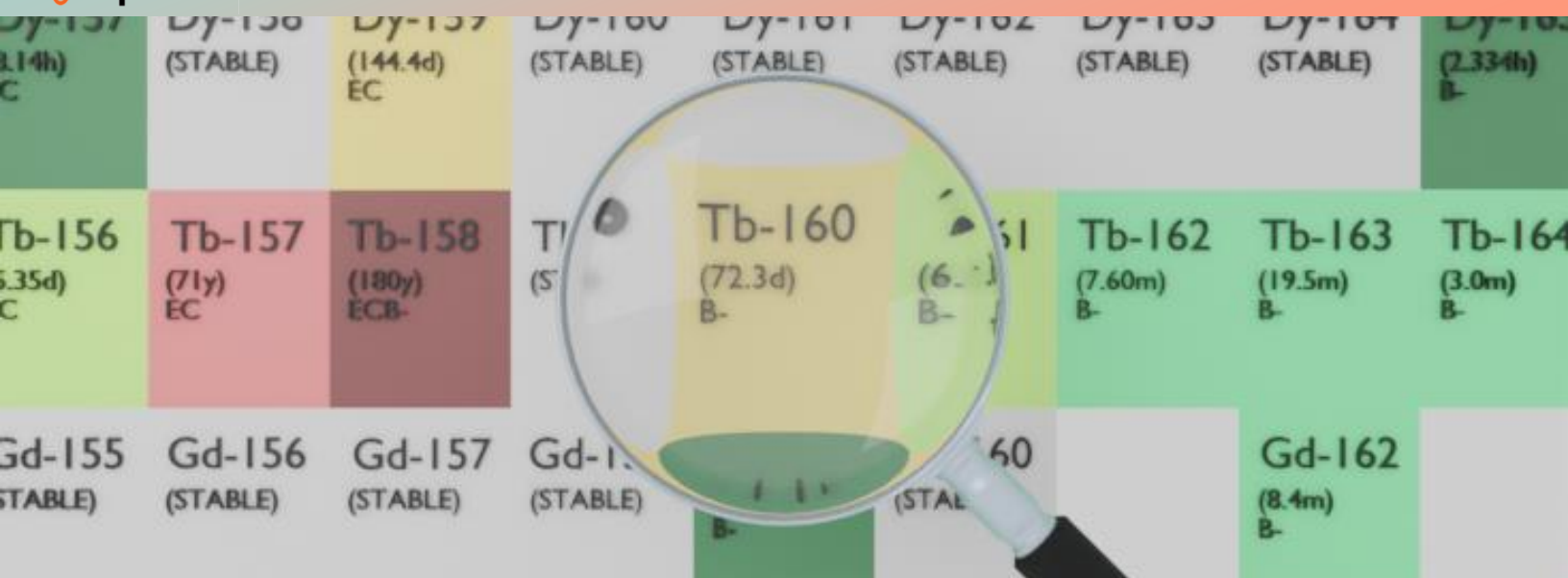




TERBIUM-160

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Tb-160
Atomic number (Z): 65
Mass number (A): 160
Neutron number (N): 95

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 72.3 [d]
Decay constant: 1.1096×10^{-7} [1/s]
Daughters: Dy-160 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.25925 [MeV]
Mean photon energy: 1.12635 [MeV]
Air kerma rate constant, Γ_{10} : 4.018×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 4.018×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 4.154×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

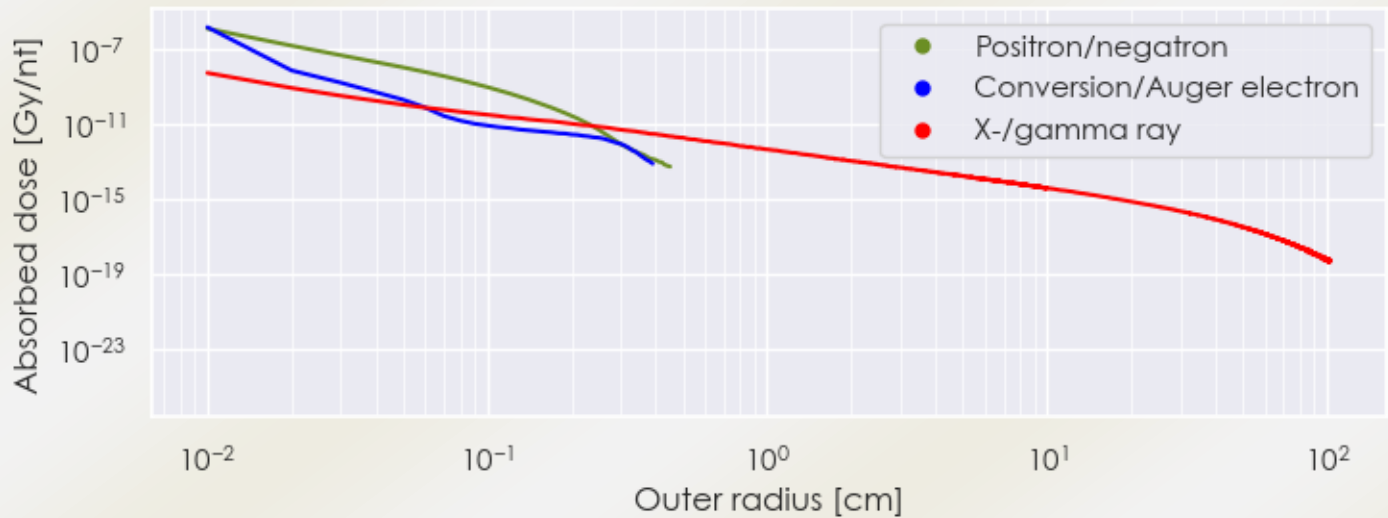
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 4.154×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.805×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

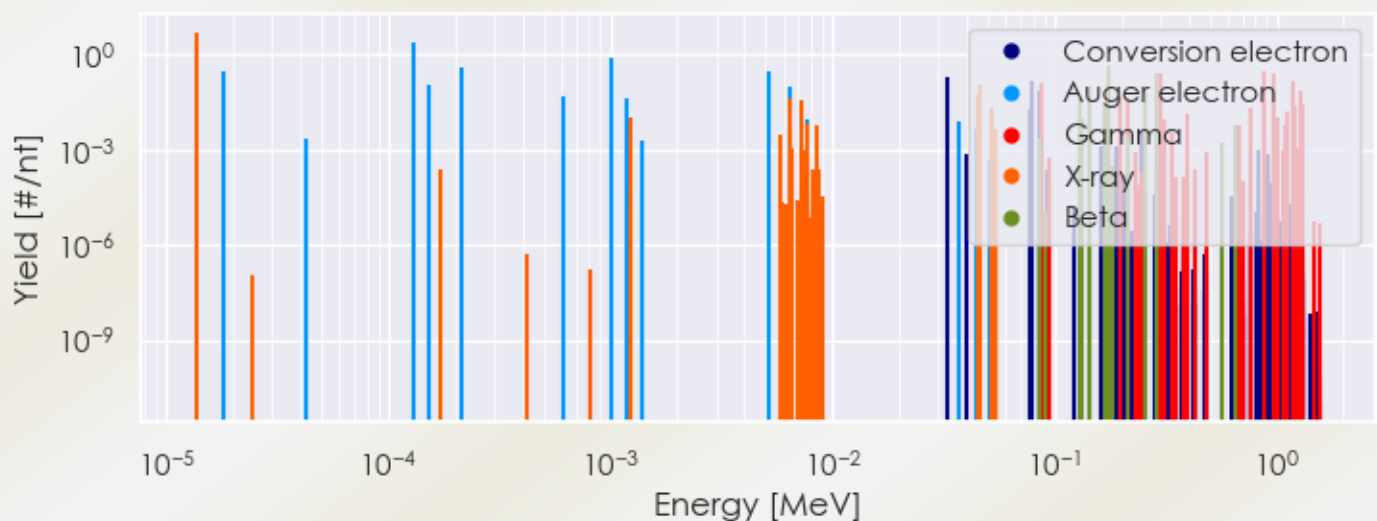
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Tb-160 DPK.csv

SUMMARY SPECTRA (PLOT)

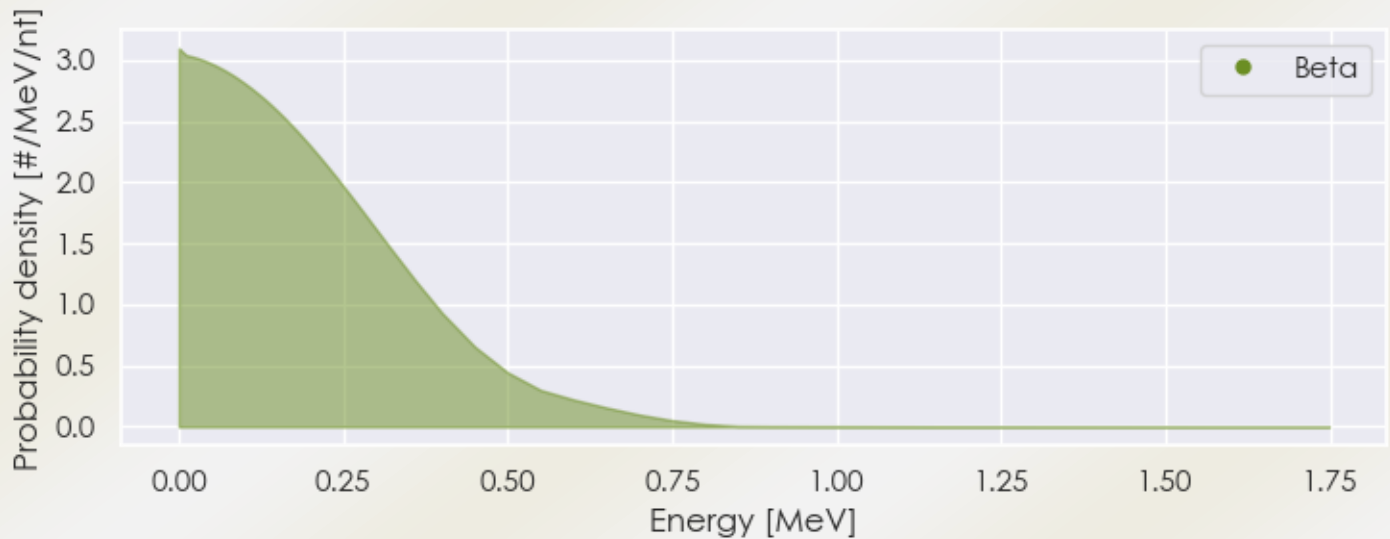
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Tb-160 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-160 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-160 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.36914e-05	5.157e+00	X-ray
1.22853e-03	1.006e-02	X-ray
6.48150e-03	4.074e-02	X-ray
7.25410e-03	3.528e-02	X-ray
4.52703e-02	5.967e-02	X-ray
4.60801e-02	1.066e-01	X-ray
5.20302e-02	1.098e-02	X-ray
5.21989e-02	2.122e-02	X-ray
8.67882e-02	1.315e-01	Gamma
1.97035e-01	5.183e-02	Gamma

2.15646e-01	4.018e-02	Gamma
2.98580e-01	2.613e-01	Gamma
3.92514e-01	1.336e-02	Gamma
7.65280e-01	2.140e-02	Gamma
8.79383e-01	3.010e-01	Gamma
9.62317e-01	9.813e-02	Gamma
9.66171e-01	2.510e-01	Gamma
1.00288e+00	1.038e-02	Gamma
1.11512e+00	1.565e-02	Gamma
1.17796e+00	1.487e-01	Gamma
1.19989e+00	2.384e-02	Gamma
1.27188e+00	7.444e-02	Gamma
1.31214e+00	2.863e-02	Gamma
1.29208e-01	4.471e-02	Beta
1.33422e-01	1.014e-02	Beta
1.42864e-01	9.913e-02	Beta
1.67852e-01	3.431e-02	Beta
1.75609e-01	4.541e-01	Beta
2.54877e-01	6.492e-02	Beta
2.86635e-01	2.801e-01	Beta
1.81686e-05	2.817e-01	Auger electron
1.28597e-04	2.353e+00	Auger electron
1.52684e-04	1.159e-01	Auger electron
2.11460e-04	3.740e-01	Auger electron
6.18271e-04	4.994e-02	Auger electron
1.01686e-03	8.354e-01	Auger electron
1.19130e-03	4.532e-02	Auger electron
5.12249e-03	2.942e-01	Auger electron
6.38222e-03	1.035e-01	Auger electron
3.29272e-02	2.037e-01	Conversion electron
7.77757e-02	1.865e-02	Conversion electron
7.81975e-02	1.460e-01	Conversion electron
7.90072e-02	1.512e-01	Conversion electron
8.51261e-02	7.596e-02	Conversion electron
8.67882e-02	1.989e-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/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6