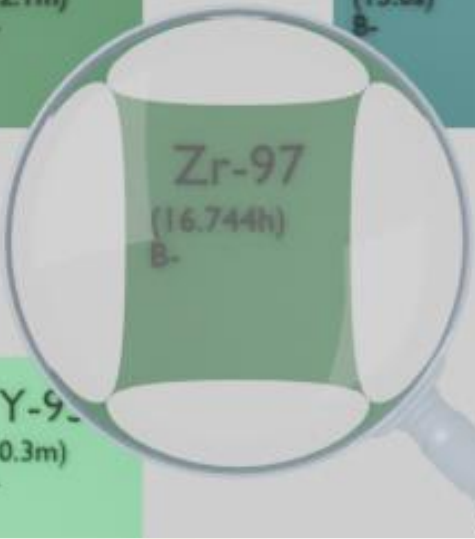




ND-94 (2.03E+4y) B-	ND-95 (34.991d) B-	ND-96 (23.35h) B-	ND-97 (72.1m) B-	ND-99 (15.0s) B-
Zr-93 (1.53E+6y) B-	Zr-94 (STABLE)	Zr-95 (64.032d) B-	Zr-97 (16.744h) B-	
Y-92 (1.54h) B-	Y-93 (10.18h) B-	Y-94 (18.7m) B-	Y-96 (10.3m) B-	

ZIRCONIUM-97

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Zr-97
Atomic number (Z): 40
Mass number (A): 97
Neutron number (N): 57

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 16.74 [h]
Decay constant: $1.1499\text{e-}05$ [1/s]
Daughters: Nb-97 (100.0%)
Radioactive daughters: Nb-97

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.72121 [MeV]
Mean photon energy: 0.87923 [MeV]
Air kerma rate constant, Γ_{10} : $3.255\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $3.255\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $1.156\text{e-}13$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

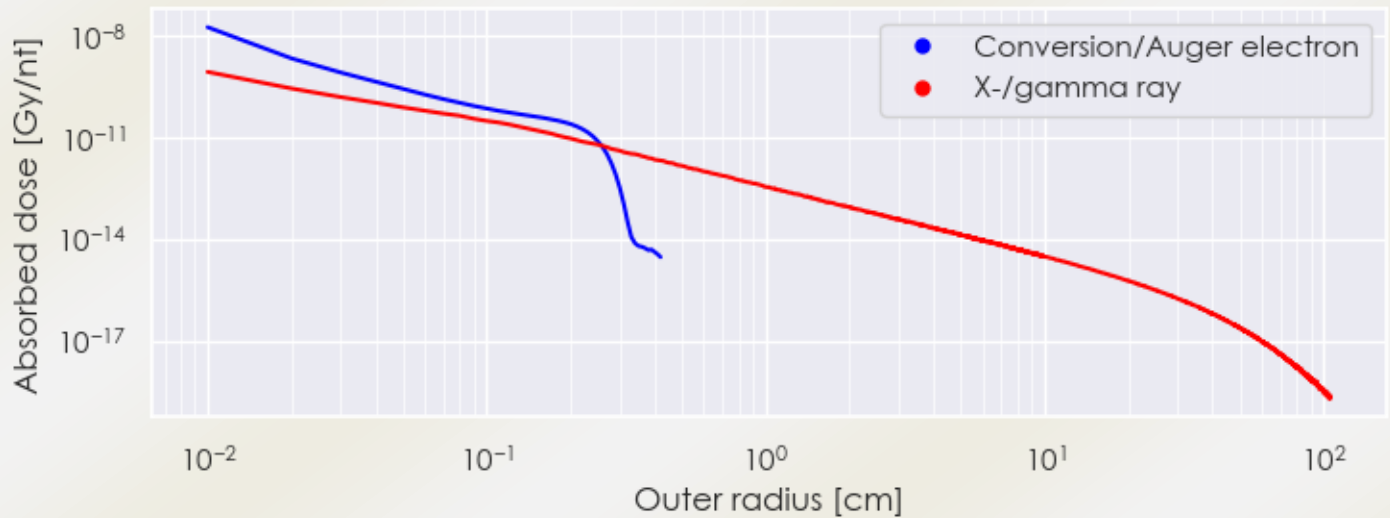
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 1.156×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.409×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

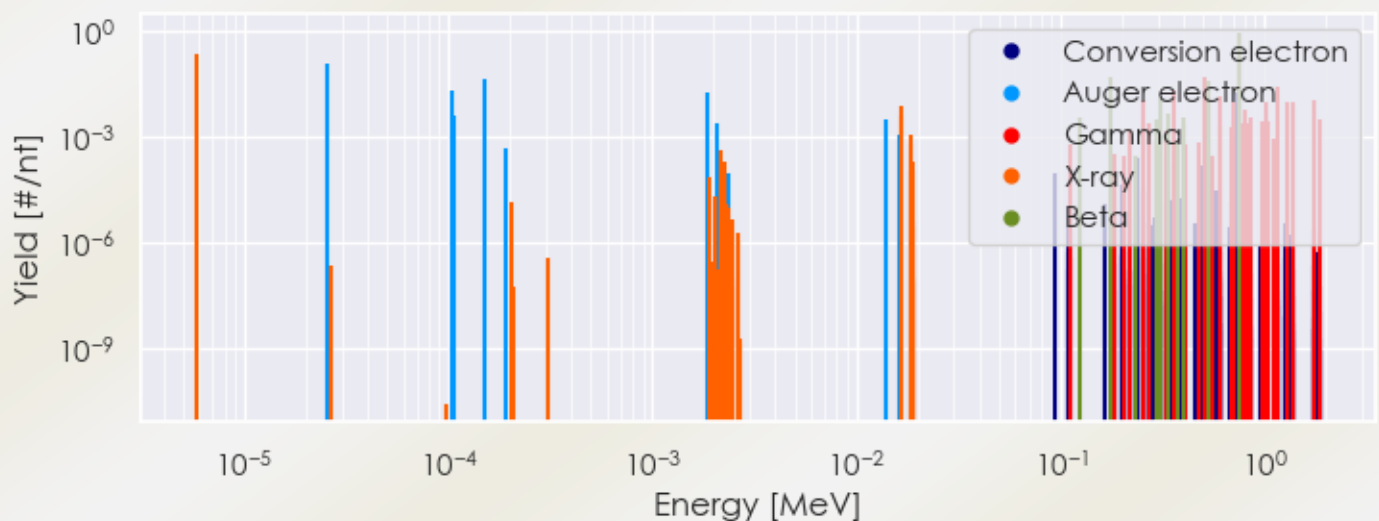
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Zr-97 DPK.csv

SUMMARY SPECTRA (PLOT)

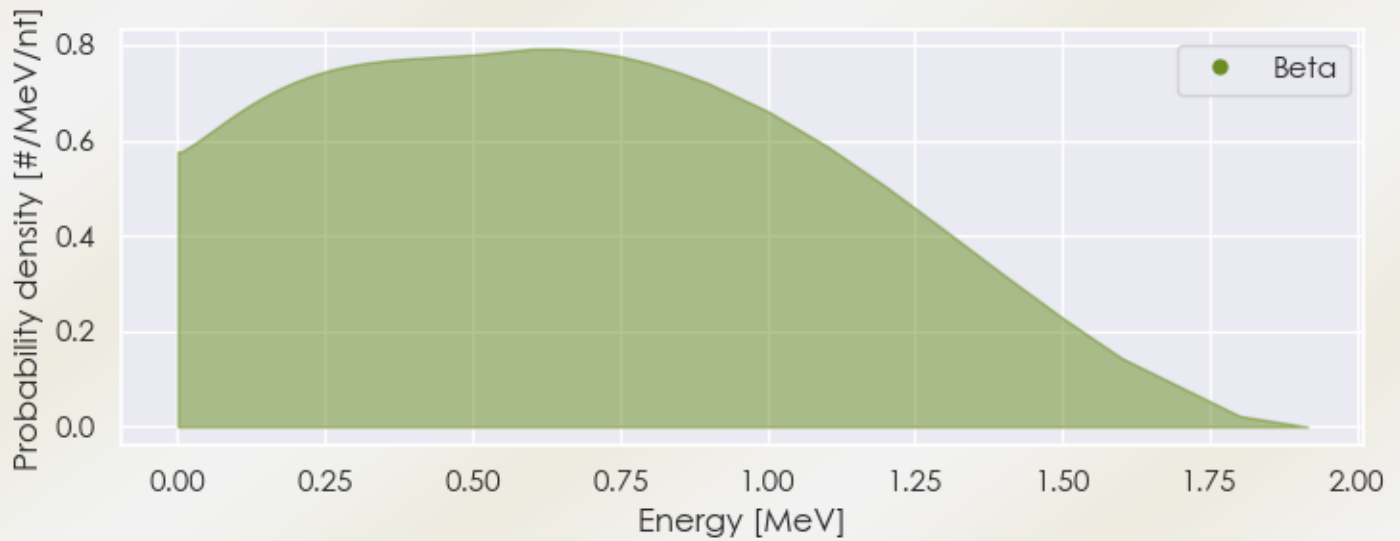
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Zr-97 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/Zr-97 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/Zr-97 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
5.83036e-06	2.318e-01	X-ray
2.54170e-01	1.145e-02	Gamma
3.55400e-01	2.094e-02	Gamma
5.07640e-01	5.025e-02	Gamma
6.02370e-01	1.377e-02	Gamma
7.03760e-01	1.014e-02	Gamma
7.43360e-01	9.306e-01	Gamma
1.02120e+00	1.014e-02	Gamma
1.14797e+00	2.615e-02	Gamma
1.36268e+00	1.024e-02	Gamma

1.75024e+00	1.089e-02	Gamma
1.75634e-01	4.963e-02	Beta
3.09506e-01	1.186e-02	Beta
5.28575e-01	3.918e-02	Beta
7.56837e-01	8.821e-01	Beta
2.53266e-05	1.141e-01	Auger electron
1.03596e-04	1.954e-02	Auger electron
1.48934e-04	4.627e-02	Auger electron
1.85296e-03	1.866e-02	Auger electron
7.24412e-01	1.748e-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