

Zr-83 (7.86m) ECB+	Zr-86 (16.5h) ECB+	Zr-87 (1.68h) ECB+	Zr-88 (83.4d)	Zr-89 (78.41h) ECB+	Zr-90 (STABLE)	Zr-91 (STABLE)	Zr-92 (STABLE)
Y-83 (7.08m) CB+		Y-85 (2.68h) ECB+	Y-86 (1.1h) ECB+	Y-87m (13.37h) IT/ECB+	Y-89 (STABLE)	Y-90 (64.10h) B-	Y-91 (58.51d) B-
Sr-82 (25.36d) B-	Sr-83 (32.41h) ECB+	Sr-84 (STABLE)	Sr-86 (64.84d) EC	Sr-87 (4.98h) EC	Sr-88 (STABLE)	Sr-89 (50.53d) B-	Sr-90 (28.79y) B-

YTTRIUM-87M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Y-87m
Atomic number (Z): 39
Mass number (A): 87
Neutron number (N): 48

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture, Internal transition
Half-life: 13.37 [h]
Decay constant: 1.4401×10^{-5} [1/s]
Daughters: Y-87 (98.4%), Sr-87 (1.57%)
Radioactive daughters: Y-87

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.07941 [MeV]
Mean photon energy: 0.30719 [MeV]
Air kerma rate constant, Γ_{10} : 1.434×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 1.463×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.272×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

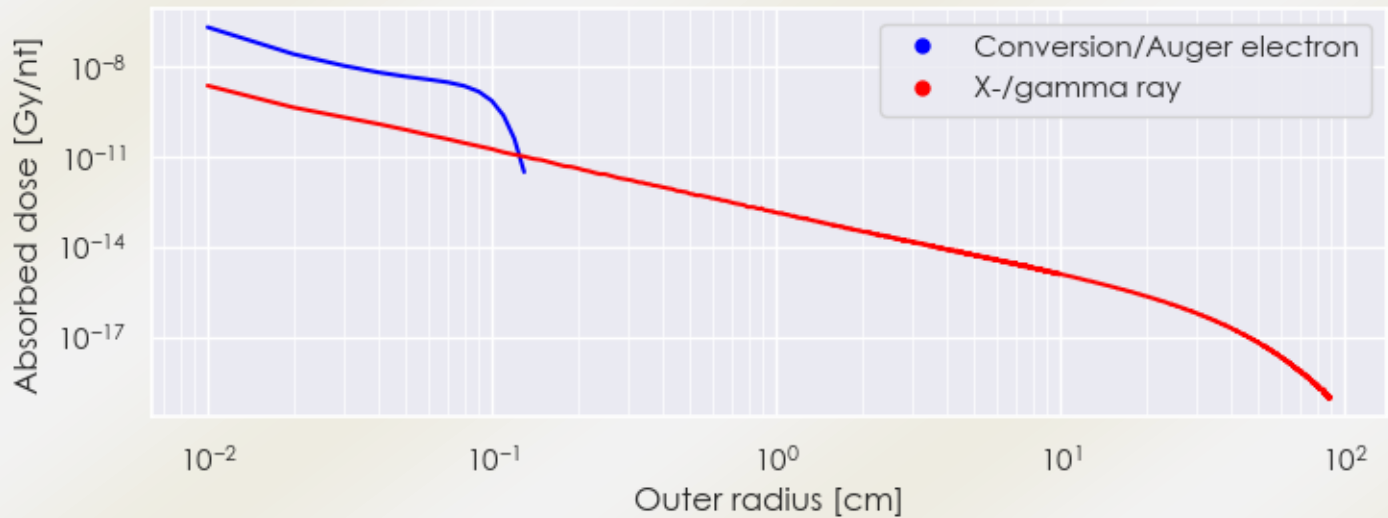
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 1.272×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 4.922×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

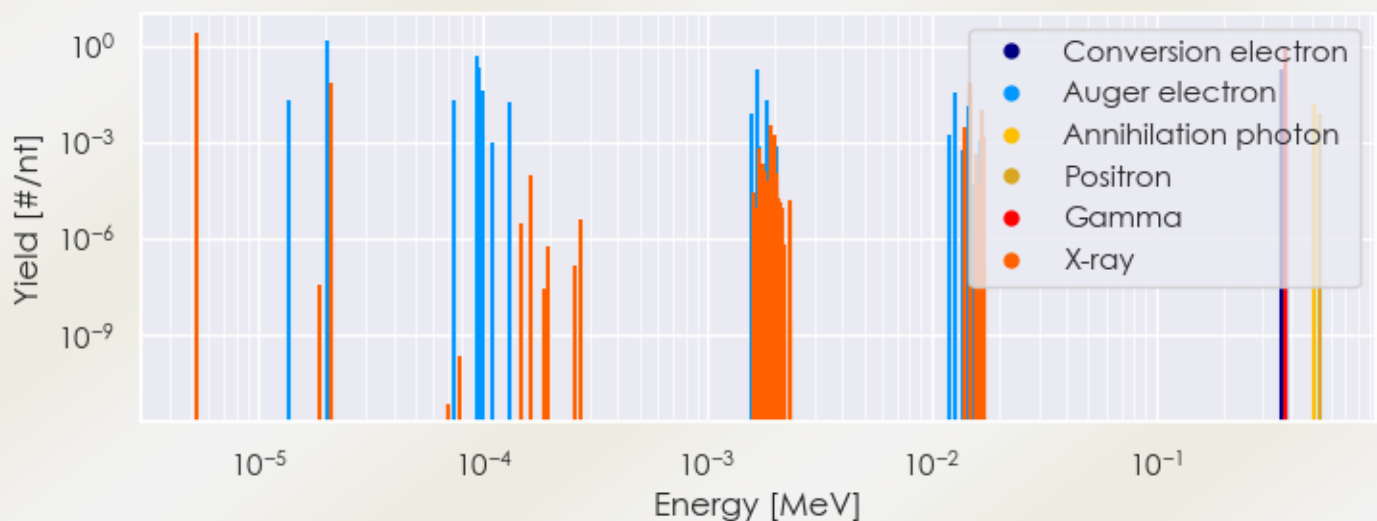
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Y-87m DPK.csv

SUMMARY SPECTRA (PLOT)

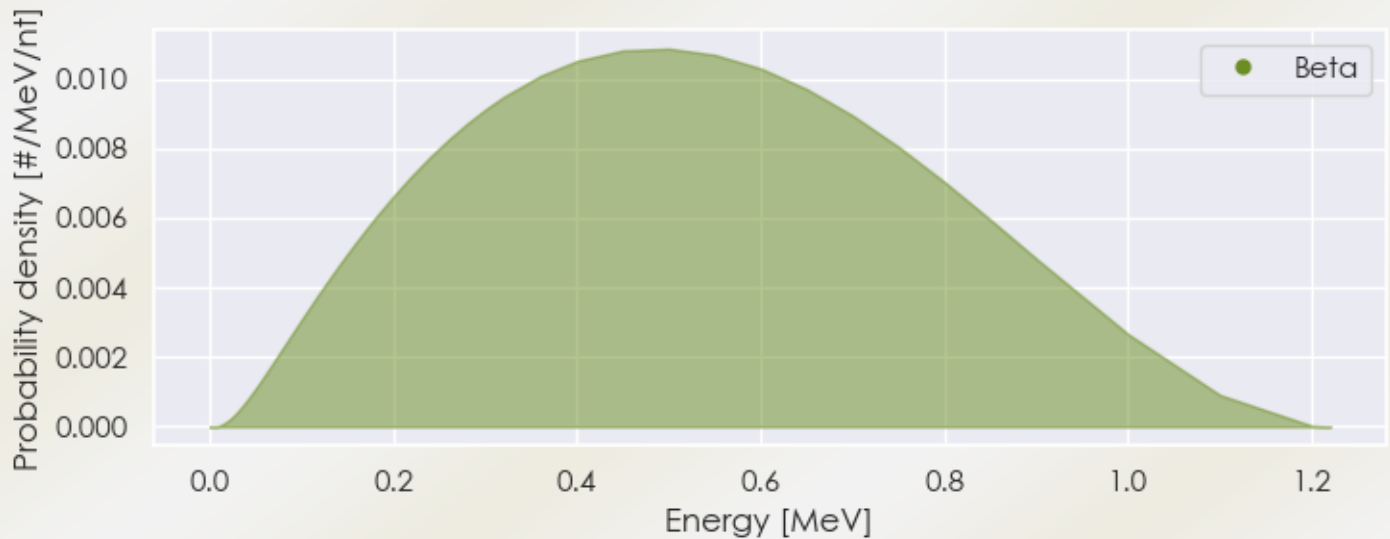
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Y-87m 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/Y-87m 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/Y-87m Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
5.29808e-06	2.633e+00	X-ray
2.09354e-05	6.833e-02	X-ray
1.48403e-02	3.538e-02	X-ray
1.49185e-02	6.778e-02	X-ray
1.67001e-02	1.023e-02	X-ray
3.80790e-01	7.815e-01	Gamma
5.11000e-01	1.500e-02	Annihilation photon
1.36397e-05	1.904e-02	Auger electron
2.02944e-05	1.465e+00	Auger electron
7.49565e-05	1.899e-02	Auger electron

9.45763e-05	4.490e-01	Auger electron
9.61884e-05	2.003e-01	Auger electron
1.00664e-04	4.142e-02	Auger electron
1.31719e-04	1.652e-02	Auger electron
1.66240e-03	1.888e-01	Auger electron
1.82718e-03	1.890e-02	Auger electron
1.26657e-02	3.639e-02	Auger electron
1.45497e-02	1.265e-02	Auger electron
3.63790e-01	1.711e-01	Conversion electron
3.78435e-01	2.091e-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