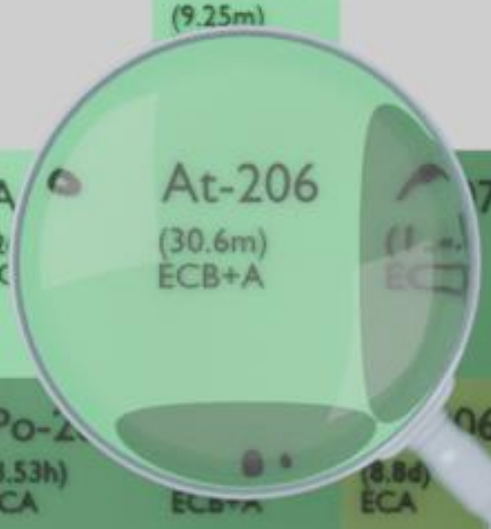




	At-204 (9.2m) ECB+A	At-205 (2.9m) ECB+A	At-206 (30.6m) ECB+A	At-207 (1.6h) ECB+A	At-208 (1.63h) ECB+A	At-209 (5.41h) ECB+A	At-210 (8.1h) ECB+A
Po-203 (36.7m) ECB+A	Po-204 (3.53h) ECA	Po-205 (142d) ECB+A	Po-206 (8.8d) ECA	Po-207 (5.80h) ECB+A	Po-208 (2.898y) A EC	Po-209 (102y) A EC	

ASTATINE-206

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: At-206
Atomic number (Z): 85
Mass number (A): 206
Neutron number (N): 121

RADIOACTIVE DECAY

Decay modes: α , β^+ , Electron capture
Half-life: 30.6 [m]
Decay constant: $3.7753\text{e-}04$ [1/s]
Daughters: Po-206 (99.1%), Bi-202 (0.89%)
Radioactive daughters: Po-206, Bi-202

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0517 [MeV]
Mean electron energy: 0.33236 [MeV]
Mean photon energy: 2.48065 [MeV]
Air kerma rate constant, Γ_{10} : $9.543\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $1.025\text{e-}16$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $6.153\text{e-}14$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : $8.283\text{e-}15$ [Gy $\cdot$ kg/Bq $\cdot$ s]

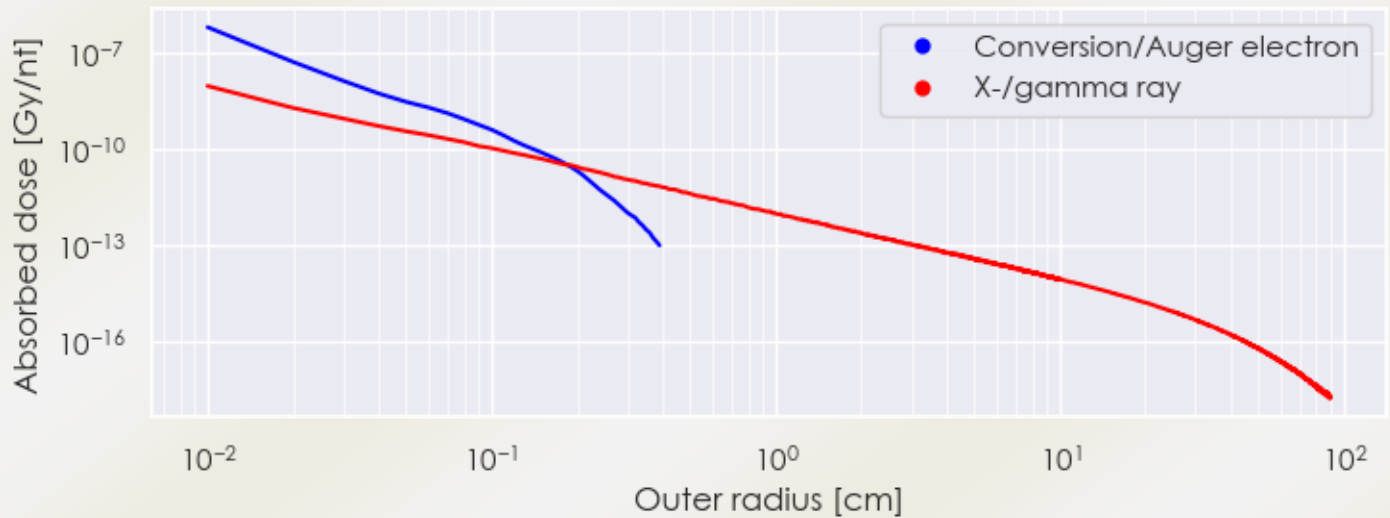
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta+, e^-}$: 5.325×10^{-14} [Gy · kg/Bq · s]

Equilibrium dose constant for photons, Δ_p : 3.974×10^{-13} [Gy · kg/Bq · s]

DOSE POINT KERNELS (PLOT)

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

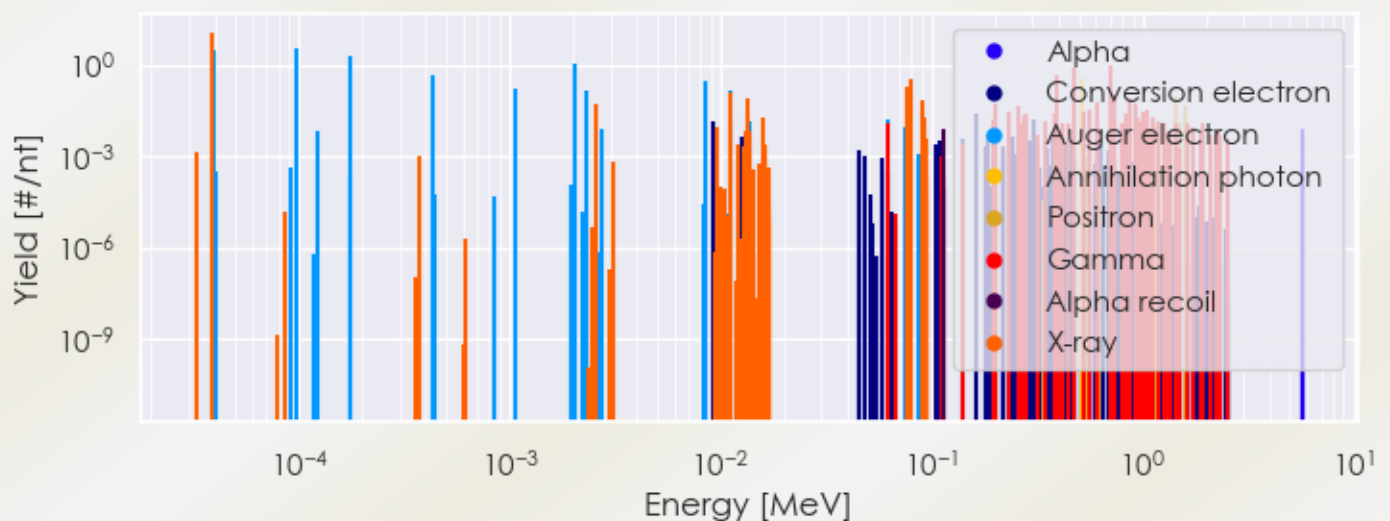
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/At-206 DPK.csv

SUMMARY SPECTRA (PLOT)

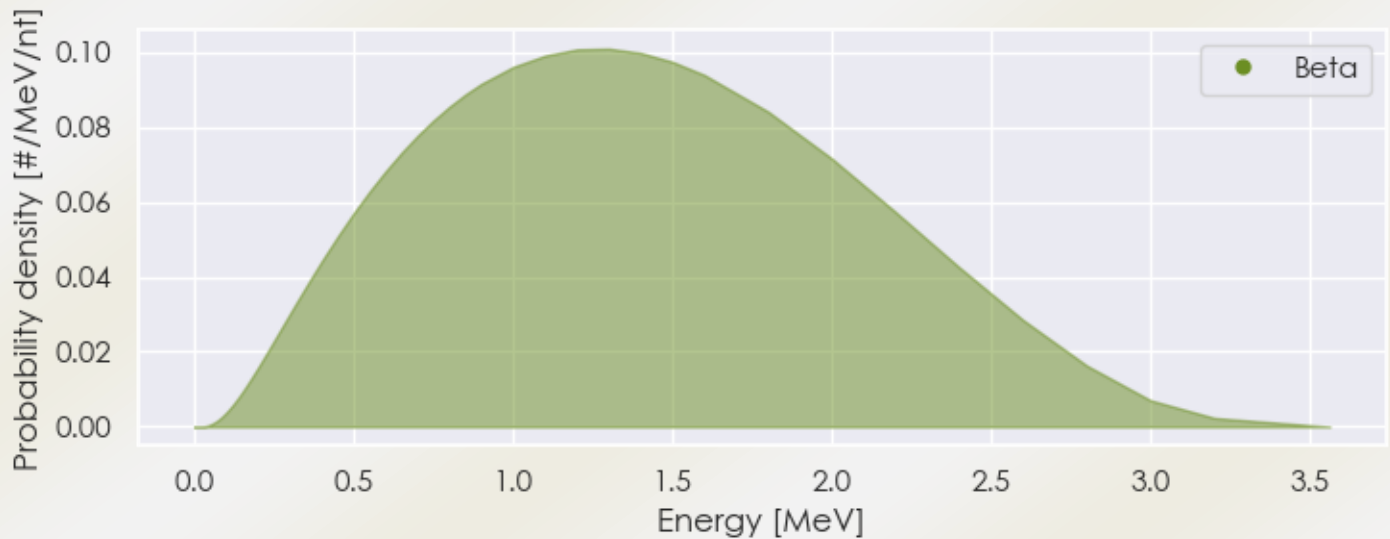
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/At-206 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/At-206 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/At-206 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
3.84107e-05	1.198e+01	X-ray
2.54256e-03	5.064e-02	X-ray
1.10135e-02	1.510e-02	X-ray
1.11319e-02	1.329e-01	X-ray
1.33474e-02	2.606e-02	X-ray
1.34935e-02	8.538e-02	X-ray
1.58015e-02	1.783e-02	X-ray
6.17660e-02	1.308e-02	Gamma
7.71271e-02	2.037e-01	X-ray
7.96070e-02	3.390e-01	X-ray

8.95836e-02	3.805e-02	X-ray
9.01425e-02	7.384e-02	X-ray
9.27190e-02	1.811e-02	X-ray
1.97980e-01	1.562e-02	Gamma
2.01840e-01	5.369e-02	Gamma
2.33550e-01	3.124e-02	Gamma
2.56530e-01	4.393e-02	Gamma
2.68340e-01	1.269e-02	Gamma
2.75590e-01	2.050e-02	Gamma
2.78880e-01	2.636e-02	Gamma
3.42510e-01	1.464e-02	Gamma
3.86740e-01	2.636e-02	Gamma
3.86740e-01	2.636e-02	Gamma
3.95540e-01	4.813e-01	Gamma
4.16410e-01	1.269e-02	Gamma
4.44730e-01	1.239e-02	Gamma
4.77100e-01	8.591e-01	Gamma
5.11000e-01	3.658e-01	Annihilation photon
5.27270e-01	2.929e-02	Gamma
5.65550e-01	3.222e-02	Gamma
6.14400e-01	1.635e-02	Gamma
6.14400e-01	6.150e-02	Gamma
7.00660e-01	9.762e-01	Gamma
7.04660e-01	5.955e-02	Gamma
7.33730e-01	1.015e-01	Gamma
7.38030e-01	1.171e-02	Gamma
7.96600e-01	1.171e-02	Gamma
8.24220e-01	1.269e-02	Gamma
8.38010e-01	2.538e-02	Gamma
8.64300e-01	1.718e-02	Gamma
8.68270e-01	7.615e-02	Gamma
9.23120e-01	5.565e-02	Gamma
9.39250e-01	1.952e-02	Gamma
9.55200e-01	1.464e-02	Gamma
9.60920e-01	1.367e-02	Gamma
9.76320e-01	1.367e-02	Gamma
1.00864e+00	1.757e-02	Gamma
1.01382e+00	2.929e-02	Gamma

1.04818e+00	2.245e-02	Gamma
1.05938e+00	3.417e-02	Gamma
1.12477e+00	1.855e-02	Gamma
1.19686e+00	1.464e-02	Gamma
1.25753e+00	1.171e-02	Gamma
1.44608e+00	1.269e-02	Gamma
1.63741e+00	1.171e-02	Gamma
1.93807e+00	1.269e-02	Gamma
1.17276e+00	1.187e-02	Positron
1.42501e+00	9.028e-02	Positron
1.42890e+00	1.158e-02	Positron
1.48736e+00	1.178e-02	Positron
1.60276e+00	4.808e-02	Positron
3.94563e-05	2.864e+00	Auger electron
9.72316e-05	3.728e+00	Auger electron
1.74767e-04	2.006e+00	Auger electron
4.35442e-04	4.709e-01	Auger electron
1.06982e-03	1.640e-01	Auger electron
2.01504e-03	1.085e+00	Auger electron
2.30889e-03	1.494e-01	Auger electron
8.46215e-03	3.071e-01	Auger electron
9.21850e-03	1.336e-02	Conversion electron
1.10139e-02	1.403e-01	Auger electron
1.35948e-02	1.527e-02	Auger electron
6.18768e-02	1.652e-02	Auger electron
1.63106e-01	2.670e-02	Conversion electron
3.02116e-01	1.763e-02	Conversion electron
3.83676e-01	2.118e-02	Conversion electron
6.07236e-01	1.115e-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