



Dy-147 (1.20m) EC ⁺	Dy-150 (7.17m) ECB+A	Dy-151 (17.9m) ECB+A	Dy-152 (2.38h) ECA	Dy-153 (6.4h) EC	Dy-154 (3.0E+6y) A	Dy-155 (9.9h) ECB ⁺	Dy-156 (STABLE)	Dy-157 (8.14h) EC
Tb-148 (50m) CB ⁺	Tb-149 (4.118h) ECB+A	Tb-150 (3.48h) ECB+A	Tb-152 (17.5h) ECB⁺	Tb-153 (2.32h) EC	Tb-154 (21.5h) ECB ⁺	Tb-155 (5.32d) EC	Tb-156 (5.35d) EC	Tb-157 (5.35d) EC
Gd-147 (18.1h) CB ⁺	Gd-148 (74.6y) A	Gd-149 (9.28d) ECB ⁺	Gd-150 (1.79E+6y) A	Gd-151 (1.08E+6y) A	Gd-152 (1.08E+6y) A	Gd-153 (240.4d) EC	Gd-154 (STABLE)	Gd-155 (STABLE)

TERBIUM-152

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Tb-152
Atomic number (Z): 65
Mass number (A): 152
Neutron number (N): 87

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 17.5 [h]
Decay constant: 1.1002e-05 [1/s]
Daughters: Gd-152 (100.0%)
Radioactive daughters: Gd-152

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.25033 [MeV]
Mean photon energy: 1.49324 [MeV]
Air kerma rate constant, Γ_{10} : 4.420e-17 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air} : 5.178e-17 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 4.011e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

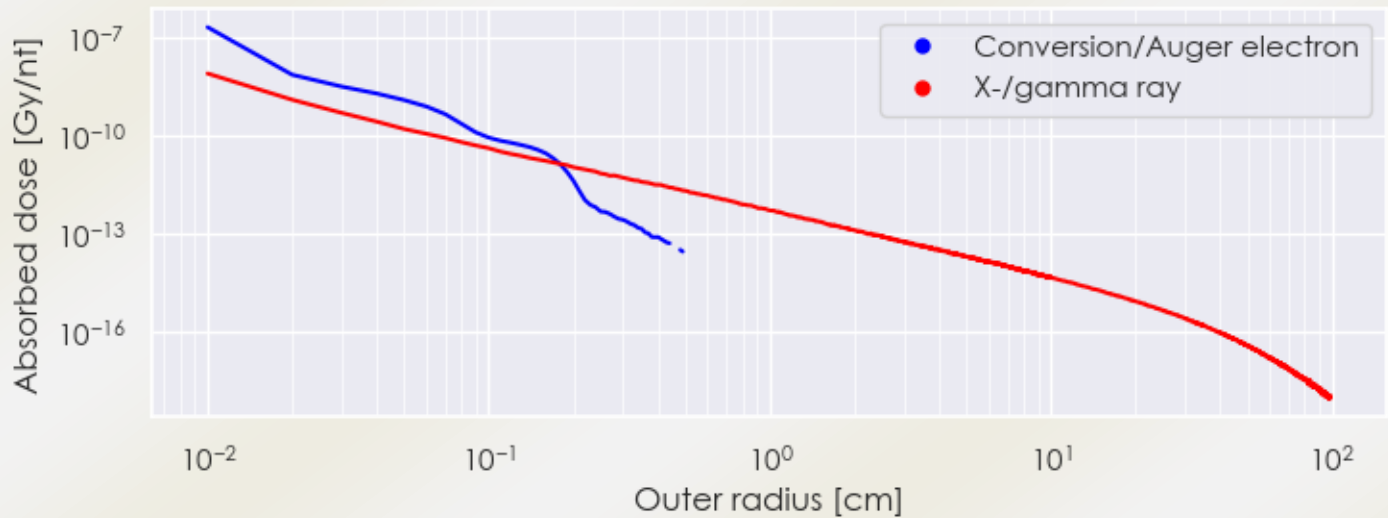
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 4.011e-14 [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.392e-13 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

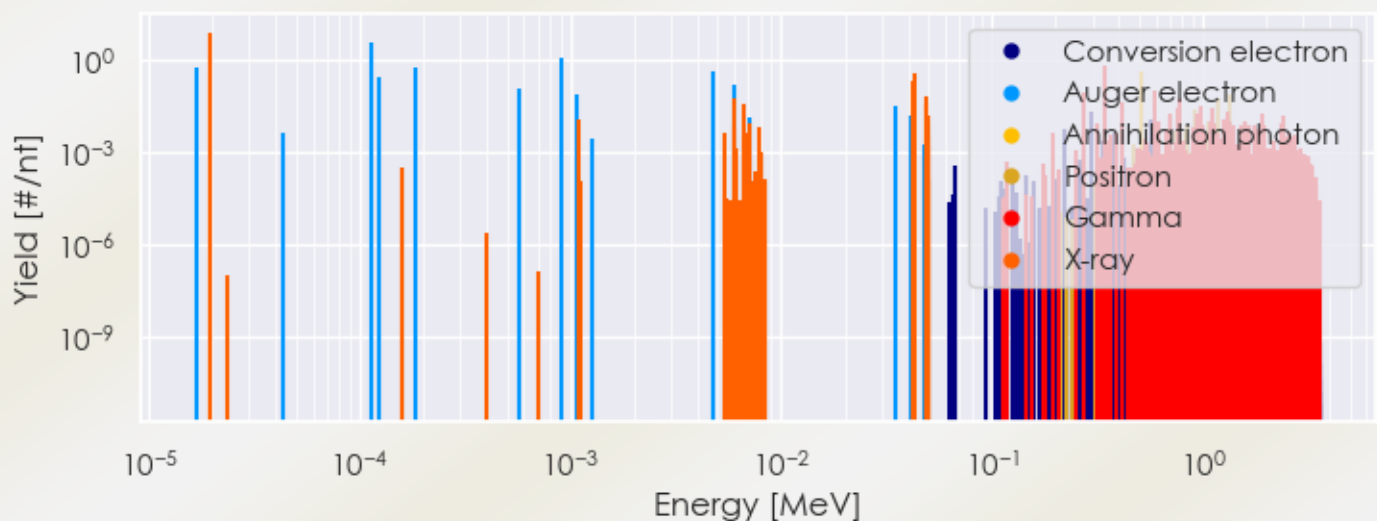
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Tb-152 DPK.csv

SUMMARY SPECTRA (PLOT)

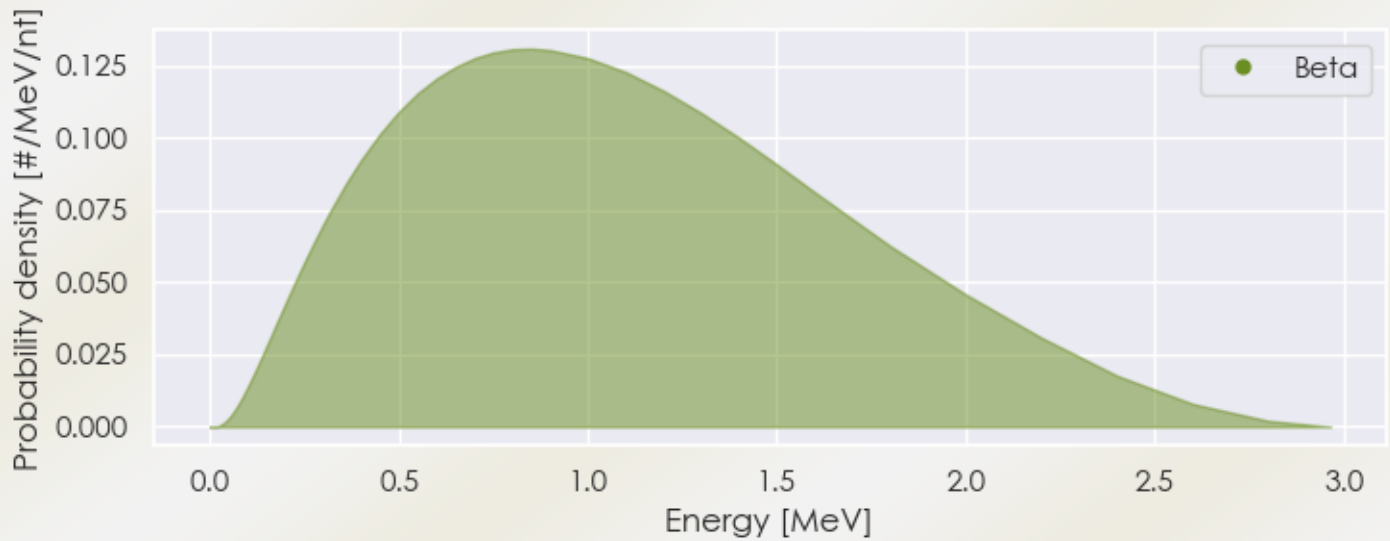
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Tb-152 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-152 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-152 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.94297e-05	7.794e+00	X-ray
1.09481e-03	1.187e-02	X-ray
6.04290e-03	5.458e-02	X-ray
6.71540e-03	3.530e-02	X-ray
4.23559e-02	1.937e-01	X-ray
4.30603e-02	3.483e-01	X-ray
4.86161e-02	3.539e-02	X-ray
4.87612e-02	6.846e-02	X-ray
5.00239e-02	1.510e-02	X-ray
2.71080e-01	8.580e-02	Gamma

3.44280e-01	6.500e-01	Gamma
4.11080e-01	4.095e-02	Gamma
5.11000e-01	3.916e-01	Annihilation photon
5.86290e-01	9.425e-02	Gamma
7.03340e-01	1.690e-02	Gamma
7.64880e-01	2.925e-02	Gamma
7.78860e-01	5.785e-02	Gamma
9.30700e-01	1.820e-02	Gamma
9.74100e-01	3.120e-02	Gamma
1.08990e+00	1.001e-02	Gamma
1.10920e+00	2.665e-02	Gamma
1.26140e+00	1.079e-02	Gamma
1.29911e+00	2.145e-02	Gamma
1.31470e+00	1.430e-02	Gamma
1.90240e+00	1.904e-02	Gamma
2.40500e+00	1.489e-02	Gamma
9.18213e-01	2.295e-02	Positron
1.18447e+00	5.987e-02	Positron
1.33602e+00	6.984e-02	Positron
1.68638e-05	5.238e-01	Auger electron
1.13378e-04	3.507e+00	Auger electron
1.23684e-04	2.884e-01	Auger electron
1.82314e-04	5.481e-01	Auger electron
5.72866e-04	1.112e-01	Auger electron
8.97981e-04	1.181e+00	Auger electron
1.07589e-03	8.016e-02	Auger electron
4.77265e-03	4.340e-01	Auger electron
5.92880e-03	1.522e-01	Auger electron
7.11966e-03	1.322e-02	Auger electron
3.47386e-02	3.022e-02	Auger electron
4.11460e-02	1.496e-02	Auger electron
2.93977e-01	2.021e-02	Conversion electron
5.65297e-01	1.094e-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