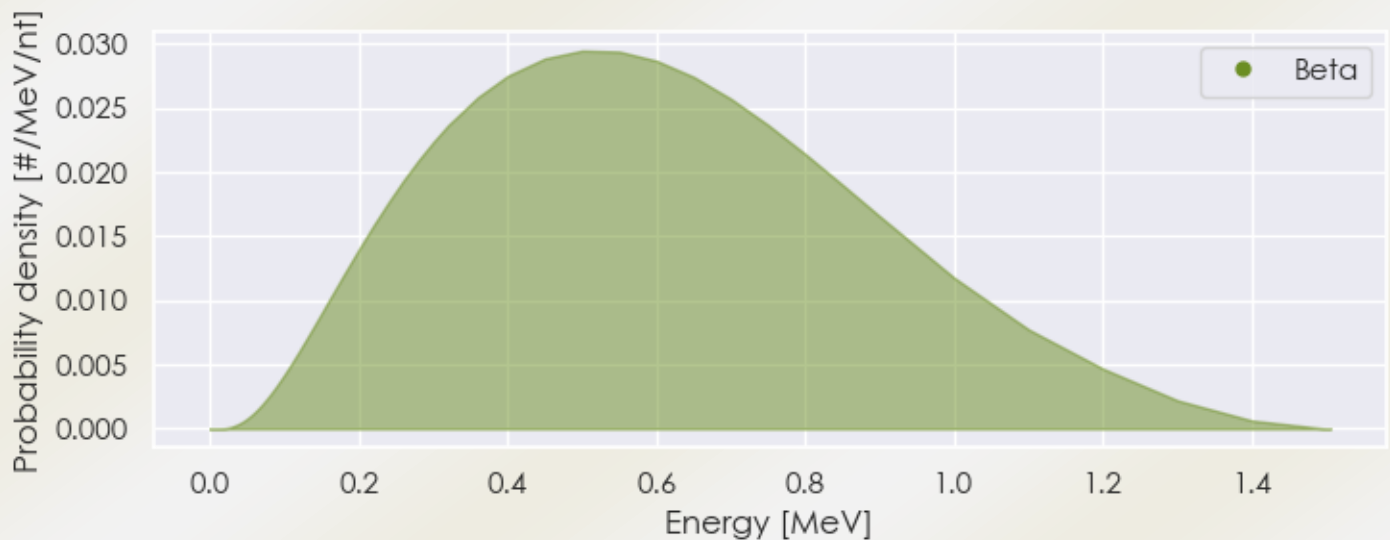
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Os-181 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Os-181%20Summary%20Spectrum.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/Os-181 Beta Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Os-181%20Beta%20Spectrum.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/Os-181 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Os-181%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [#/(nt)] if > 0.01	Radiation type
3.76175e-05	1.430e+01	X-ray
1.84805e-03	5.753e-02	X-ray
7.62641e-03	1.237e-02	X-ray
8.57622e-03	2.115e-02	X-ray
8.64532e-03	1.865e-01	X-ray
1.00312e-02	1.245e-01	X-ray
1.02735e-02	3.343e-02	X-ray
1.17147e-02	2.344e-02	X-ray
5.98631e-02	3.424e-01	X-ray
6.13181e-02	5.920e-01	X-ray
6.91788e-02	6.398e-02	X-ray
6.94956e-02	1.236e-01	X-ray
7.13392e-02	1.464e-02	X-ray
7.14134e-02	2.844e-02	X-ray
7.57300e-02	1.818e-02	Gamma
1.18010e-01	1.293e-01	Gamma
1.45020e-01	1.414e-02	Gamma
1.67230e-01	3.030e-02	Gamma
2.28730e-01	1.616e-02	Gamma
2.33630e-01	1.818e-02	Gamma
2.38750e-01	4.444e-01	Gamma
2.42740e-01	6.060e-02	Gamma
2.67650e-01	1.010e-02	Gamma
3.56700e-01	1.616e-02	Gamma
4.34500e-01	1.919e-02	Gamma
5.11000e-01	4.336e-02	Annihilation photon
6.75400e-01	1.555e-02	Gamma
7.28600e-01	1.030e-02	Gamma

7.51400e-01	3.232e-02	Gamma
7.59500e-01	2.424e-02	Gamma
7.87600e-01	5.252e-02	Gamma
7.96900e-01	1.212e-02	Gamma
8.27000e-01	2.020e-01	Gamma
8.31500e-01	7.676e-02	Gamma
8.68000e-01	2.020e-02	Gamma
8.72200e-01	2.424e-02	Gamma
9.20300e-01	1.313e-02	Gamma
9.41500e-01	1.030e-02	Gamma
9.55000e-01	5.050e-02	Gamma
9.71000e-01	1.232e-02	Gamma
9.90600e-01	1.495e-02	Gamma
1.03050e+00	1.656e-02	Gamma
1.06040e+00	5.656e-02	Gamma
1.08620e+00	1.293e-02	Gamma
1.11090e+00	2.121e-02	Gamma
1.18150e+00	1.030e-02	Gamma
1.30500e+00	1.818e-02	Gamma
1.34520e+00	1.091e-02	Gamma
1.38530e+00	1.212e-02	Gamma
1.49180e+00	1.030e-02	Gamma
1.56800e+00	1.030e-02	Gamma
1.57300e+00	1.091e-02	Gamma
1.70490e+00	1.414e-02	Gamma
1.74060e+00	1.252e-02	Gamma
1.98170e+00	1.212e-02	Gamma
6.86402e-01	1.143e-02	Positron
2.72929e-05	2.813e+00	Auger electron
1.62367e-04	4.801e+00	Auger electron
3.25668e-04	9.436e-01	Auger electron
3.28788e-04	1.783e-01	Auger electron
6.00521e-04	2.592e-01	Auger electron
1.52626e-03	2.271e+00	Auger electron
1.71659e-03	1.613e-01	Auger electron
3.87400e-03	1.711e-02	Conversion electron
6.69402e-03	7.068e-01	Auger electron
8.51998e-03	2.757e-01	Auger electron

1.03749e-02	2.667e-02	Auger electron
2.81440e-02	1.354e-02	Conversion electron
3.26440e-02	1.271e-02	Conversion electron
4.61540e-02	3.464e-01	Conversion electron
4.85493e-02	3.483e-02	Auger electron
5.80540e-02	1.835e-02	Auger electron
6.37370e-02	8.554e-02	Conversion electron
6.51920e-02	8.208e-02	Conversion electron
7.33695e-02	4.360e-02	Conversion electron
7.57300e-02	1.226e-02	Conversion electron
9.53740e-02	1.869e-02	Conversion electron
1.05502e-01	5.046e-02	Conversion electron
1.15650e-01	1.443e-02	Conversion electron
1.66894e-01	1.534e-02	Conversion electron
1.70884e-01	1.875e-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