



Dy-146 (3.3m) ECB+	Dy-147 (4.20m) ECB+	Dy-150 (7.17m) ECB+A	Dy-151 (17.9m)	Dy-152 (2.38h) ECA	Dy-153 (6.4h) ECB+A	Dy-154 (3.0E+6y) A	Dy-155 (9.9h) ECB+
Tb-146 (23s) CB+	Tb-147 (1.64h) ECB+	Tb-148 (60m) ECB+	Tb-150 (3.48h) ECB+A	Tb-151 (1.7h) ECB+	Tb-152 (17.5h) ECB+	Tb-153 (2.34d) ECB+	Tb-154 (21.5h) ECB+
Gd-145 (13.0m) CB+	Gd-146 (48.27d) EC	Gd-147 (38.1h) ECB+	Gd-150 (74.6y) A	Gd-151 (1.79E+11y) A	Gd-152 (124d) ECA	Gd-153 (1.08E+14y) A	Gd-154 (240.4d) EC

TERBIUM-150

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Tb-150
Atomic number (Z): 65
Mass number (A): 150
Neutron number (N): 85

RADIOACTIVE DECAY

Decay modes: α , β^+ , Electron capture
Half-life: 3.48 [h]
Decay constant: 5.5328e-05 [1/s]
Daughters: Gd-150 (100.0%), Eu-146 (0.0007%)
Radioactive daughters: Gd-150, Eu-146

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.28896 [MeV]
Mean photon energy: 2.44026 [MeV]
Air kerma rate constant, Γ_{10} : 7.189e-17 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air} : 8.037e-17 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 4.630e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

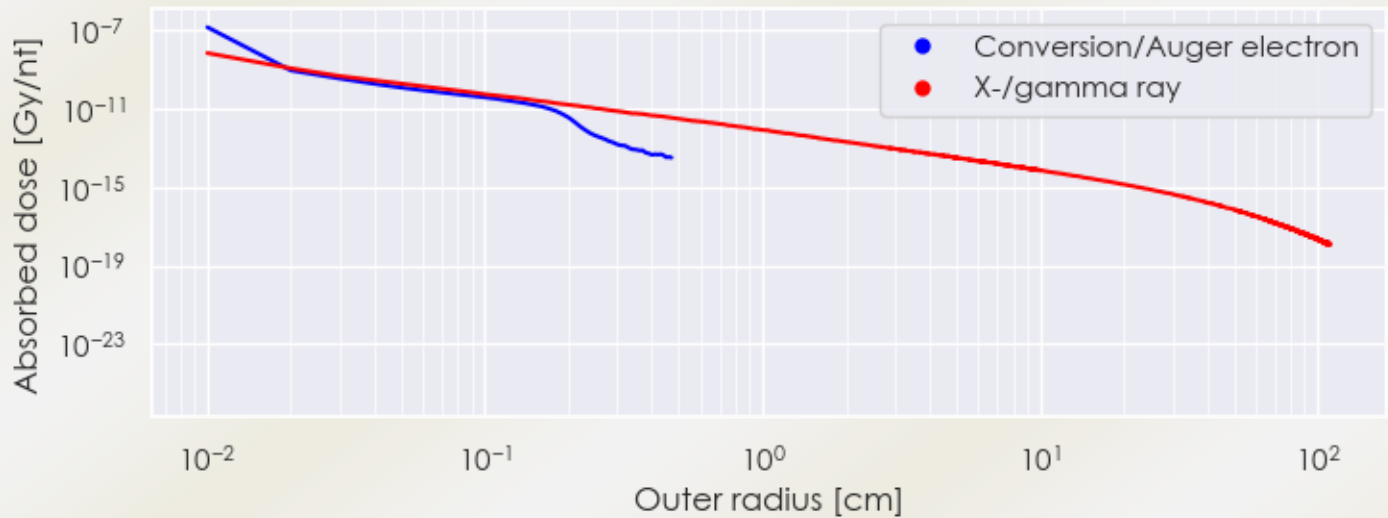
Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 4.630e-14 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 3.910e-13 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

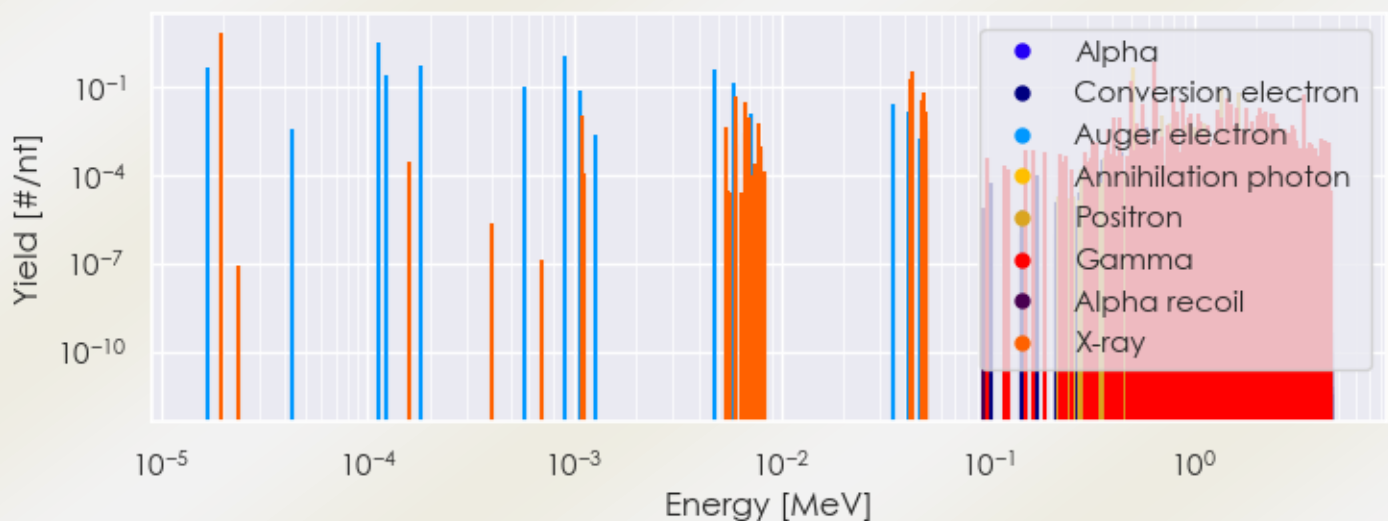
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Tb-150 DPK.csv

SUMMARY SPECTRA (PLOT)

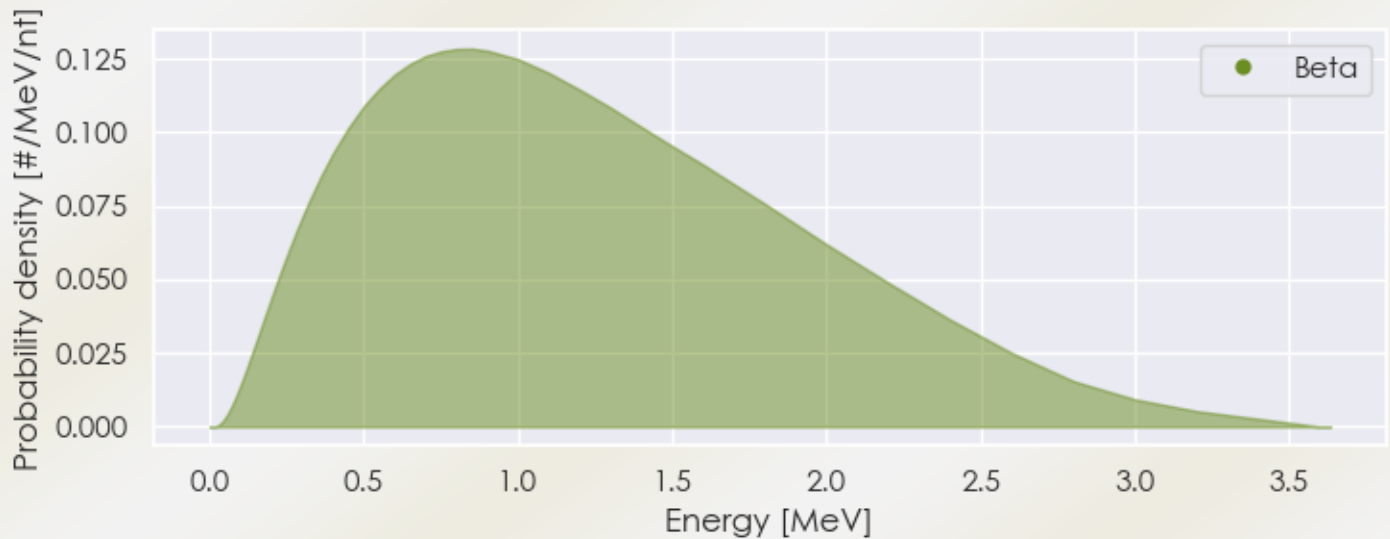
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Tb-150 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-150 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-150 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.94300e-05	7.115e+00	X-ray
1.09485e-03	1.083e-02	X-ray
6.04290e-03	4.976e-02	X-ray
6.71540e-03	3.209e-02	X-ray
4.23559e-02	1.769e-01	X-ray
4.30603e-02	3.181e-01	X-ray
4.86161e-02	3.233e-02	X-ray
4.87612e-02	6.253e-02	X-ray
5.00239e-02	1.379e-02	X-ray
4.96242e-01	1.462e-01	Gamma

5.11000e-01	4.382e-01	Annihilation photon
5.65640e-01	1.123e-02	Gamma
5.69083e-01	2.498e-02	Gamma
6.38050e-01	7.200e-01	Gamma
6.50360e-01	4.032e-02	Gamma
7.92385e-01	4.392e-02	Gamma
8.21067e-01	1.404e-02	Gamma
8.80270e-01	2.952e-02	Gamma
9.54460e-01	1.195e-02	Gamma
1.04560e+00	1.282e-02	Gamma
1.29166e+00	1.642e-02	Gamma
1.43046e+00	2.448e-02	Gamma
1.45355e+00	3.888e-02	Gamma
1.51834e+00	2.736e-02	Gamma
1.59251e+00	1.966e-02	Gamma
1.78891e+00	1.930e-02	Gamma
2.01630e+00	1.073e-02	Gamma
2.09156e+00	1.865e-02	Gamma
2.14844e+00	1.174e-02	Gamma
2.20758e+00	1.310e-02	Gamma
2.36493e+00	1.174e-02	Gamma
2.42598e+00	1.224e-02	Gamma
3.38360e+00	5.760e-02	Gamma
1.35657e+00	8.965e-02	Positron
1.63580e+00	5.977e-02	Positron
1.68638e-05	4.783e-01	Auger electron
1.13376e-04	3.201e+00	Auger electron
1.23727e-04	2.632e-01	Auger electron
1.82297e-04	5.008e-01	Auger electron
5.73485e-04	1.024e-01	Auger electron
8.98011e-04	1.077e+00	Auger electron
1.07597e-03	7.314e-02	Auger electron
4.77316e-03	3.959e-01	Auger electron
5.92940e-03	1.389e-01	Auger electron
7.12041e-03	1.206e-02	Auger electron
3.47386e-02	2.760e-02	Auger electron
4.11460e-02	1.367e-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