



TERBIUM-147M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Tb-147m
Atomic number (Z): 65
Mass number (A): 147
Neutron number (N): 82

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 1.87 [m]
Decay constant: $6.1778\text{e-}03$ [1/s]
Daughters: Gd-147 (100.0%)
Radioactive daughters: Gd-147

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.31957 [MeV]
Mean photon energy: 1.91163 [MeV]
Air kerma rate constant, Γ_{10} : $5.222\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : $6.438\text{e-}17$ [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $5.120\text{e-}14$ [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [Gy $\cdot$ kg/Bq $\cdot$ s]

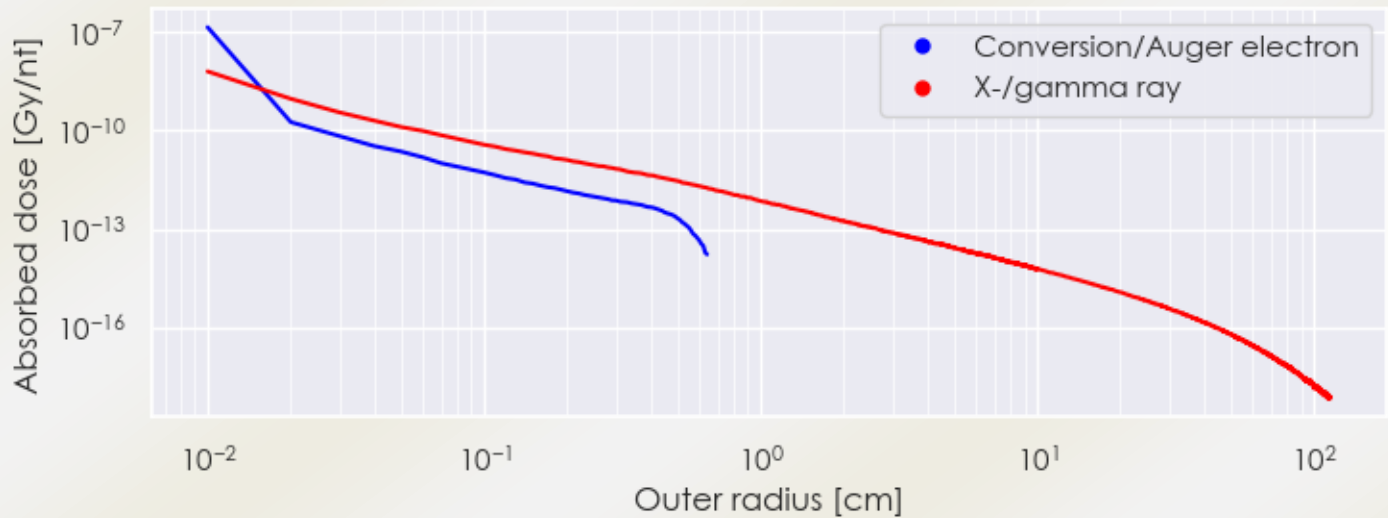
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 5.120×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.063×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

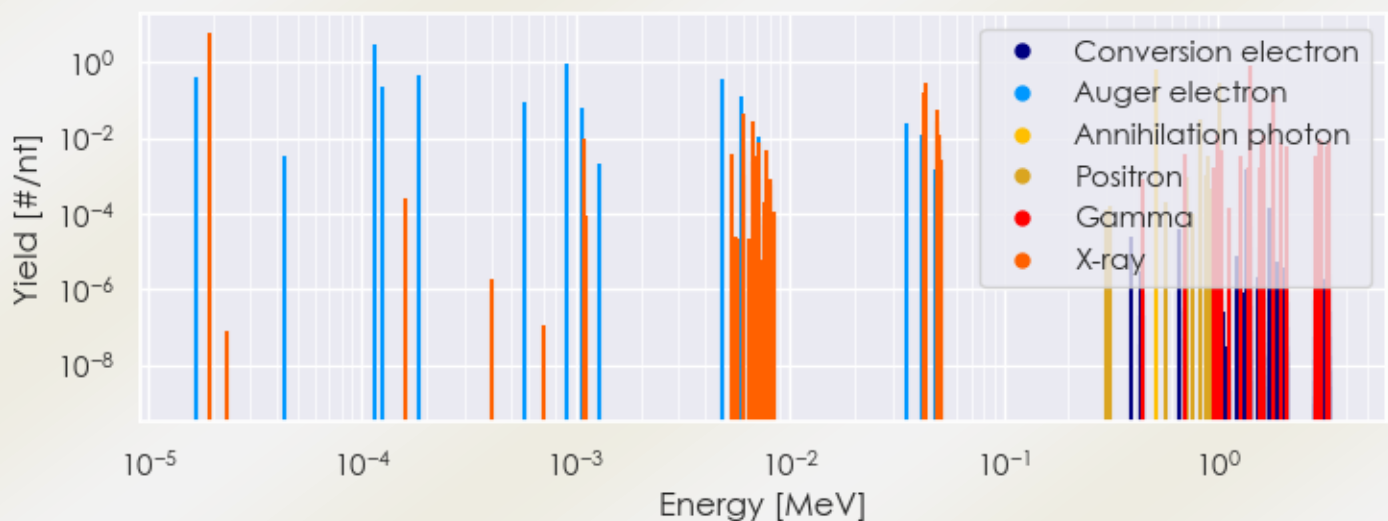
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Tb-147m DPK.csv

SUMMARY SPECTRA (PLOT)

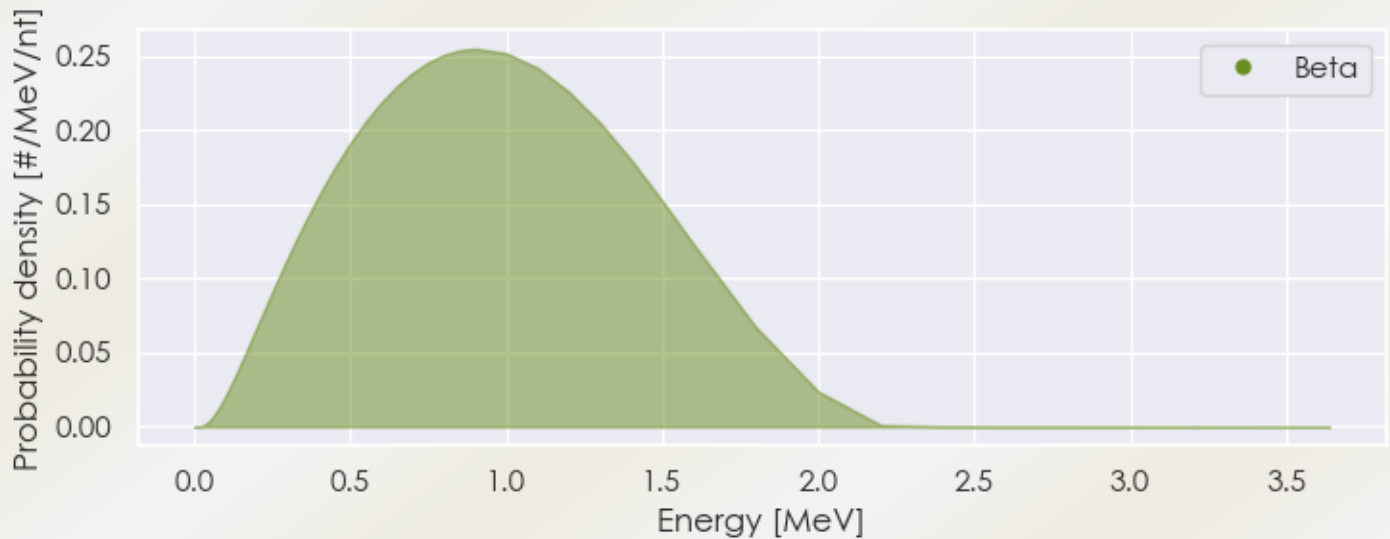
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Tb-147m 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/Tb-147m 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/Tb-147m Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.94296e-05	6.199e+00	X-ray
6.04290e-03	4.348e-02	X-ray
6.71540e-03	2.802e-02	X-ray
4.23559e-02	1.550e-01	X-ray
4.30603e-02	2.787e-01	X-ray
4.86161e-02	2.833e-02	X-ray
4.87612e-02	5.479e-02	X-ray
5.00239e-02	1.208e-02	X-ray
5.11000e-01	6.281e-01	Annihilation photon

9.97200e-01	1.178e-02	Gamma
1.39730e+00	7.850e-01	Gamma
1.64280e+00	1.178e-02	Gamma
1.79830e+00	1.429e-01	Gamma
8.31259e-01	3.230e-02	Positron
1.01215e+00	2.744e-01	Positron
1.68638e-05	4.166e-01	Auger electron
1.13378e-04	2.789e+00	Auger electron
1.23678e-04	2.293e-01	Auger electron
1.82282e-04	4.359e-01	Auger electron
5.72866e-04	8.825e-02	Auger electron
8.97963e-04	9.392e-01	Auger electron
1.07586e-03	6.377e-02	Auger electron
4.77209e-03	3.453e-01	Auger electron
5.92820e-03	1.211e-01	Auger electron
7.11901e-03	1.052e-02	Auger electron
3.47387e-02	2.418e-02	Auger electron
4.11460e-02	1.197e-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