
# RUBIDIUM-84M

## SUMMARY DATA

### GENERAL

#### CLASSIFICATION

*Isotope:* Rb-84m
*Atomic number (Z):* 37
*Mass number (A):* 84
*Neutron number (N):* 47

#### RADIOACTIVE DECAY

*Decay modes:* Internal transition
*Half-life:* 20.26 [m]
*Decay constant:* 5.7021e-04 [1/s]
*Daughters:* Rb-84 (100.0%)
*Radioactive daughters:* Rb-84

#### DOSIMETRIC CONSTANTS

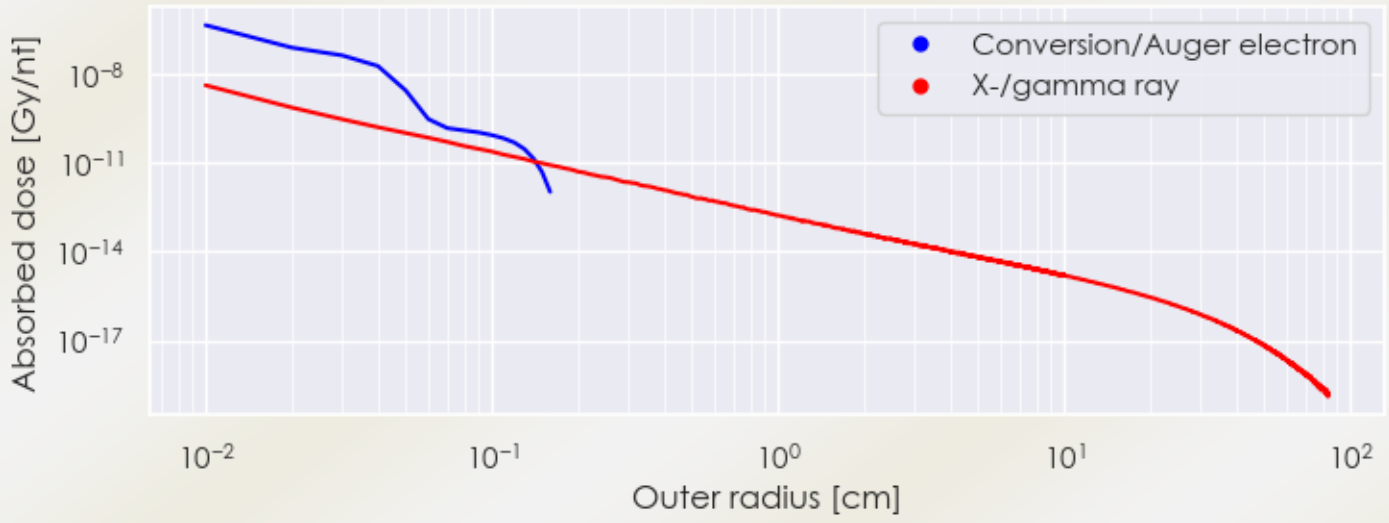
*Mean alpha energy:* 0.0 [MeV]
*Mean electron energy:* 0.08133 [MeV]
*Mean photon energy:* 0.38305 [MeV]
*Air kerma rate constant, $\Gamma_{10}$:* 2.001e-17 [Gy·m$^2$/Bq·s]
*Air kerma coefficient, $K_{air}$:* 2.001e-17 [Gy·m$^2$/Bq·s]
*Equilibrium dose constant for weakly-penetrating radiations (a and/or electrons), $\Delta_{wp}$:* 1.303e-14 [Gy·kg/Bq·s]
*Equilibrium dose constant for alphas, $\Delta_{a}$:* 0.000e+00 [Gy·kg/Bq·s]

*Equilibrium dose constant for betas/electrons, $\Delta_{\beta^-,\beta^+,e^-}$:* 1.303e-14 [Gy·kg/Bq·s]
*Equilibrium dose constant for photons, $\Delta_p$:* 6.137e-14 [Gy·kg/Bq·s]

## DOSE POINT KERNELS (PLOT)

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

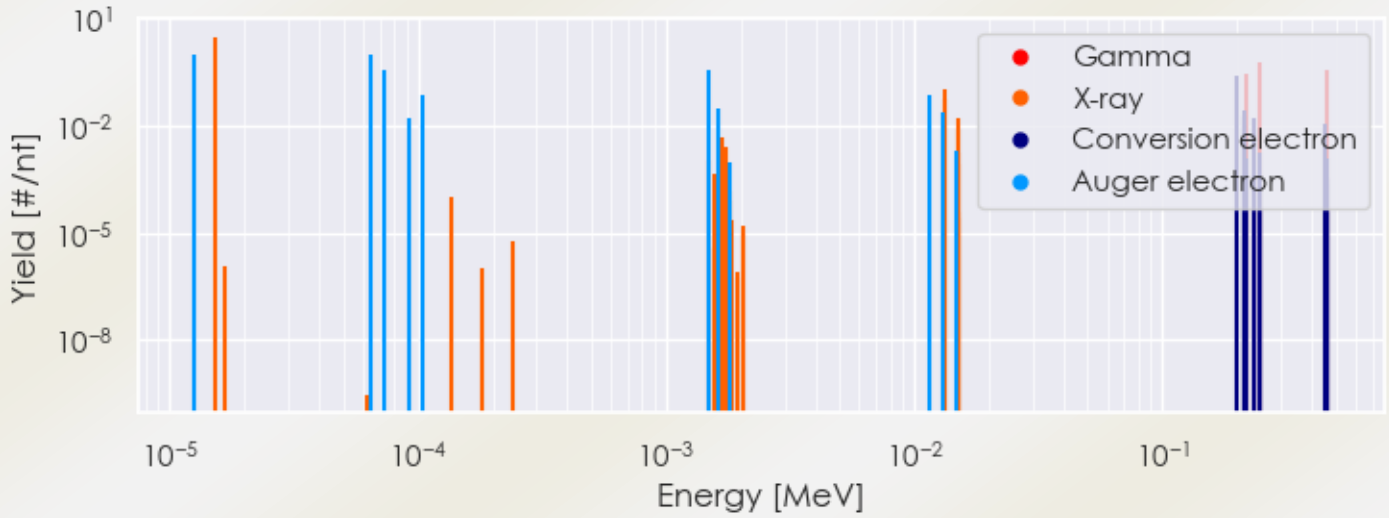
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.




*Download tabulated dose point kernel file here:* www.mirdsoft.org/products/MIRDspecs/Rb-84m 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-84m 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/Rb-84m Summary Spectrum.csv

| Energy [MeV] | Yield [#/nt] if > 0.01 | Radiation type |
|---|---|---|
| **1.52813e-05** | 3.235e+00 | X-ray |
| **1.32919e-02** | 5.697e-02 | X-ray |
| **1.33539e-02** | 1.096e-01 | X-ray |
| **1.49217e-02** | 1.592e-02 | X-ray |
| **2.15610e-01** | 2.950e-01 | Gamma |
| **2.48020e-01** | 6.020e-01 | Gamma |
| **4.63620e-01** | 3.612e-01 | Gamma |
| **1.26043e-05** | 9.478e-01 | Auger electron |
| **6.49626e-05** | 9.513e-01 | Auger electron |
| **7.35331e-05** | 3.850e-01 | Auger electron |
| **9.22144e-05** | 1.693e-02 | Auger electron |
| **1.04202e-04** | 6.967e-02 | Auger electron |
| **1.48982e-03** | 3.615e-01 | Auger electron |
| **1.61108e-03** | 2.925e-02 | Auger electron |
| **1.14024e-02** | 7.262e-02 | Auger electron |
| **1.30522e-02** | 2.383e-02 | Auger electron |
| **2.00451e-01** | 2.622e-01 | Conversion electron |
| **2.13562e-01** | 2.598e-02 | Conversion electron |
| **2.13743e-01** | 1.906e-02 | Conversion electron |
| **2.13805e-01** | 1.696e-02 | Conversion electron |
| **2.15373e-01** | 1.068e-02 | Conversion electron |
| **2.32861e-01** | 1.748e-02 | Conversion electron |
| **4.48461e-01** | 1.206e-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