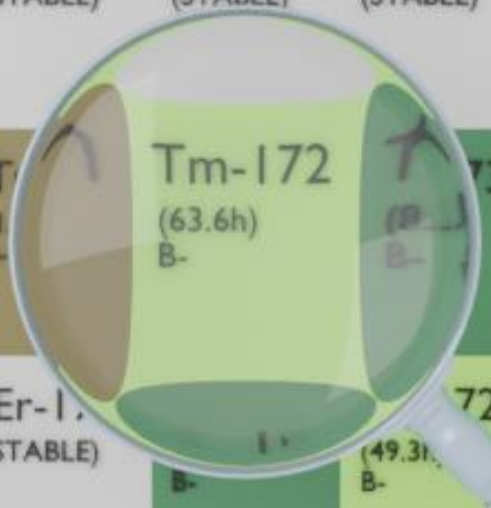




10-167 (12.026d) B-	10-170 (STABLE)	10-171 (STABLE)	10-172 (STABLE)	10-173 (STABLE)	10-174 (STABLE)	10-175 (4.185d) B-	10-176 (STABLE)	10-177 (1.911h) B-
Tm-168 (93.1d) CB+B-	Tm-169 (STABLE)	Tm-170 (128.6d) B-EC	Tm-172 (63.6h) B-	Tm-173 (1.85m) B-	Tm-174 (5.4m) B-	Tm-175 (15.2m) B-	Tm-176 (1.85m) B-	Tm-177 (1.85m) B-
Er-167 (STABLE)	Er-168 (STABLE)	Er-169 (9.40d) B-	Er-170 (STABLE)	Er-171 (49.31d) B-	Er-172 (1.434m) B-	Er-173 (1.434m) B-	Er-174 (1.434m) B-	Er-175 (1.434m) B-

THULIUM-172

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Tm-172
Atomic number (Z): 69
Mass number (A): 172
Neutron number (N): 103

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 63.6 [h]
Decay constant: 3.0274×10^{-6} [1/s]
Daughters: Yb-172 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.53273 [MeV]
Mean photon energy: 0.47442 [MeV]
Air kerma rate constant, Γ_{10} : 1.584×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 1.584×10^{-17} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 8.535×10^{-14} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy $\cdot$ kg/Bq $\cdot$ s]

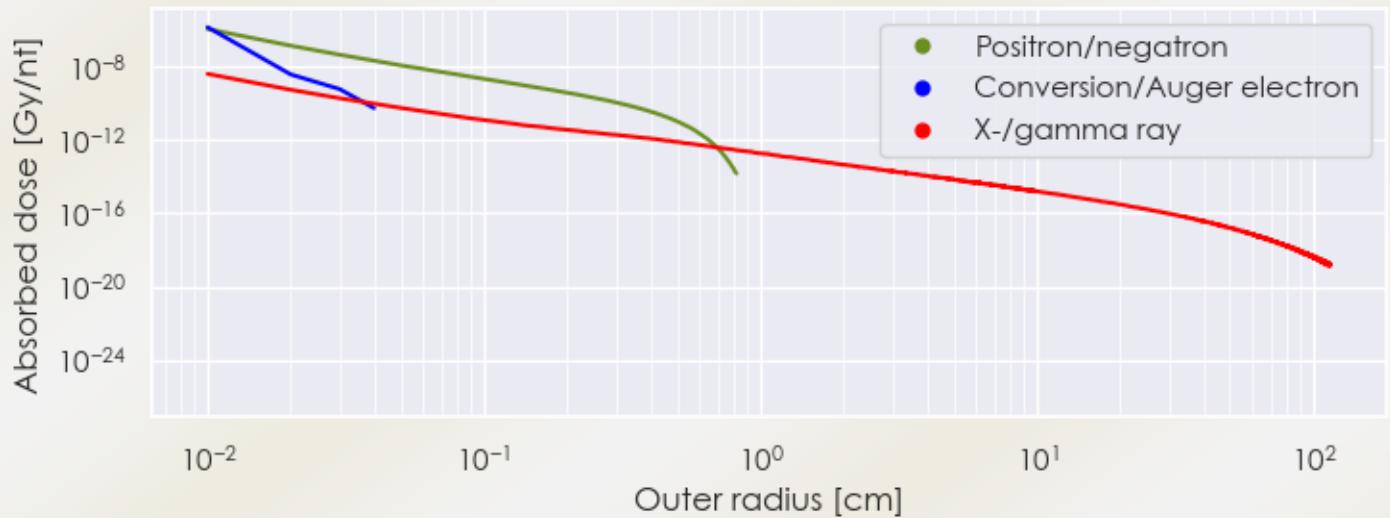
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 8.535×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 7.601×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

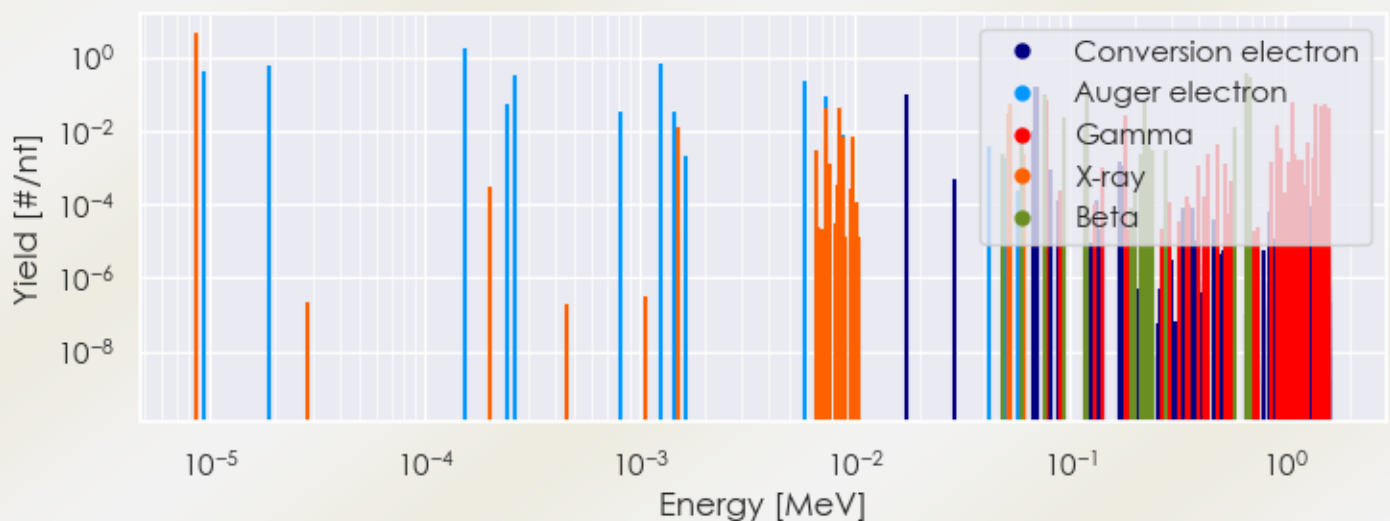
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Tm-172 DPK.csv

SUMMARY SPECTRA (PLOT)

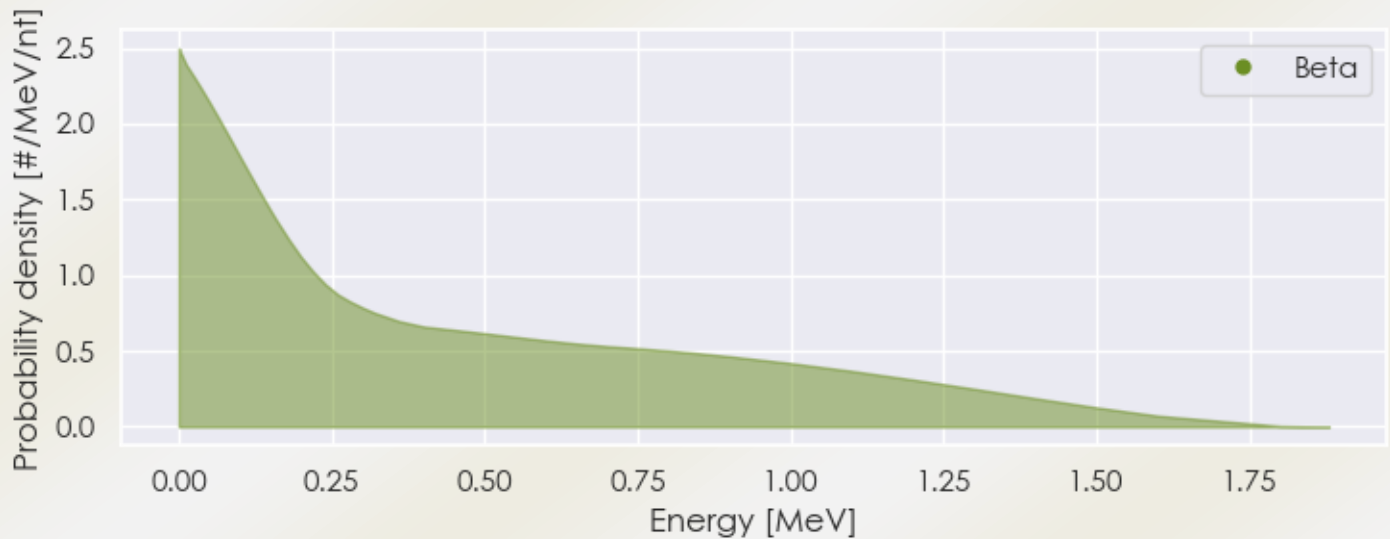
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Tm-172 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/Tm-172 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/Tm-172 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
8.69213e-06	4.847e+00	X-ray
1.50248e-03	1.207e-02	X-ray
7.40528e-03	4.161e-02	X-ray
8.41451e-03	4.013e-02	X-ray
5.14483e-02	2.964e-02	X-ray
5.25072e-02	5.223e-02	X-ray
5.95058e-02	1.064e-02	X-ray
7.87500e-02	6.540e-02	Gamma
1.81520e-01	2.754e-02	Gamma
9.12064e-01	1.416e-02	Gamma

1.09359e+00	6.000e-02	Gamma
1.38709e+00	5.580e-02	Gamma
1.46586e+00	4.500e-02	Gamma
1.47028e+00	1.866e-02	Gamma
1.52964e+00	5.100e-02	Gamma
1.60837e+00	4.140e-02	Gamma
5.94967e-02	1.303e-02	Beta
7.58724e-02	1.003e-01	Beta
9.43779e-02	2.406e-02	Beta
1.17768e-01	1.113e-02	Beta
1.21317e-01	1.013e-01	Beta
2.24123e-01	6.617e-02	Beta
5.83717e-01	1.203e-02	Beta
6.67861e-01	3.609e-01	Beta
6.90822e-01	2.907e-01	Beta
9.31663e-06	4.208e-01	Auger electron
1.88608e-05	5.971e-01	Auger electron
1.54792e-04	1.756e+00	Auger electron
2.43162e-04	5.288e-02	Auger electron
2.64624e-04	3.086e-01	Auger electron
8.16420e-04	3.458e-02	Auger electron
1.25901e-03	7.134e-01	Auger electron
1.43260e-03	3.230e-02	Auger electron
5.84924e-03	2.369e-01	Auger electron
7.34044e-03	8.549e-02	Auger electron
1.73090e-02	9.977e-02	Conversion electron
6.82960e-02	1.043e-02	Conversion electron
6.87574e-02	1.651e-01	Conversion electron
6.98162e-02	1.674e-01	Conversion electron
7.68148e-02	8.496e-02	Conversion electron
7.87500e-02	2.242e-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