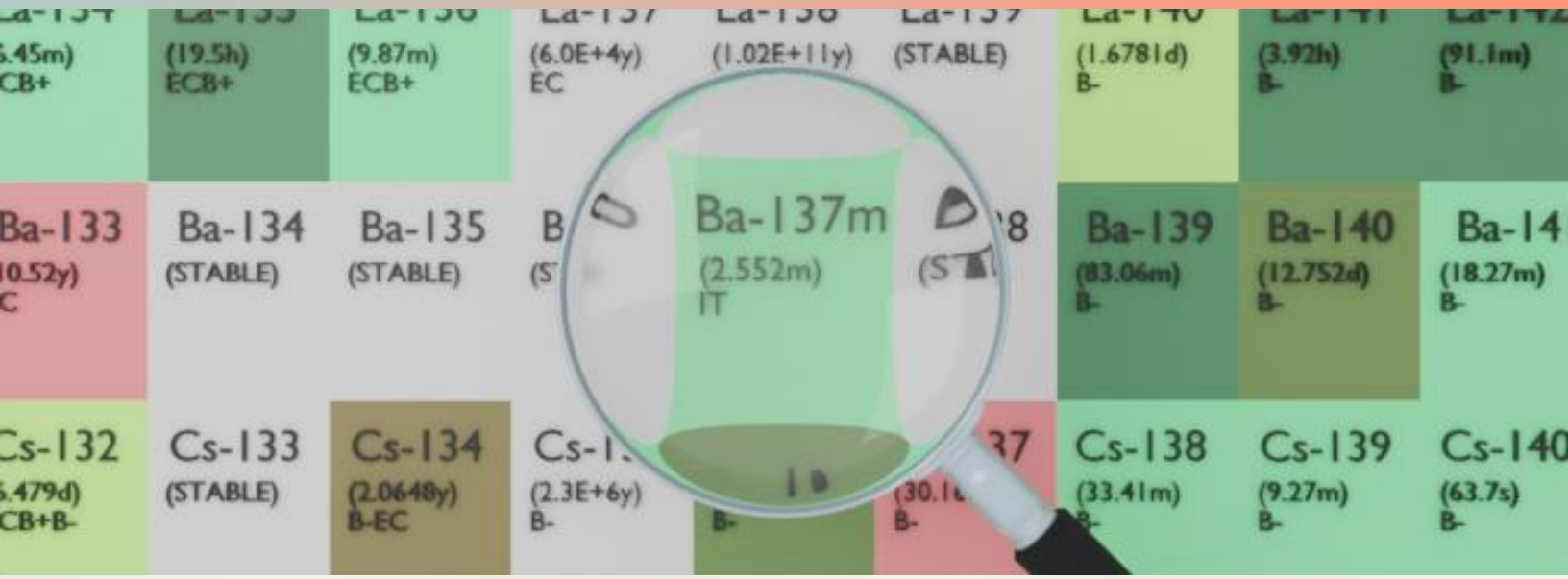


BARIUM-137M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ba-137m
Atomic number (Z): 56
Mass number (A): 137
Neutron number (N): 81

RADIOACTIVE DECAY

Decay modes: Internal transition
Half-life: 2.552 [m]
Decay constant: 4.5268e-03 [1/s]
Daughters: Ba-137 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

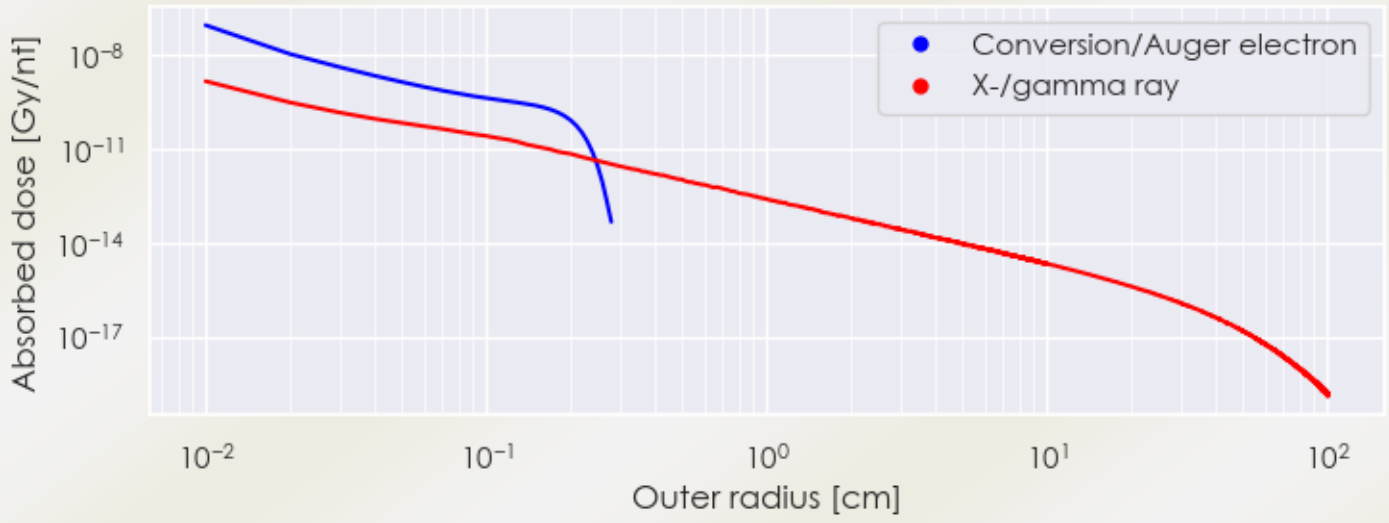
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.06534 [MeV]
Mean photon energy: 0.59631 [MeV]
Air kerma rate constant, Γ_{10}: 2.263e-17 [Gy·m^2/Bq·s]
Air kerma coefficient, K_{air}: 2.263e-17 [Gy·m^2/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (a and/or electrons), Δ_{wp}: 1.047e-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, $\Delta_{\beta-,\beta+,e-}$: 1.047e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for photons, Δ_{p}: 9.554e-14 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

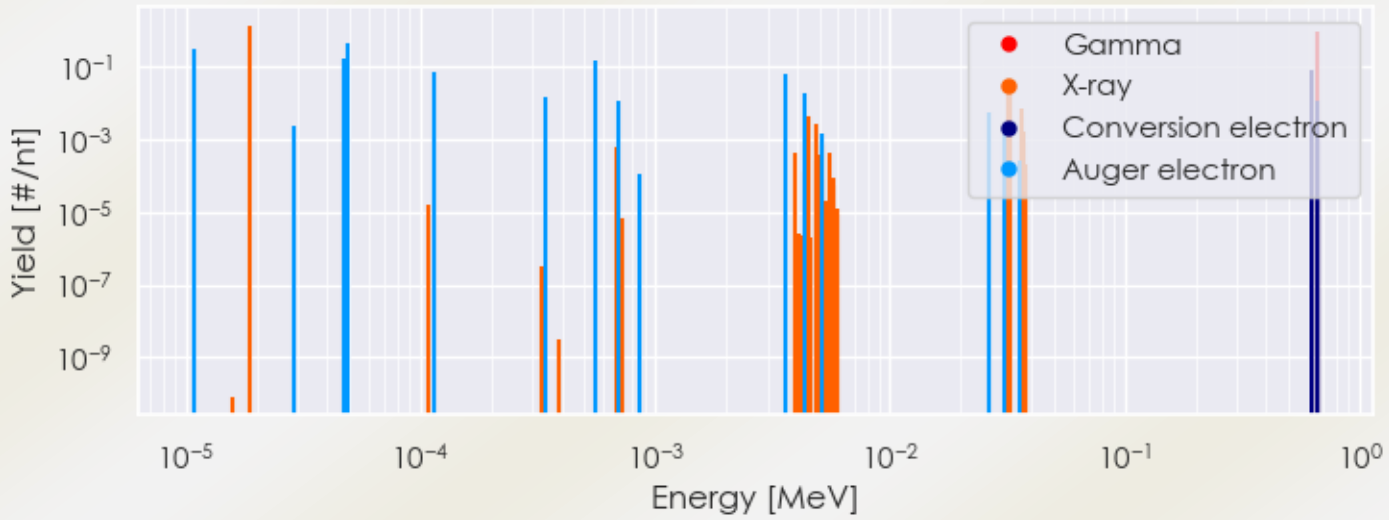
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ba-137m 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/Ba-137m 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/Ba-137m Summary Spectrum.csv

Energy [MeV]	Yield [#/nt] if > 0.01	Radiation type
1.86004e-05	1.369e+00	X-ray
3.18187e-02	2.160e-02	X-ray
3.22056e-02	3.977e-02	X-ray
6.61657e-01	8.974e-01	Gamma
1.08630e-05	2.920e-01	Auger electron
4.69626e-05	1.695e-01	Auger electron
4.88221e-05	4.631e-01	Auger electron
1.14579e-04	6.705e-02	Auger electron
3.42997e-04	1.385e-02	Auger electron
5.52330e-04	1.511e-01	Auger electron
6.90733e-04	1.113e-02	Auger electron
3.57126e-03	5.925e-02	Auger electron
4.33797e-03	1.894e-02	Auger electron
6.24208e-01	8.335e-02	Conversion electron
6.55696e-01	1.208e-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