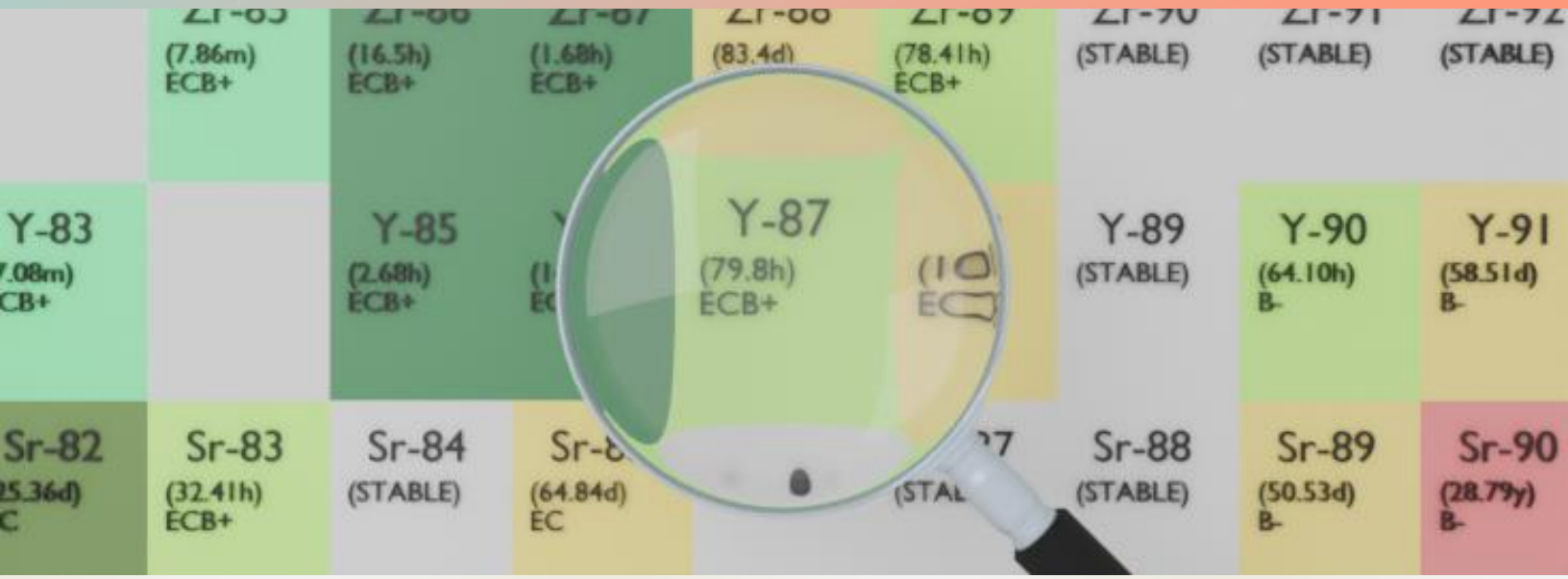


YTTRIUM-87

SUMMARY DATA

GENERAL

CLASSIFICATION

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

RADIOACTIVE DECAY

Decay modes: β+, Electron capture
Half-life: 79.8 [h]
Decay constant: 2.4128e-06 [1/s]
Daughters: Sr-87m (100.0%)
Radioactive daughters: Sr-87m

DOSIMETRIC CONSTANTS

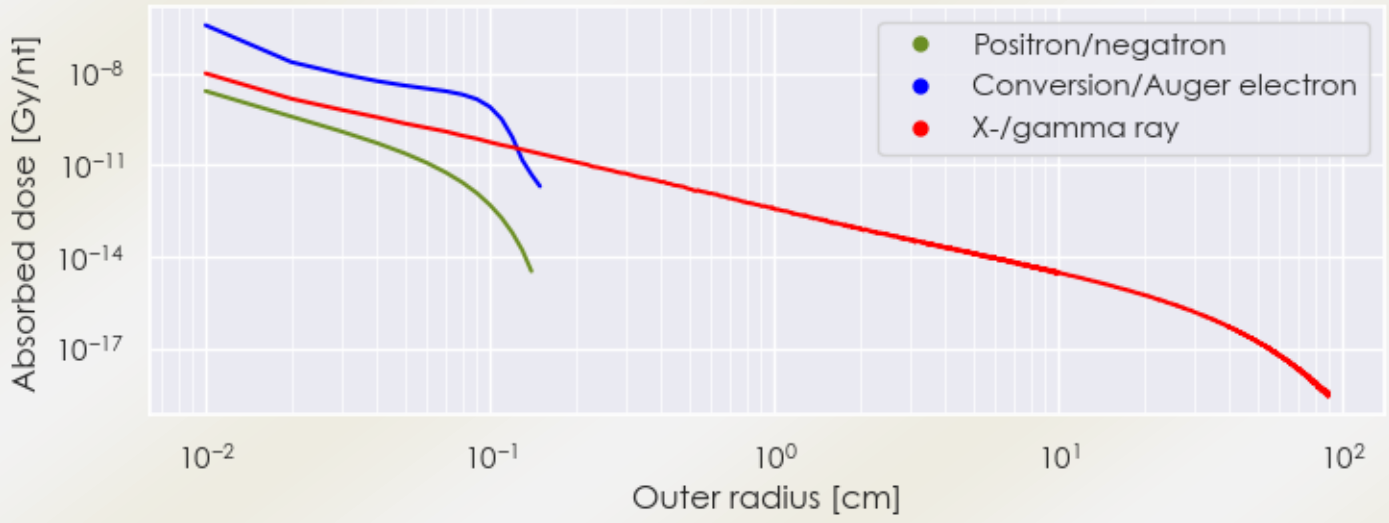
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.00715 [MeV]
Mean photon energy: 0.44622 [MeV]
Air kerma rate constant, Γ_{10}: 3.338e-17 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air}: 3.345e-17 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (a and/or electrons), Δ_{wp}: 1.146e-15 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{a}: 0.000e+00 [Gy·kg/Bq·s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta-,\beta+,e-}$: 1.146e-15 [Gy·kg/Bq·s]
Equilibrium dose constant for photons, Δ_{p}: 7.149e-14 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

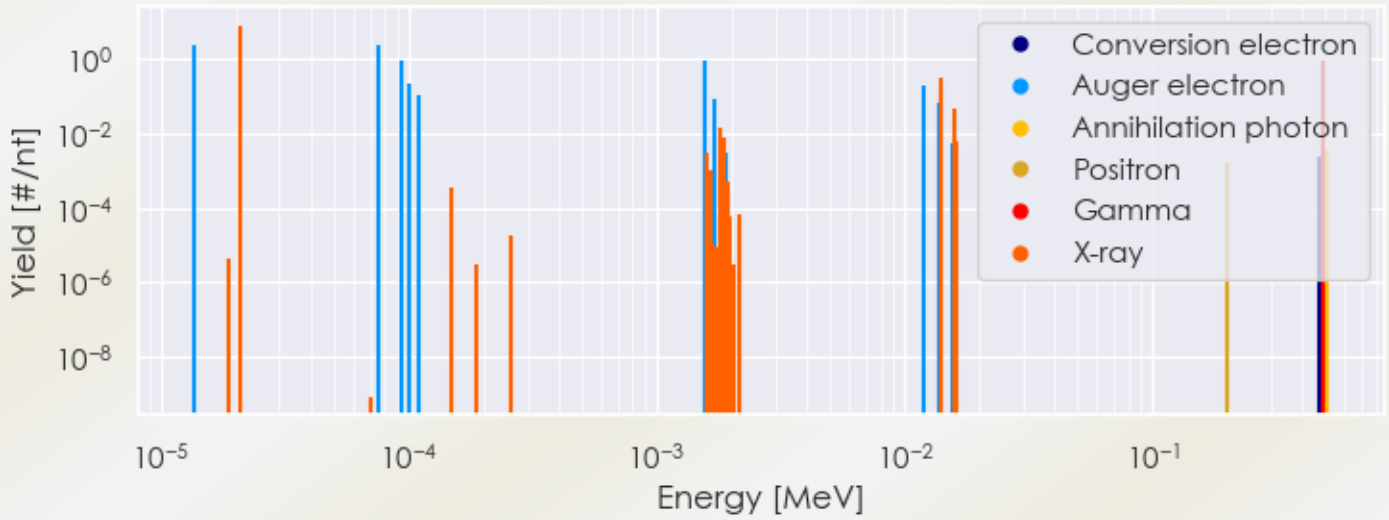
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



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

SUMMARY SPECTRA (PLOT)

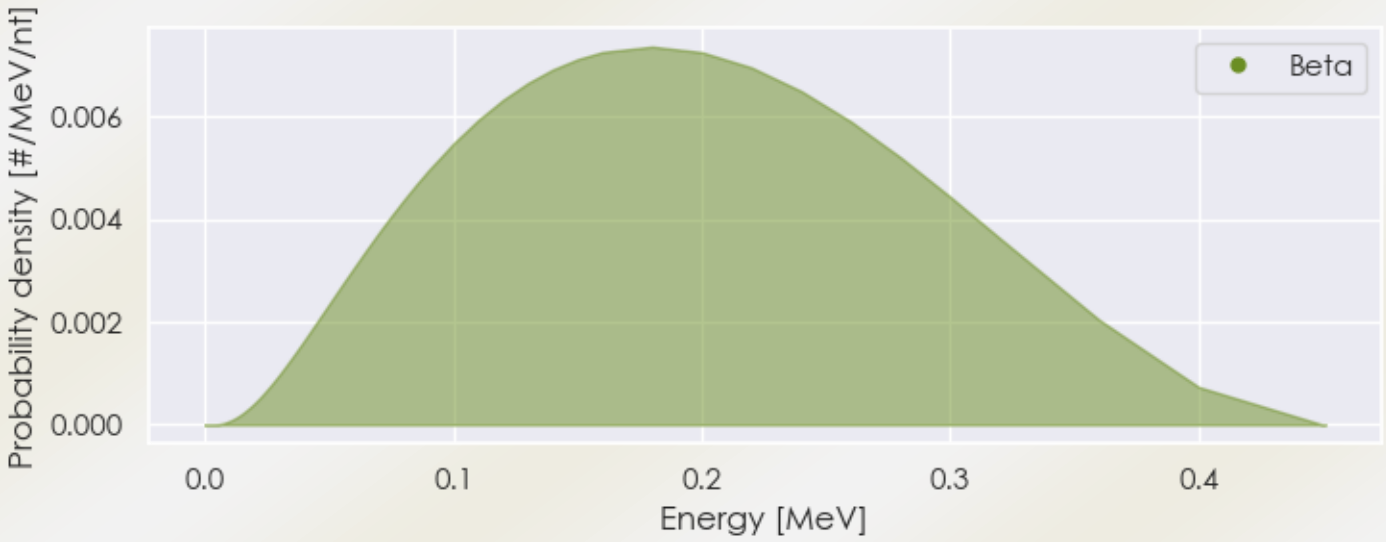
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



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

Energy [MeV]	Yield [#/nt] if > 0.01	Radiation type
2.09352e-05	8.340e+00	X-ray
1.79939e-03	1.492e-02	X-ray
1.40549e-02	1.757e-01	X-ray
1.41246e-02	3.373e-01	X-ray
1.57867e-02	2.564e-02	X-ray
1.57975e-02	4.998e-02	X-ray
4.84805e-01	8.984e-01	Gamma
1.36397e-05	2.325e+00	Auger electron
7.49589e-05	2.318e+00	Auger electron
9.39171e-05	9.846e-01	Auger electron

1.00592e-04	2.124e-01	Auger electron
1.09930e-04	1.124e-01	Auger electron
1.57338e-03	9.690e-01	Auger electron
1.71380e-03	8.617e-02	Auger electron
1.20238e-02	2.008e-01	Auger electron
1.37890e-02	6.804e-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/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6