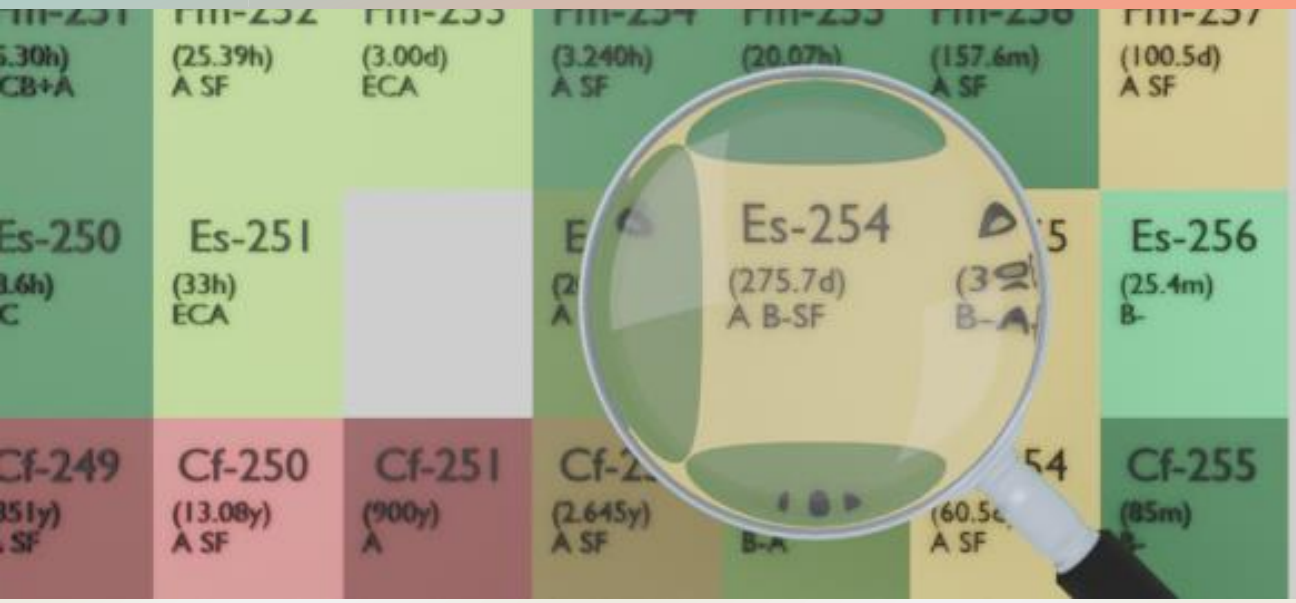


EINSTEINIUM-254

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Es-254
Atomic number (Z): 99
Mass number (A): 254
Neutron number (N): 155

RADIOACTIVE DECAY

Decay modes: α, β-, Spontaneus fission
Half-life: 275.7 [d]
Decay constant: 2.9099e-08 [1/s]
Daughters: Bk-250 (100.0%), Fm-254 (0.000174%), SF (3e-06%)
Radioactive daughters: Bk-250, Fm-254

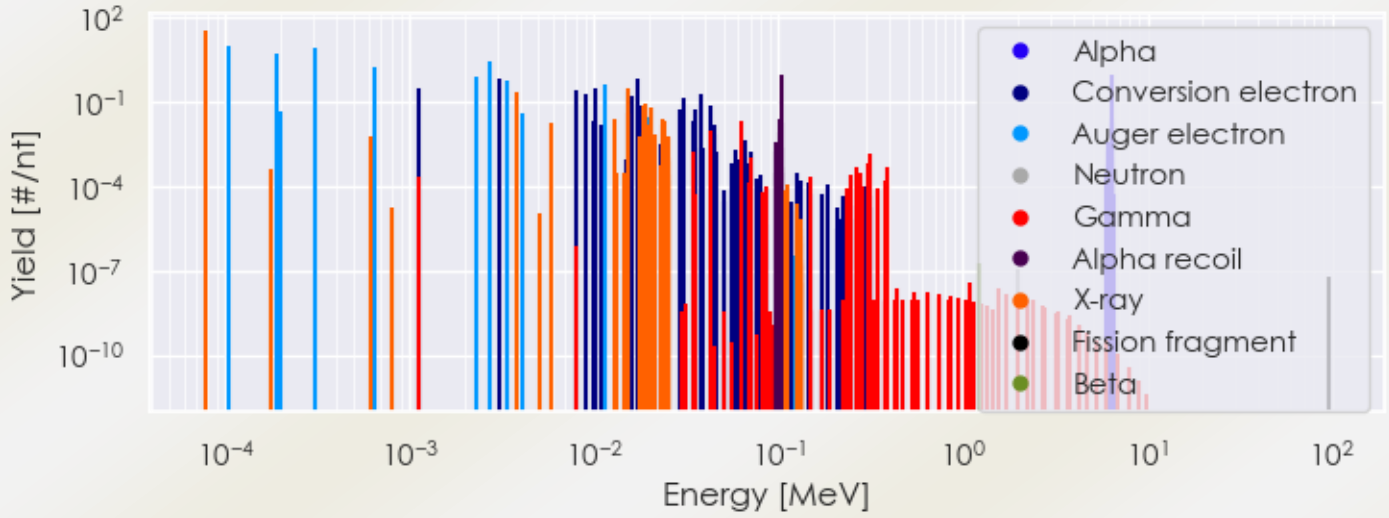
DOSIMETRIC CONSTANTS

Mean alpha energy: 6.5243 [MeV]
Mean electron energy: 0.07266 [MeV]
Mean photon energy: 0.0208 [MeV]
Air kerma rate constant, Γ_{10}: 1.530e-17 [Gy·m^2/Bq·s]
Air kerma coefficient, K_{air}: 1.530e-17 [Gy·m^2/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (a and/or electrons), Δ_{wp}: 1.057e-12 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α}: 1.045e-12 [Gy·kg/Bq·s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta^-,\beta^+,e^-}$: 1.164e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for photons, Δ_p: 3.333e-15 [Gy·kg/Bq·s]

SUMMARY SPECTRA (PLOT)

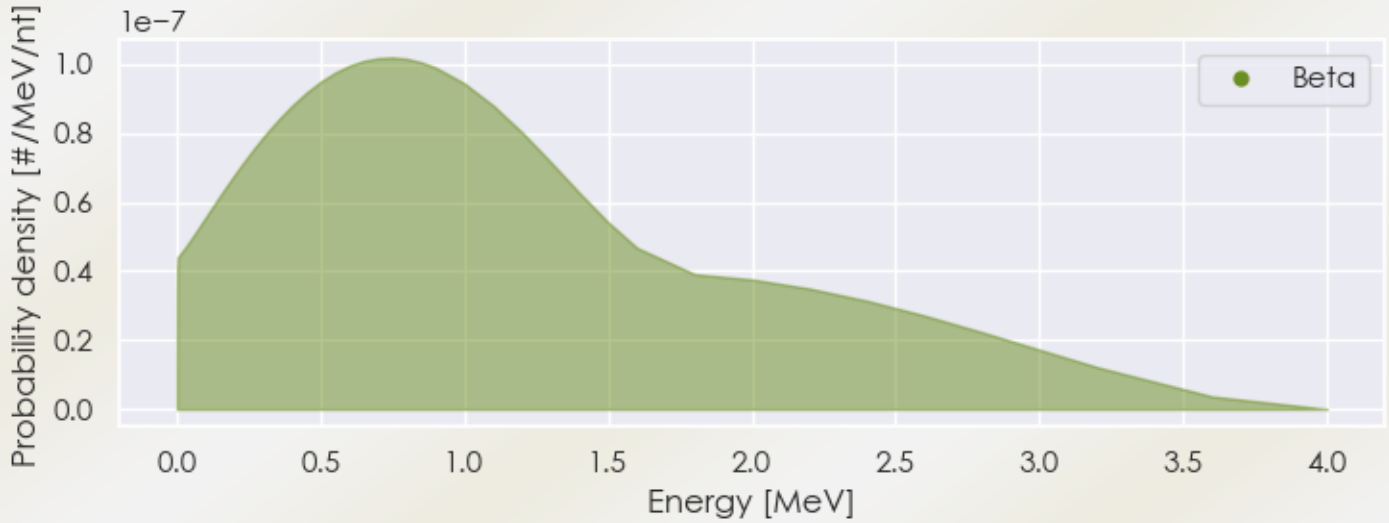
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Es-254 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/Es-254 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/Es-254 Summary Spectrum.csv

Energy [MeV]	Yield [#/nt] if > 0.01	Radiation type
7.83079e-05	3.284e+01	X-ray
3.76436e-03	2.178e-01	X-ray
5.83200e-03	1.746e-02	X-ray
1.29387e-02	2.416e-02	X-ray
1.50951e-02	3.662e-02	X-ray
1.53277e-02	3.214e-01	X-ray
1.85632e-02	6.977e-02	X-ray
1.91452e-02	8.442e-02	X-ray
1.93317e-02	1.427e-02	X-ray
2.01361e-02	6.576e-02	X-ray
2.03253e-02	6.328e-02	X-ray
2.35469e-02	1.558e-02	X-ray
2.37400e-02	2.322e-02	X-ray
2.40574e-02	2.058e-02	X-ray
6.30000e-02	2.000e-02	Gamma
1.03860e-04	9.113e+00	Auger electron
1.91270e-04	5.155e+00	Auger electron
1.99964e-04	4.657e-02	Auger electron
3.06065e-04	8.711e+00	Auger electron
6.49385e-04	1.845e+00	Auger electron
1.12000e-03	2.998e-01	Conversion electron
2.27893e-03	8.342e-01	Auger electron
2.74224e-03	2.543e+00	Auger electron
3.03140e-03	7.000e-01	Conversion electron
3.38350e-03	5.934e-01	Auger electron
4.13034e-03	3.812e-02	Auger electron
8.00000e-03	2.550e-01	Conversion electron
9.10600e-03	2.001e-01	Conversion electron

9.89700e-03	2.211e-02	Conversion electron
1.02060e-02	3.171e-01	Conversion electron
1.09970e-02	1.511e-02	Conversion electron
1.14999e-02	4.389e-01	Auger electron
1.54027e-02	2.339e-01	Auger electron
1.60380e-02	1.620e-01	Conversion electron
1.73060e-02	6.635e-01	Conversion electron
1.80970e-02	7.363e-02	Conversion electron
1.93700e-02	2.925e-02	Auger electron
2.94314e-02	5.489e-02	Conversion electron
3.05314e-02	1.486e-01	Conversion electron
3.44000e-02	2.042e-02	Conversion electron
3.55000e-02	5.719e-02	Conversion electron
3.76314e-02	1.822e-01	Conversion electron
4.26000e-02	6.793e-02	Conversion electron
4.51060e-02	1.605e-02	Conversion electron
6.35791e+00	2.607e-02	Alpha
6.41550e+00	1.805e-02	Alpha
6.42681e+00	9.336e-01	Alpha
1.01793e-01	2.607e-02	Alpha recoil
1.02715e-01	1.805e-02	Alpha recoil
1.02896e-01	9.336e-01	Alpha recoil

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