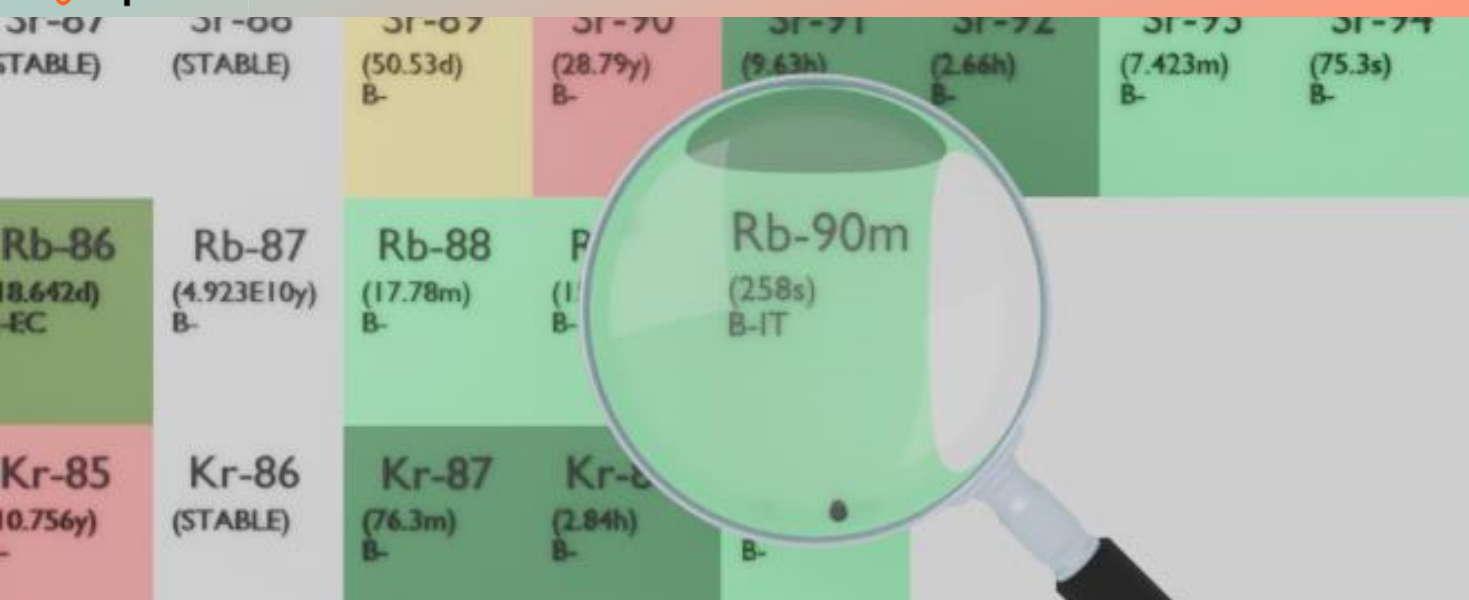




RUBIDIUM-90M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Rb-90m
Atomic number (Z): 37
Mass number (A): 90
Neutron number (N): 53

RADIOACTIVE DECAY

Decay modes: β^- , Internal transition
Half-life: 258.0 [s]
Decay constant: $2.6866\text{e-}03$ [1/s]
Daughters: Sr-90 (97.4%), Rb-90 (2.6%)
Radioactive daughters: Sr-90, Rb-90

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 1.41041 [MeV]
Mean photon energy: 3.24062 [MeV]
Air kerma rate constant, Γ_{10} : $9.914\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $9.914\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $2.260\text{e-}13$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

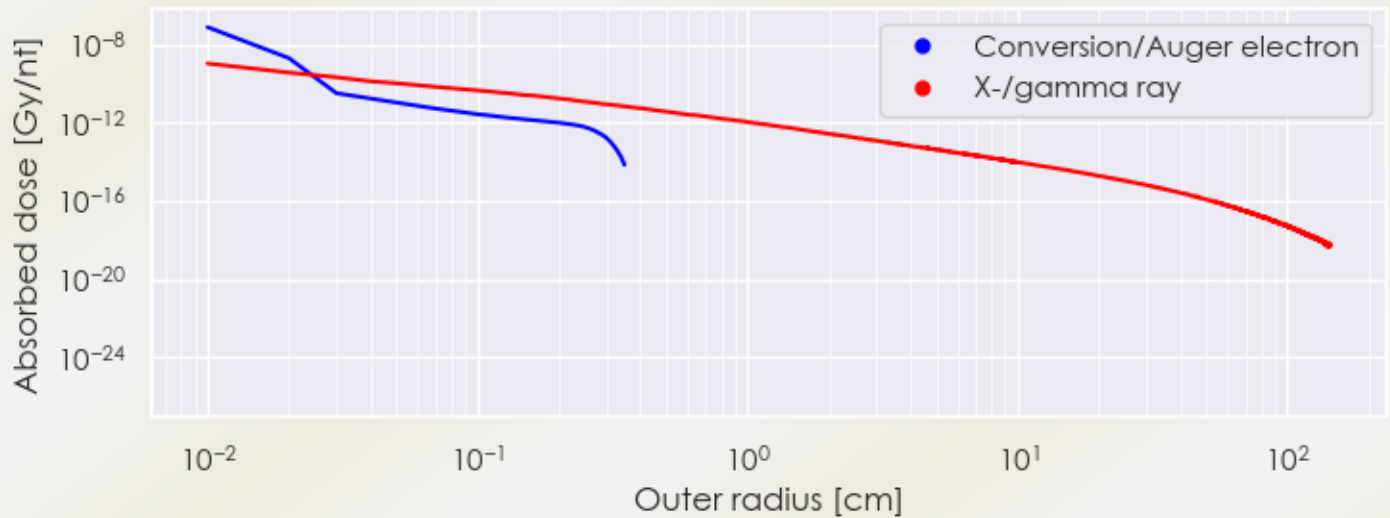
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 2.260e-13 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 5.192e-13 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

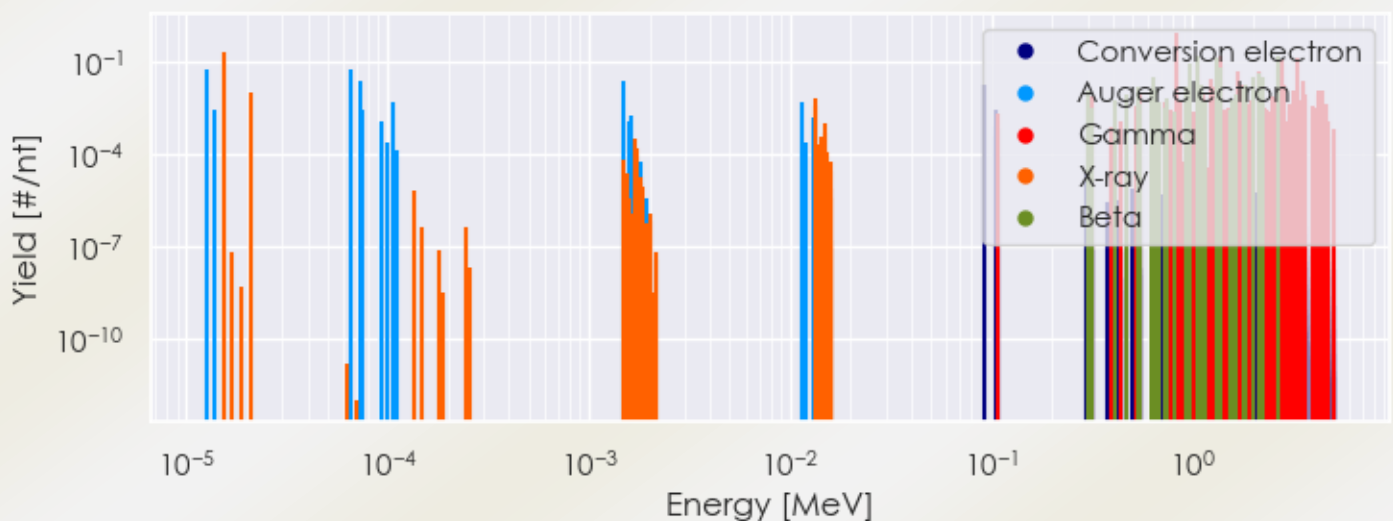
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Rb-90m DPK.csv

SUMMARY SPECTRA (PLOT)

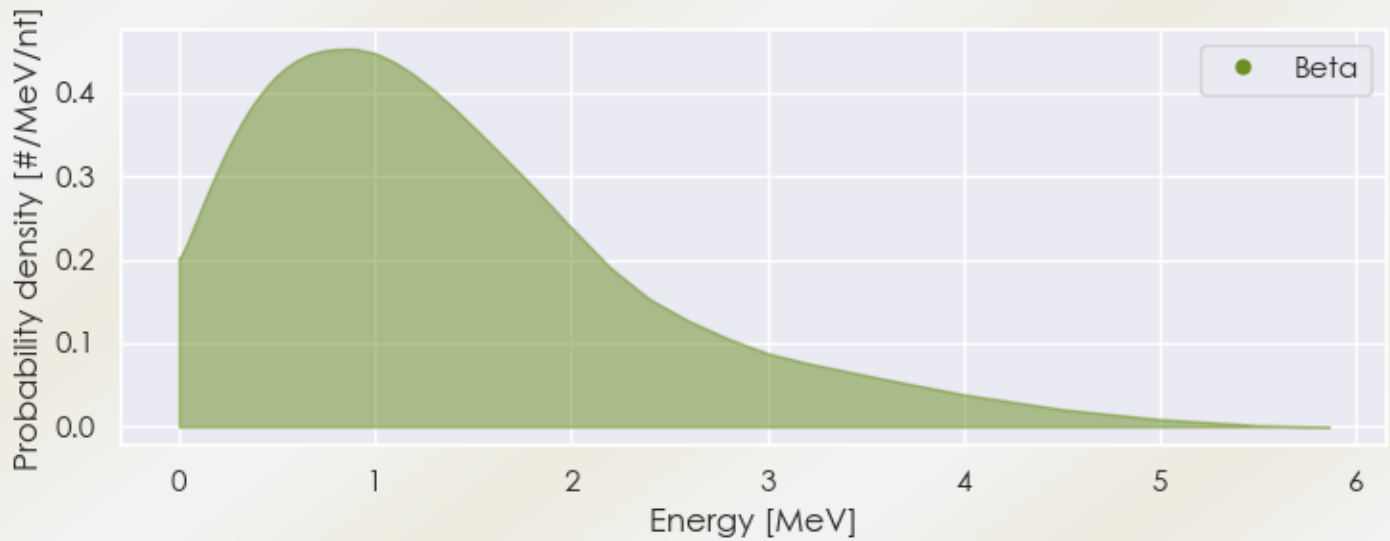
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Rb-90m 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/Rb-90m 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/Rb-90m Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.52770e-05	2.110e-01	X-ray
8.24230e-01	8.656e-02	Gamma
8.31690e-01	9.409e-01	Gamma
9.52440e-01	1.684e-02	Gamma
1.06070e+00	7.621e-02	Gamma
1.24284e+00	3.030e-02	Gamma
1.27177e+00	1.543e-02	Gamma
1.37536e+00	1.665e-01	Gamma
1.37720e+00	2.258e-02	Gamma

1.66561e+00	4.799e-02	Gamma
1.69616e+00	1.647e-02	Gamma
1.73893e+00	1.882e-02	Gamma
2.12830e+00	5.194e-02	Gamma
2.75268e+00	1.148e-01	Gamma
2.83443e+00	1.844e-02	Gamma
3.20509e+00	1.120e-02	Gamma
3.31700e+00	1.430e-01	Gamma
3.50352e+00	2.362e-02	Gamma
3.57282e+00	1.534e-02	Gamma
4.19275e+00	1.138e-02	Gamma
4.45407e+00	1.176e-02	Gamma
2.99992e-01	1.236e-02	Beta
5.31863e-01	1.618e-02	Beta
6.19535e-01	1.377e-02	Beta
6.41177e-01	3.096e-02	Beta
6.48811e-01	1.146e-02	Beta
9.33813e-01	1.618e-02	Beta
9.66118e-01	9.046e-02	Beta
1.05349e+00	1.578e-01	Beta
1.10613e+00	1.779e-02	Beta
1.32018e+00	1.437e-01	Beta
1.38418e+00	6.573e-02	Beta
1.80464e+00	1.327e-02	Beta
1.82514e+00	1.749e-02	Beta
1.83983e+00	1.498e-02	Beta
1.97933e+00	3.116e-02	Beta
2.13076e+00	4.221e-02	Beta
2.24466e+00	3.518e-02	Beta
2.64214e+00	1.508e-01	Beta
1.26043e-05	6.185e-02	Auger electron
6.50076e-05	6.200e-02	Auger electron
7.35486e-05	2.502e-02	Auger electron
1.48974e-03	2.335e-02	Auger electron
9.17610e-02	1.917e-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