



	IND-87 (3.75m) ECB+	IND-88 (14.5m)	IND-89 (2.03h) ECB+	IND-90 (14.60h) ECB+	IND-91 (680y) ECB+	IND-92 (3.47E+7y) EC
Zr-85 (7.86m) ECB+	Zr-86 (1.68h) ECB+	Zr-87 (1.68h) ECB+	Zr-88 (83.1d) ECB+	Zr-89 (78.41h) ECB+	Zr-90 (STABLE)	Zr-91 (STABLE)
Y-83 (7.08m) ECB+	Y-84 (2.68h) ECB+	Y-85 (79.8h) ECB+	Y-86 (106.65d) ECB+	Y-87 (106.65d) ECB+	Y-88 (106.65d) ECB+	Y-89 (STABLE)
						Y-90 (64.10h) B-

ZIRCONIUM-87

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Zr-87
Atomic number (Z): 40
Mass number (A): 87
Neutron number (N): 47

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 1.68 [h]
Decay constant: 1.1461×10^{-4} [1/s]
Daughters: Y-87m (99.7%), Y-87 (0.296%)
Radioactive daughters: Y-87m, Y-87

DOSIMETRIC CONSTANTS

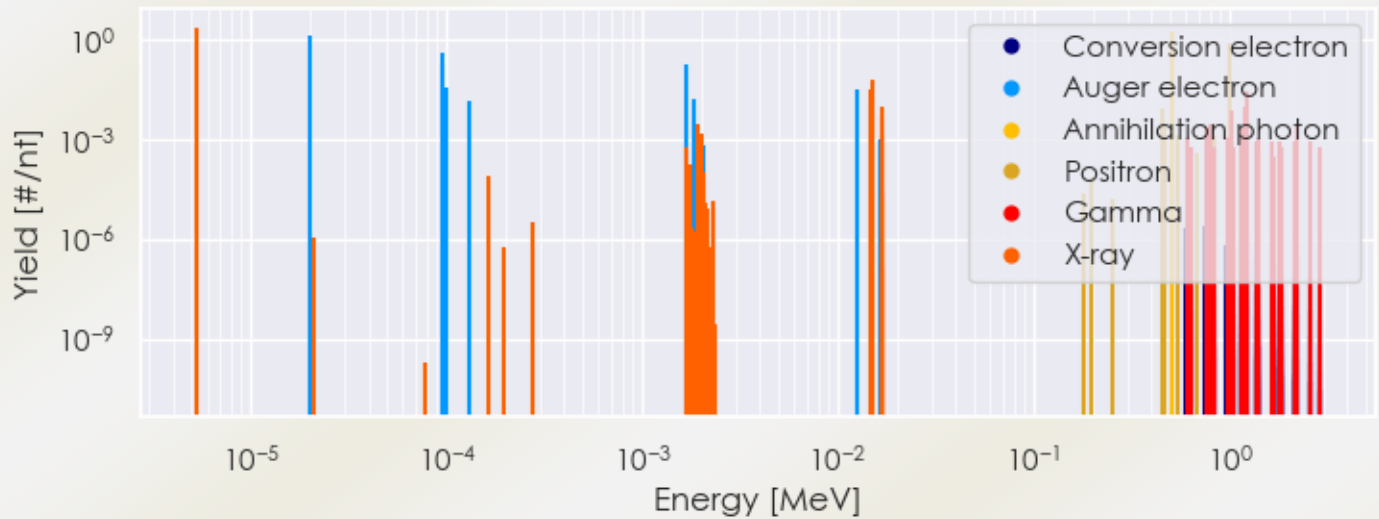
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.82177 [MeV]
Mean photon energy: 0.92706 [MeV]
Air kerma rate constant, Γ_{10} : 5.814×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 3.748×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.317×10^{-13} [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, $\Delta_{\beta,\beta^+,e^-}$: $1.317\text{e-}13$ [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : $1.485\text{e-}13$ [Gy·kg/Bq·s]

SUMMARY SPECTRA (PLOT)

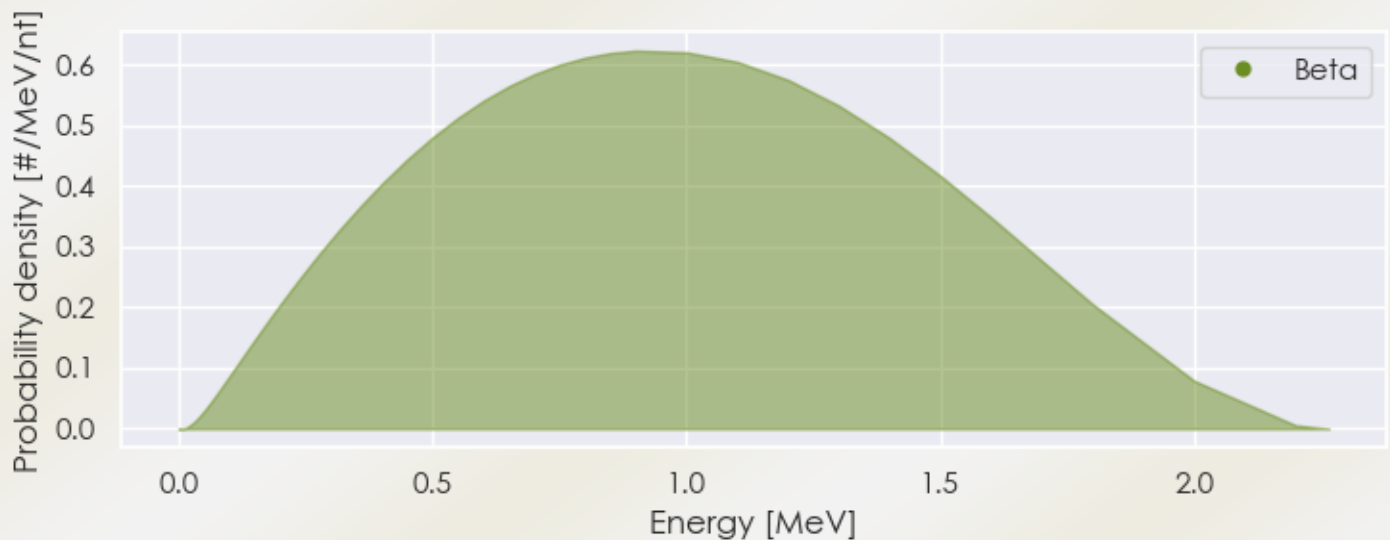
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: [www.mirdsoft.org/products/MIRDspecs/Zr-87 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Zr-87%20Summary%20Spectrum.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-87 Beta Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Zr-87%20Beta%20Spectrum.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-87 Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Zr-87%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
5.29809e-06	2.381e+00	X-ray
1.48403e-02	3.283e-02	X-ray
1.49185e-02	6.290e-02	X-ray
5.11000e-01	1.636e+00	Annihilation photon
1.22700e+00	2.800e-02	Gamma
1.01212e+00	8.038e-01	Positron
2.02938e-05	1.325e+00	Auger electron
9.45918e-05	4.060e-01	Auger electron
9.61265e-05	1.812e-01	Auger electron
1.00854e-04	3.767e-02	Auger electron
1.31750e-04	1.494e-02	Auger electron
1.66231e-03	1.706e-01	Auger electron
1.82712e-03	1.707e-02	Auger electron
1.26657e-02	3.377e-02	Auger electron
1.45497e-02	1.174e-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