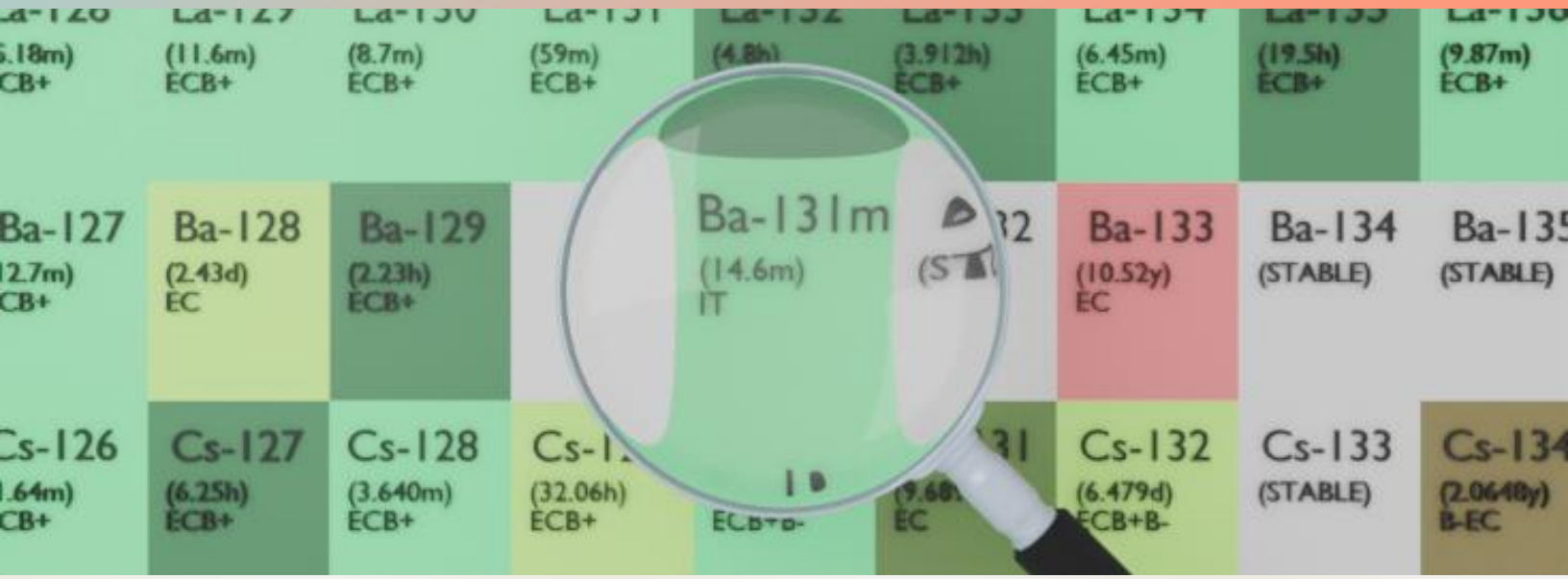


BARIUM-131M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ba-131m
Atomic number (Z): 56
Mass number (A): 131
Neutron number (N): 75

RADIOACTIVE DECAY

Decay modes: Internal transition
Half-life: 14.6 [m]
Decay constant: 7.9126e-04 [1/s]
Daughters: Ba-131 (100.0%)
Radioactive daughters: Ba-131

DOSIMETRIC CONSTANTS

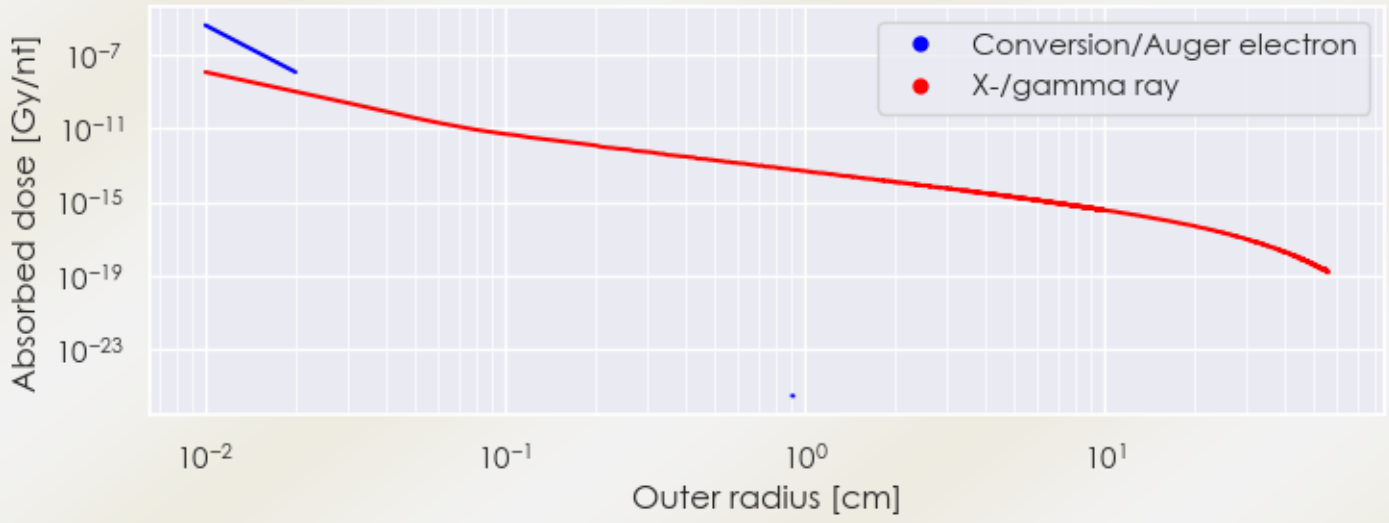
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.11017 [MeV]
Mean photon energy: 0.07734 [MeV]
Air kerma rate constant, Γ_{10}: 4.162e-18 [Gy·m^2/Bq·s]
Air kerma coefficient, K_{air}: 4.162e-18 [Gy·m^2/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (a and/or electrons), Δ_{wp}: 1.765e-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, $\Delta_{\beta-,\beta+,e-}$: 1.765e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for photons, Δ_{p}: 1.239e-14 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

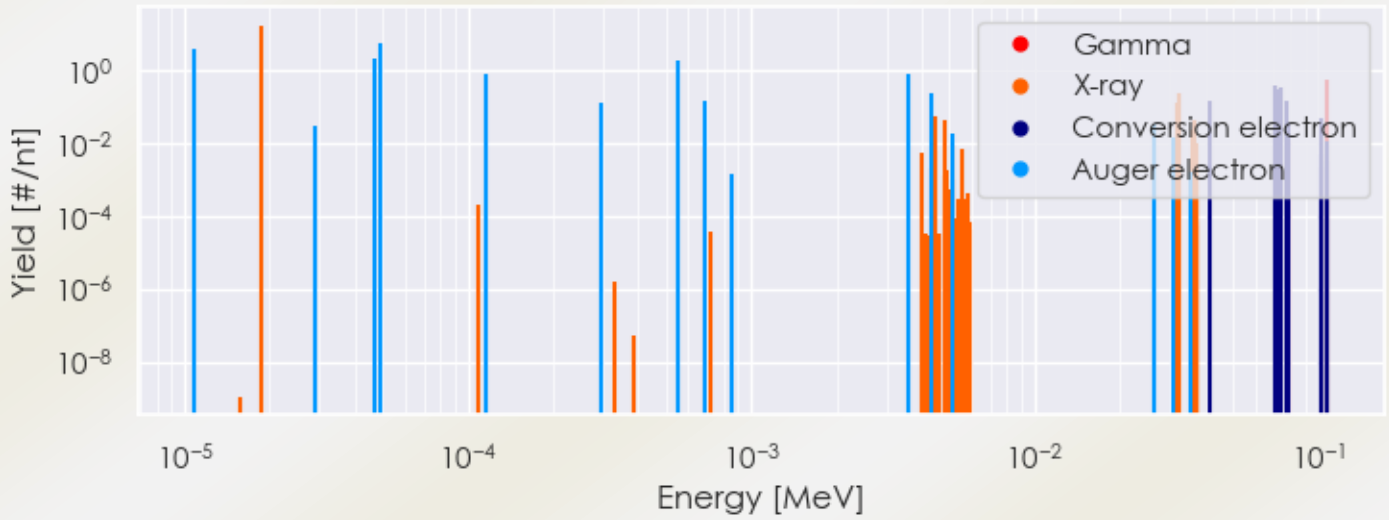
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ba-131m 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-131m 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-131m Summary Spectrum.csv

Energy [MeV]	Yield [#/nt] if > 0.01	Radiation type
1.86083e-05	1.791e+01	X-ray
4.45292e-03	5.484e-02	X-ray
4.82366e-03	4.153e-02	X-ray
3.18187e-02	1.360e-01	X-ray
3.22056e-02	2.505e-01	X-ray
3.63167e-02	2.394e-02	X-ray
3.63920e-02	4.639e-02	X-ray
7.90500e-02	1.191e-02	Gamma
1.08450e-01	5.517e-01	Gamma
1.08631e-05	3.816e+00	Auger electron
2.91100e-05	3.163e-02	Auger electron
4.66202e-05	2.196e+00	Auger electron
4.87601e-05	6.081e+00	Auger electron
1.16315e-04	8.638e-01	Auger electron
2.97136e-04	1.308e-01	Auger electron
5.51772e-04	2.008e+00	Auger electron
6.88877e-04	1.473e-01	Auger electron
3.56624e-03	7.767e-01	Auger electron
4.33082e-03	2.481e-01	Auger electron
5.12367e-03	1.934e-02	Auger electron
2.63448e-02	3.335e-02	Auger electron
3.09583e-02	1.539e-02	Auger electron
4.16010e-02	1.446e-01	Conversion electron
7.10010e-02	3.804e-01	Conversion electron
7.30892e-02	1.067e-02	Conversion electron
7.34197e-02	3.078e-01	Conversion electron
7.38066e-02	3.352e-01	Conversion electron

7.79930e-02	1.518e-01	Conversion electron
7.90500e-02	3.798e-02	Conversion electron
1.02489e-01	4.686e-02	Conversion electron
1.07393e-01	1.116e-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