



Se-74 (174m) CB+	Se-72 (8.40d) EC	Se-73 (7.15h) ECB+	Se-74 (STABLE)	Se-75 (119.779d)	Se-76 (STABLE)	Se-77 (STABLE)	Se-78 (STABLE)	Se-77 (2.95E+5y) B-
As-70 (52.6m) CB+	As-71 (65.28h) ECB+	As-72 (26.0h) ECB+	As-74 (17.77d) ECB+B-	As-75 (STABLE)	As-76 (1.0778d) B-	As-77 (38.83h) B-	As-78 (90.7m) B-	
Ge-69 (9.05h) CB+	Ge-70 (STABLE)	Ge-71 (11.43d) EC	Ge-74 (STABLE)	Ge-75 (82.78m) B-	Ge-77 (11.30h) B-			

ARSENIC-74

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: As-74
Atomic number (Z): 33
Mass number (A): 74
Neutron number (N): 41

RADIOACTIVE DECAY

Decay modes: β^- , β^+ , Electron capture
Half-life: 17.77 [d]
Decay constant: 4.5147×10^{-7} [1/s]
Daughters: Ge-74 (66.0%), Se-74 (34.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.26584 [MeV]
Mean photon energy: 0.75823 [MeV]
Air kerma rate constant, Γ_{10} : 1.831×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 2.956×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 4.259×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta+,e-}$: 4.259e-14 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.215e-13 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

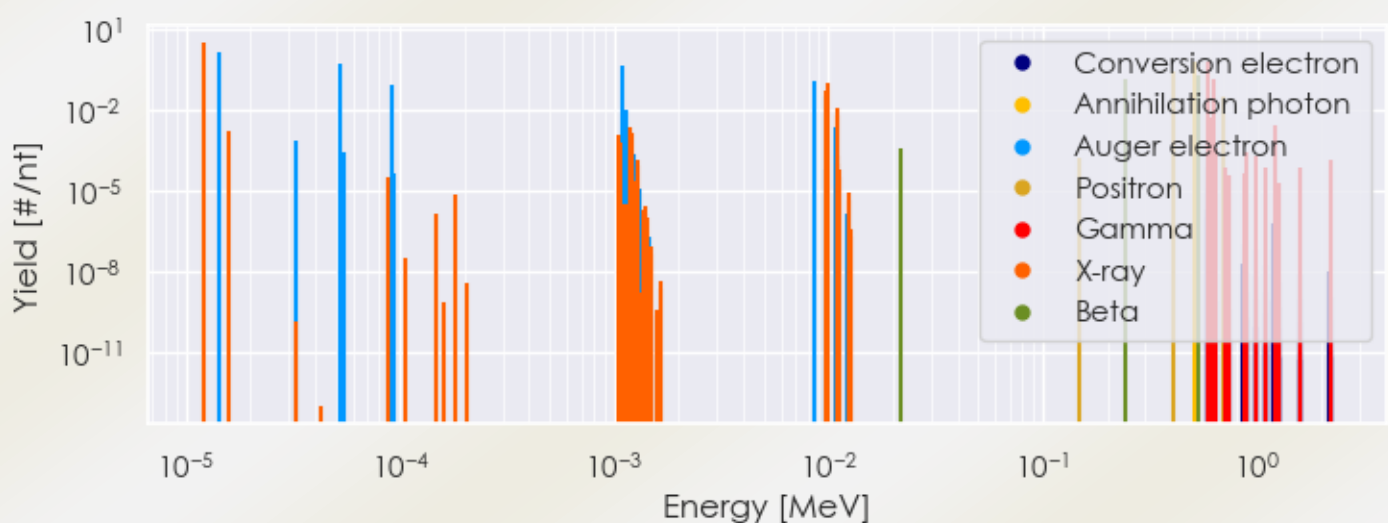
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/As-74 DPK.csv

SUMMARY SPECTRA (PLOT)

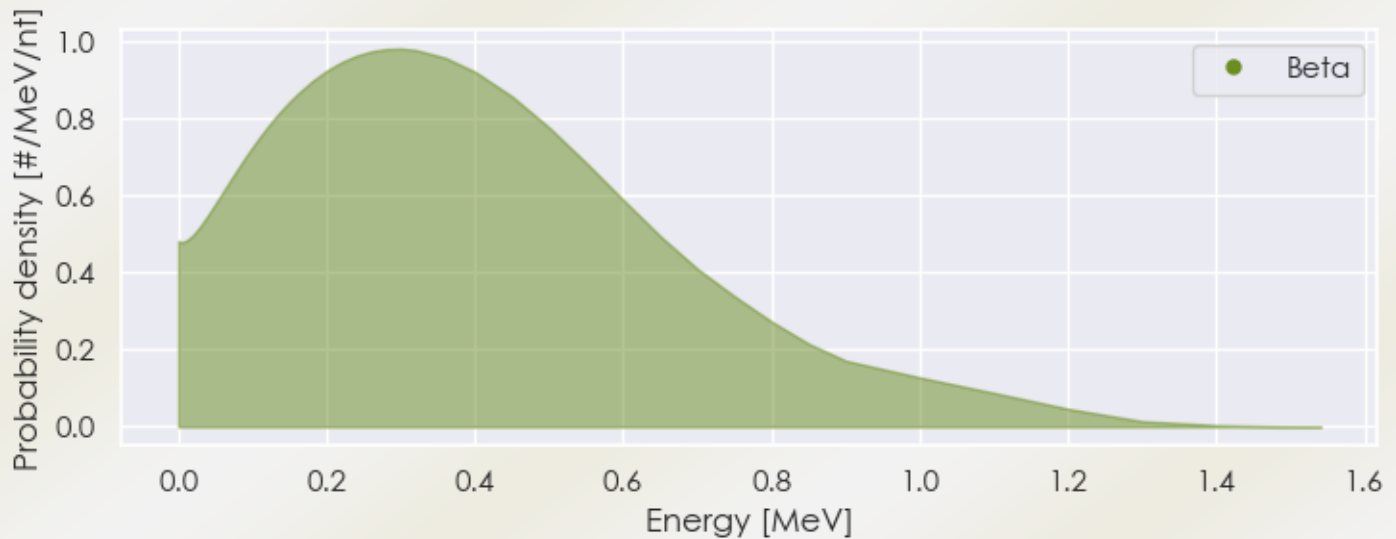
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/As-74 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/As-74 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/As-74 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.21072e-05	3.094e+00	X-ray
9.81159e-03	5.170e-02	X-ray
9.84420e-03	1.003e-01	X-ray
1.09420e-02	1.306e-02	X-ray
5.11000e-01	5.813e-01	Annihilation photon
5.95830e-01	5.940e-01	Gamma
6.34780e-01	1.535e-01	Gamma
2.42793e-01	1.538e-01	Beta
4.07982e-01	2.604e-01	Positron
5.30863e-01	1.858e-01	Beta

7.01054e-01	3.005e-02	Positron
1.41918e-05	1.486e+00	Auger electron
5.27726e-05	5.456e-01	Auger electron
9.17081e-05	8.600e-02	Auger electron
1.07872e-03	4.424e-01	Auger electron
1.13600e-03	1.100e-02	Auger electron
8.52330e-03	1.190e-01	Auger electron
9.66388e-03	3.258e-02	Auger 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/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6