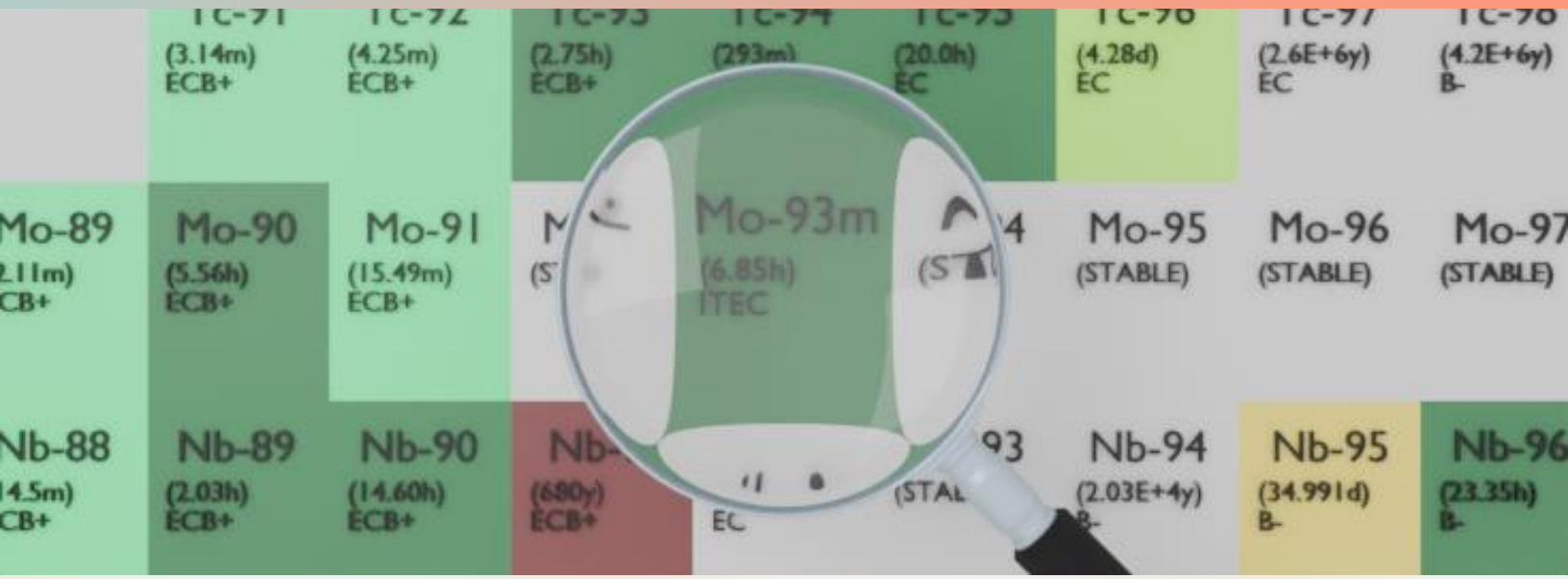


MOLYBDENUM-93M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Mo-93m
Atomic number (Z): 42
Mass number (A): 93
Neutron number (N): 51

RADIOACTIVE DECAY

Decay modes: Electron capture, Internal transition
Half-life: 6.85 [h]
Decay constant: 2.8108e-05 [1/s]
Daughters: Mo-93 (99.9%), Nb-93 (0.12%)
Radioactive daughters: Mo-93

DOSIMETRIC CONSTANTS

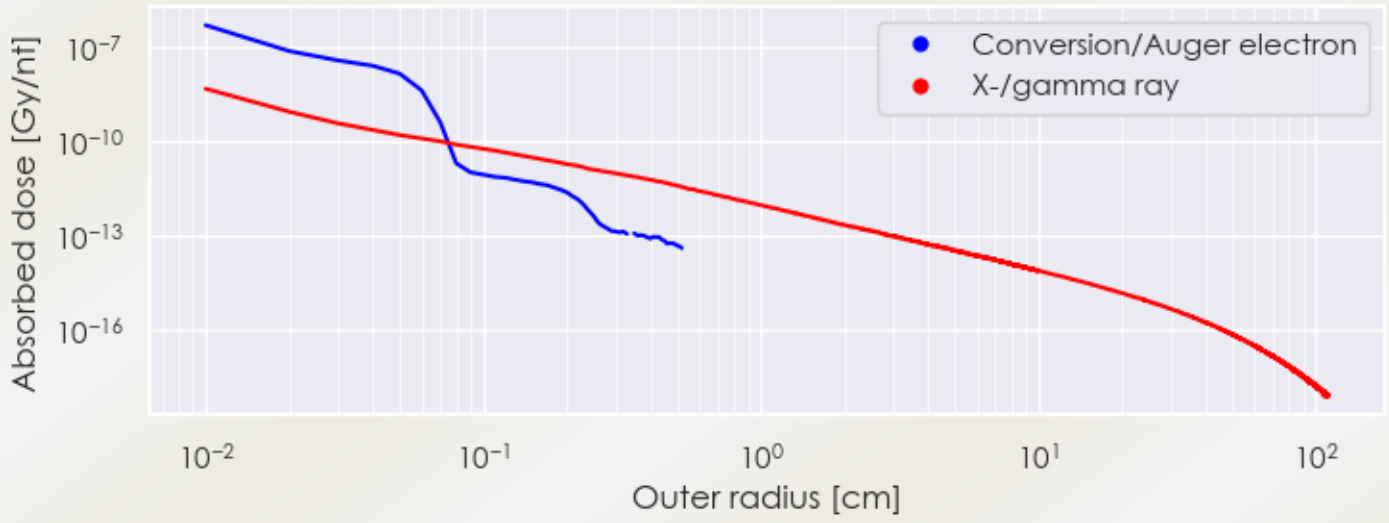
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.1045 [MeV]
Mean photon energy: 2.31827 [MeV]
Air kerma rate constant, Γ_{10}: 8.350e-17 [Gy·m^2/Bq·s]
Air kerma coefficient, K_{air}: 8.350e-17 [Gy·m^2/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (a and/or electrons), Δ_{wp}: 1.674e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{a}: 0.000e+00 [Gy·kg/Bq·s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta-,\beta+,e-}$: 1.674e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for photons, Δ_{p}: 3.714e-13 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

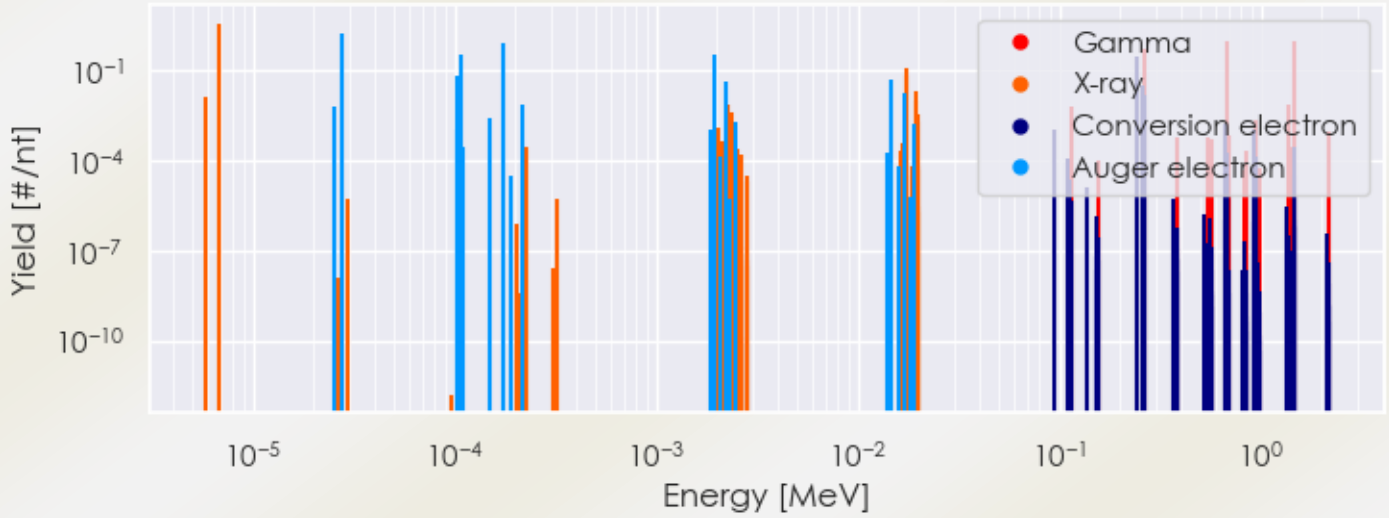
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Mo-93m 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-93m 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/Mo-93m Summary Spectrum.csv

Energy [MeV]	Yield [#/nt] if > 0.01	Radiation type
5.83032e-06	1.337e-02	X-ray
6.84834e-06	3.924e+00	X-ray
1.73355e-02	6.600e-02	X-ray
1.74440e-02	1.258e-01	X-ray
1.95554e-02	1.025e-02	X-ray
1.95734e-02	1.995e-02	X-ray
2.63062e-01	5.672e-01	Gamma
6.84672e-01	9.968e-01	Gamma
1.47711e+00	9.908e-01	Gamma
2.73747e-05	1.816e+00	Auger electron
1.03699e-04	6.645e-02	Auger electron
1.07317e-04	3.480e-01	Auger electron
1.76181e-04	8.273e-01	Auger electron
1.95390e-03	3.335e-01	Auger electron
2.20281e-03	4.722e-02	Auger electron
1.47064e-02	5.031e-02	Auger electron
1.69714e-02	1.863e-02	Auger electron
2.43097e-01	2.940e-01	Conversion electron
2.60216e-01	2.881e-02	Conversion electron
2.60433e-01	3.320e-02	Conversion electron
2.60541e-01	2.470e-02	Conversion electron
2.62670e-01	1.633e-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