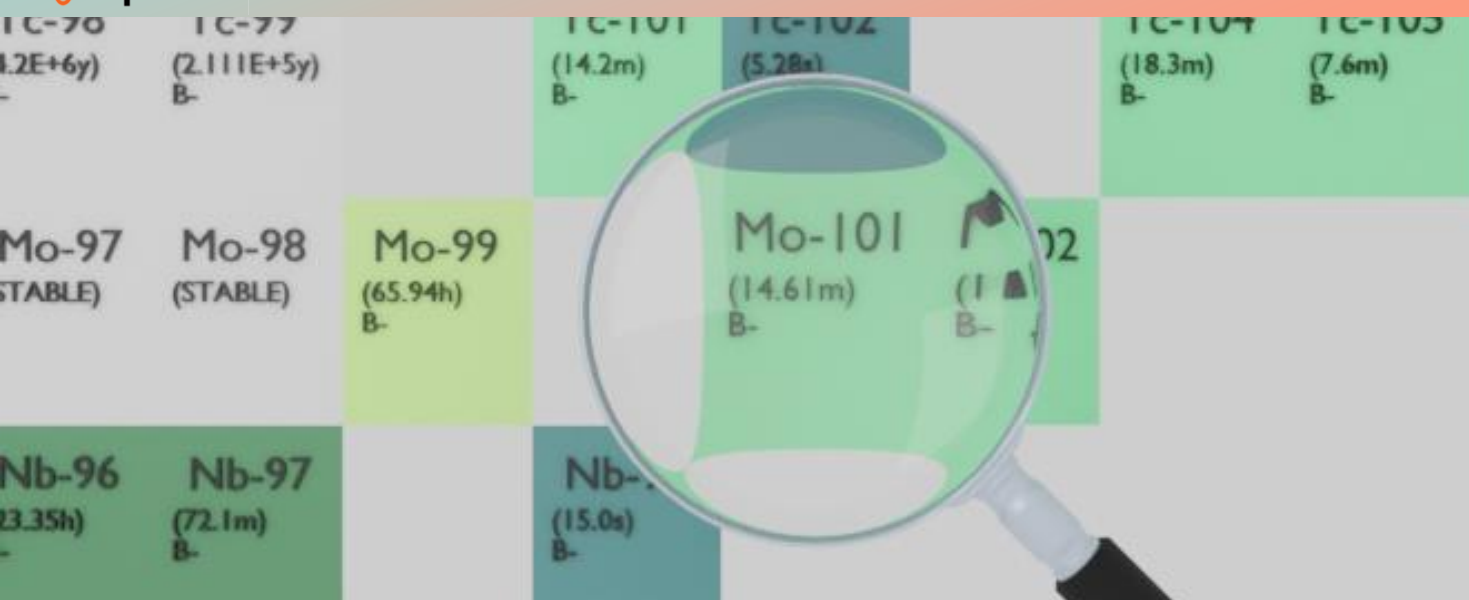




MOLYBDENUM-101

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Mo-101
Atomic number (Z): 42
Mass number (A): 101
Neutron number (N): 59

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 14.61 [m]
Decay constant: $7.9072\text{e-}04$ [1/s]
Daughters: Tc-101 (100.0%)
Radioactive daughters: Tc-101

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.5524 [MeV]
Mean photon energy: 1.47059 [MeV]
Air kerma rate constant, Γ_{10} : $5.106\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $5.106\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $8.850\text{e-}14$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [Gy $\cdot$ kg/Bq $\cdot$ s]

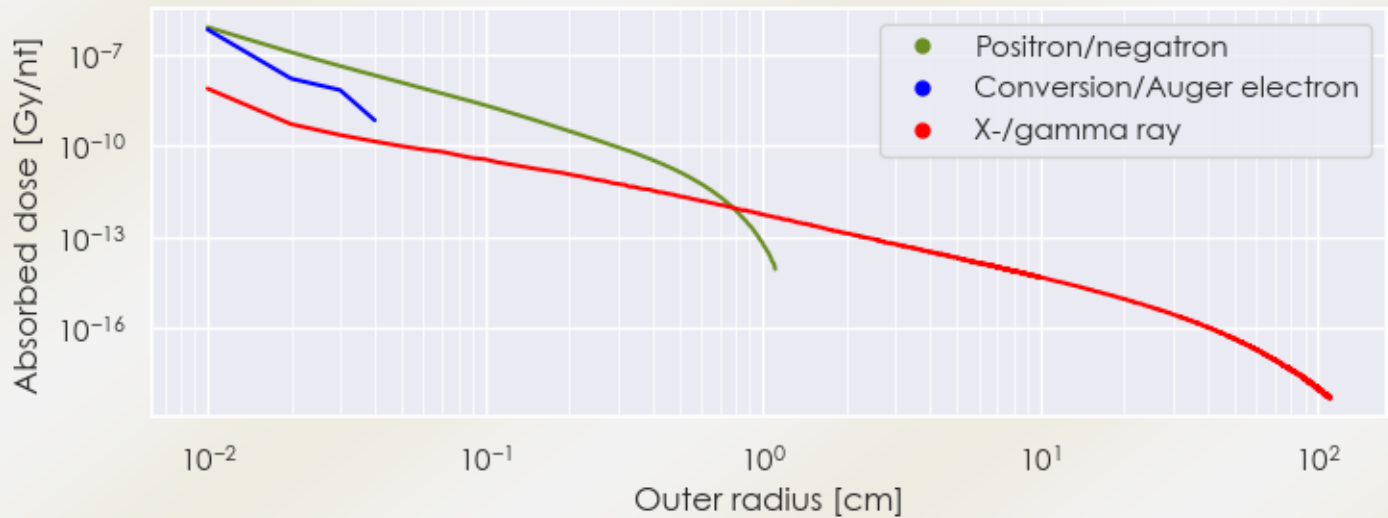
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-\beta+,e-}$: 8.850e-14 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.356e-13 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

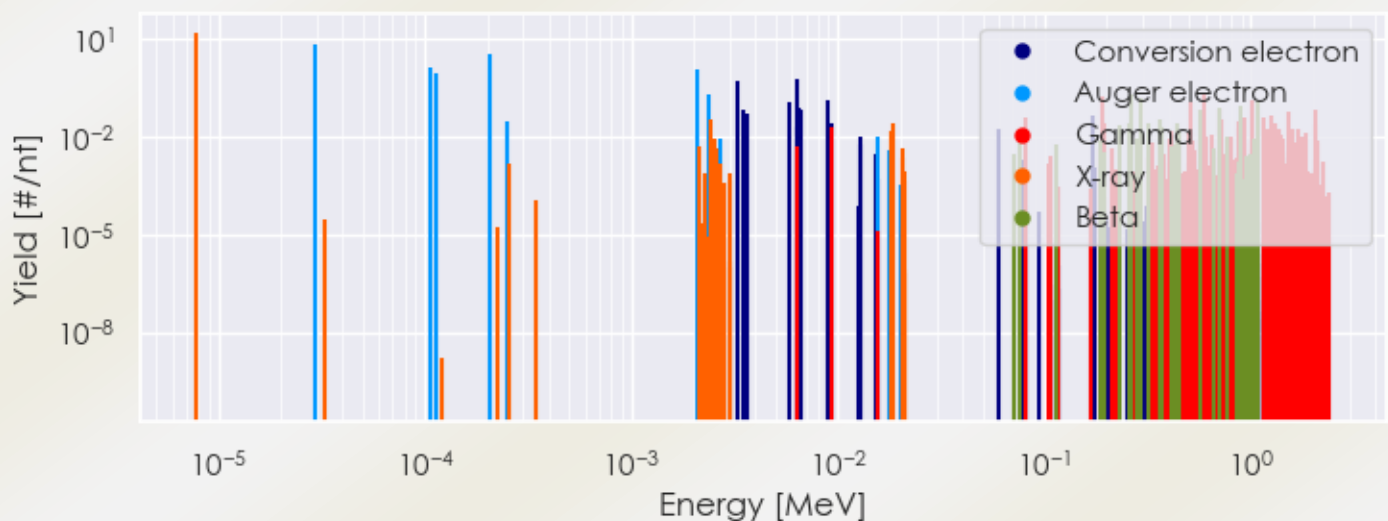
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Mo-101 DPK.csv

SUMMARY SPECTRA (PLOT)

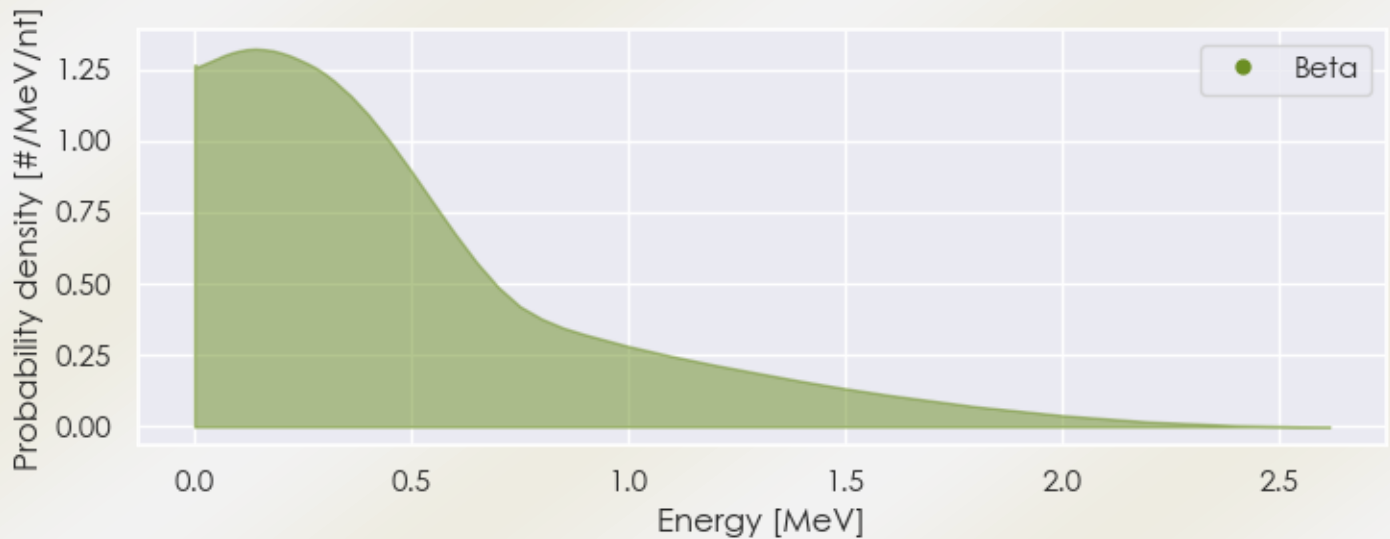
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Mo-101 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/Mo-101 Beta Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Mo-101%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/Mo-101 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Mo-101%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
7.87552e-06	1.666e+01	X-ray
2.41453e-03	3.330e-02	X-ray
9.31700e-03	2.103e-02	Gamma
1.82141e-02	1.480e-02	X-ray
1.83344e-02	2.813e-02	X-ray
8.09200e-02	3.733e-02	Gamma
1.91920e-01	1.821e-01	Gamma
1.95930e-01	2.768e-02	Gamma
4.08690e-01	1.530e-02	Gamma

4.99650e-01	1.395e-02	Gamma
5.05920e-01	1.162e-01	Gamma
5.12830e-01	1.402e-02	Gamma
5.90100e-01	1.111e-02	Gamma
5.90100e-01	1.921e-01	Gamma
6.08340e-01	1.020e-02	Gamma
6.42710e-01	1.215e-02	Gamma
6.95560e-01	6.665e-02	Gamma
7.13040e-01	3.332e-02	Gamma
8.71080e-01	1.712e-02	Gamma
8.77390e-01	3.223e-02	Gamma
9.34210e-01	4.115e-02	Gamma
1.01247e+00	1.302e-01	Gamma
1.16098e+00	4.024e-02	Gamma
1.18676e+00	1.011e-02	Gamma
1.19994e+00	1.796e-02	Gamma
1.25110e+00	4.716e-02	Gamma
1.30400e+00	2.713e-02	Gamma
1.35589e+00	1.694e-02	Gamma
1.38271e+00	1.129e-02	Gamma
1.53249e+00	6.137e-02	Gamma
1.59926e+00	1.748e-02	Gamma
1.67391e+00	1.675e-02	Gamma
1.75972e+00	1.005e-02	Gamma
1.84024e+00	1.402e-02	Gamma
2.03210e+00	6.592e-02	Gamma
2.04124e+00	2.149e-02	Gamma
2.28727e-01	2.167e-02	Beta
2.57341e-01	2.732e-02	Beta
2.60952e-01	2.039e-01	Beta
2.95190e-01	1.485e-01	Beta
3.21429e-01	2.583e-02	Beta
3.59347e-01	3.266e-02	Beta
3.72272e-01	1.940e-02	Beta
4.39267e-01	2.781e-02	Beta
4.40521e-01	1.900e-02	Beta
4.49201e-01	1.534e-02	Beta
5.69513e-01	6.532e-02	Beta

7.00203e-01	7.423e-02	Beta
7.64484e-01	1.019e-02	Beta
8.93230e-01	9.204e-02	Beta
1.07881e+00	1.336e-01	Beta
2.92844e-05	7.336e+00	Auger electron
1.05500e-04	1.452e+00	Auger electron
1.12305e-04	9.665e-01	Auger electron
2.04818e-04	3.670e+00	Auger electron
2.52553e-04	3.134e-02	Auger electron
2.06721e-03	1.212e+00	Auger electron
2.35257e-03	1.915e-01	Auger electron
3.25860e-03	5.046e-01	Conversion electron
3.48310e-03	6.808e-02	Conversion electron
3.60340e-03	5.422e-02	Conversion electron
5.85605e-03	1.149e-01	Conversion electron
6.28100e-03	2.136e-02	Conversion electron
6.29460e-03	6.106e-01	Conversion electron
6.51910e-03	8.067e-02	Conversion electron
6.63940e-03	6.451e-02	Conversion electron
8.89205e-03	1.387e-01	Conversion electron
9.31700e-03	2.590e-02	Conversion electron
1.29284e-02	1.017e-02	Conversion electron
1.54229e-02	1.025e-02	Auger electron
5.99080e-02	1.675e-02	Conversion electron
1.70908e-01	4.519e-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