



Am-237 (2.9h) CB+	Am-240 (27d) A SF	Am-241 (32.8d) ECA	Am-242 (162.8d) A SF	Am-243 (29.1v) A SF	Am-244 (18.10y) A SF	Am-245 (8.5E+3y) A SF	Am-246 (4.76E+3y) A SF	Am-247 (1.56E+7y) A
Am-238 (98m) CB+A	Am-239 (11.9h) ECA	Am-240 (50.8h) ECA	Am-241 (4.8h) A	Am-242 (16.02h) B-EC	Am-243 (7.37h) A	Am-244 (10.1h) B-	Am-245 (2.05h) B-	Am-246 (39m) B-
Pu-237 (45.2d) CA	Pu-238 (87.7y) A SF	Pu-239 (2.411E+4y) A	Pu-240 (6564y) A SF	Pu-241 (14.3h) B-A	Pu-242 (3.75E+5y) A SF	Pu-243 (4.956h) B-	Pu-244 (8.00E+7y) A SF	Pu-245 (10.5h) B-

AMERICIUM-242

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Am-242
Atomic number (Z): 95
Mass number (A): 242
Neutron number (N): 147

RADIOACTIVE DECAY

Decay modes: β^- , Electron capture
Half-life: 16.02 [h]
Decay constant: 1.2019e-05 [1/s]
Daughters: Cm-242 (82.7%), Pu-242 (17.3%)
Radioactive daughters: Cm-242, Pu-242

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.18061 [MeV]
Mean photon energy: 0.01881 [MeV]
Air kerma rate constant, Γ_{10} : 6.366e-18 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air} : 6.366e-18 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 2.894e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 2.894×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.014×10^{-15} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

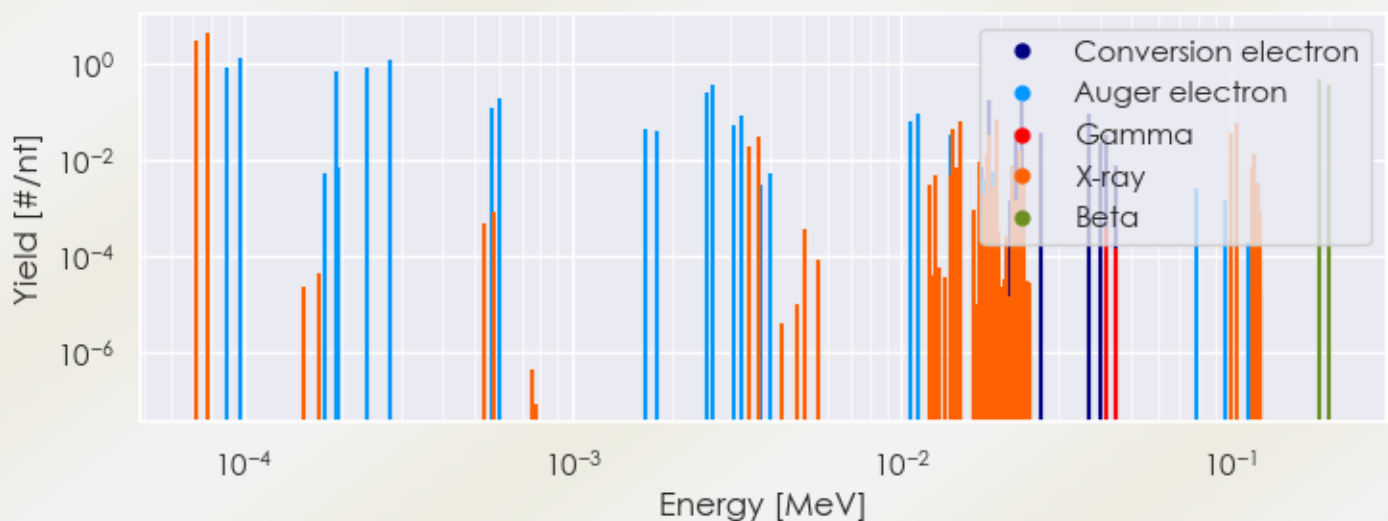
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Am-242 DPK.csv

SUMMARY SPECTRA (PLOT)

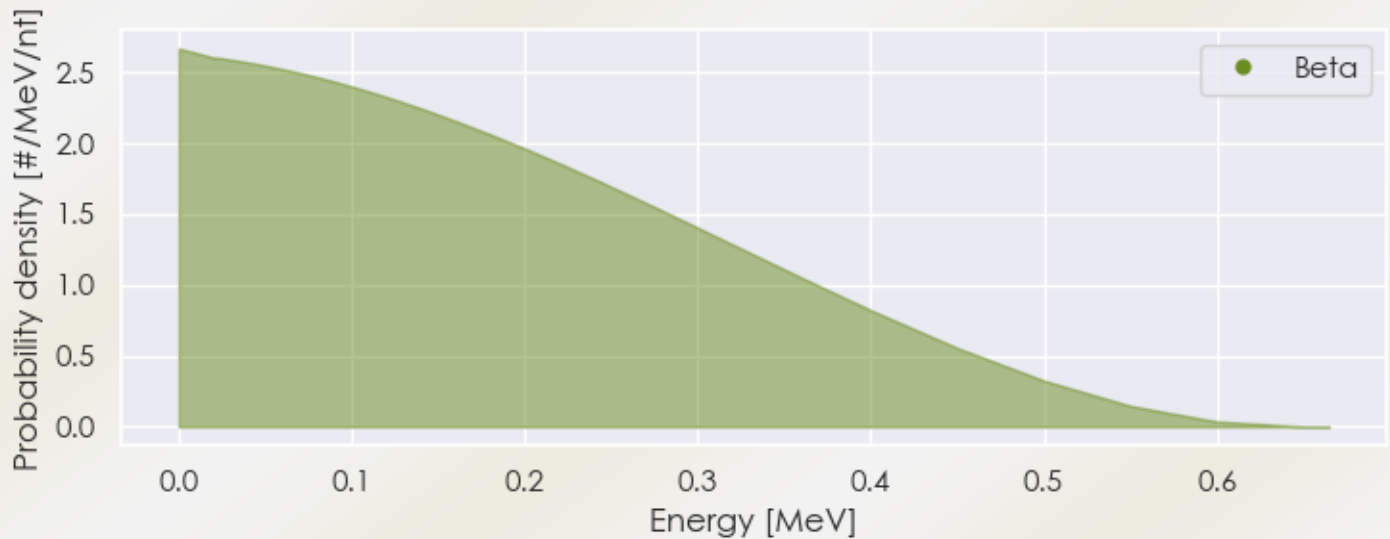
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Am-242 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/Am-242 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/Am-242 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
7.20051e-05	2.974e+00	X-ray
7.76494e-05	4.395e+00	X-ray
3.44878e-03	1.951e-02	X-ray
3.66055e-03	3.103e-02	X-ray
1.42941e-02	4.331e-02	X-ray
1.49784e-02	6.184e-02	X-ray
1.81285e-02	1.334e-02	X-ray
1.83932e-02	3.173e-02	X-ray
1.95388e-02	6.743e-02	X-ray

2.28564e-02	1.584e-02	X-ray
9.99790e-02	3.655e-02	X-ray
1.04279e-01	5.786e-02	X-ray
1.17801e-01	1.316e-02	X-ray
1.85987e-01	4.548e-01	Beta
2.00225e-01	3.721e-01	Beta
8.90967e-05	8.152e-01	Auger electron
9.71086e-05	1.244e+00	Auger electron
1.90634e-04	6.655e-01	Auger electron
1.91723e-04	4.605e-01	Auger electron
2.36332e-04	7.808e-01	Auger electron
2.79611e-04	1.153e+00	Auger electron
5.70338e-04	1.208e-01	Auger electron
6.00429e-04	1.908e-01	Auger electron
1.66766e-03	4.256e-02	Auger electron
1.79589e-03	3.952e-02	Auger electron
2.55569e-03	2.556e-01	Auger electron
2.67780e-03	3.730e-01	Auger electron
3.08706e-03	5.236e-02	Auger electron
3.27218e-03	8.263e-02	Auger electron
1.06313e-02	6.386e-02	Auger electron
1.12729e-02	9.103e-02	Auger electron
1.41701e-02	3.310e-02	Auger electron
1.50451e-02	4.817e-02	Auger electron
1.83540e-02	1.729e-01	Conversion electron
2.21690e-02	4.111e-02	Conversion electron
2.31360e-02	1.494e-01	Conversion electron
2.64690e-02	3.520e-02	Conversion electron
3.73010e-02	9.207e-02	Conversion electron
3.99901e-02	2.174e-02	Conversion electron
4.21300e-02	3.433e-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