



FD-203 (1.53E+7y) C	FD-206 (STABLE)	FD-207 (STABLE)	FD-208 (STABLE)	FD-209 (3.253h) B-	FD-210 (22.20y) B-A	FD-211 (36.1m) B-	FD-212 (10.64h) B-
TI-204 (3.78y) EC	TI-205 (STABLE)	TI-206 (4.200m) B-	TI-207 (4.77m) B-	TI-208 (3.053m) B-	TI-209 (2.35m) B-	TI-210 (1.30m) B-	
Hg-203 (46.612d) EC	Hg-204 (STABLE)	Hg-205 (5.2m) B-	Hg-206 (8.15m) B-	Hg-207 (2.42m) B-	Hg-208 (2.98m) B-		

THALLIUM-208

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: TI-208
Atomic number (Z): 81
Mass number (A): 208
Neutron number (N): 127

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 3.053 [m]
Decay constant: 3.7840e-03 [1/s]
Daughters: Pb-208 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.61134 [MeV]
Mean photon energy: 3.36025 [MeV]
Air kerma rate constant, Γ_{10} : 1.018e-16 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air} : 1.018e-16 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 9.795e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

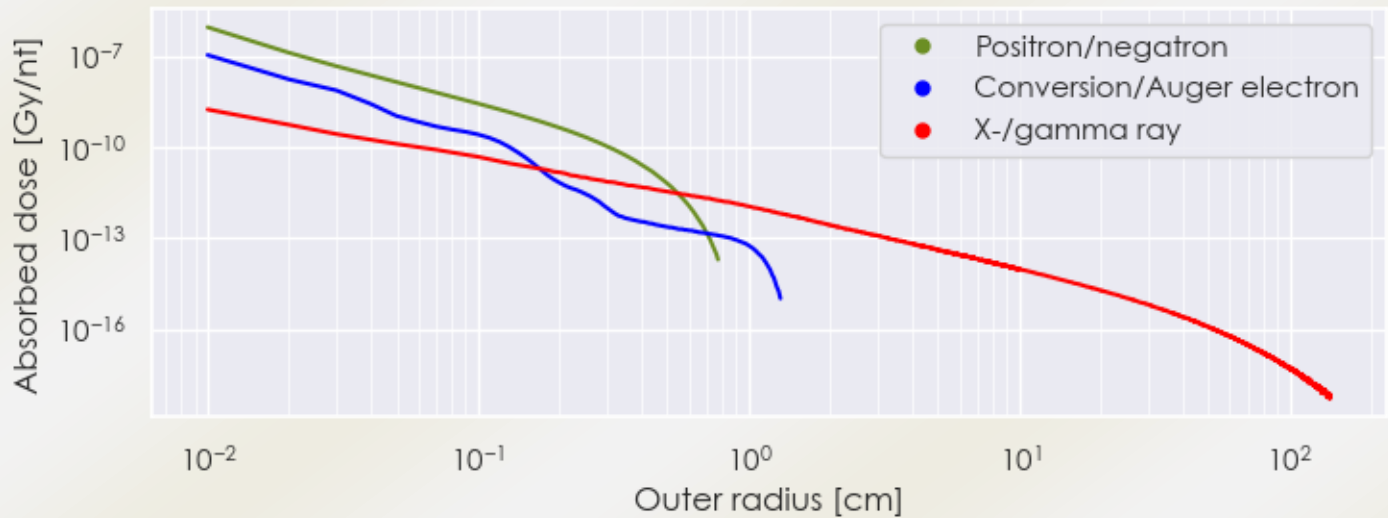
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 9.795×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 5.384×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

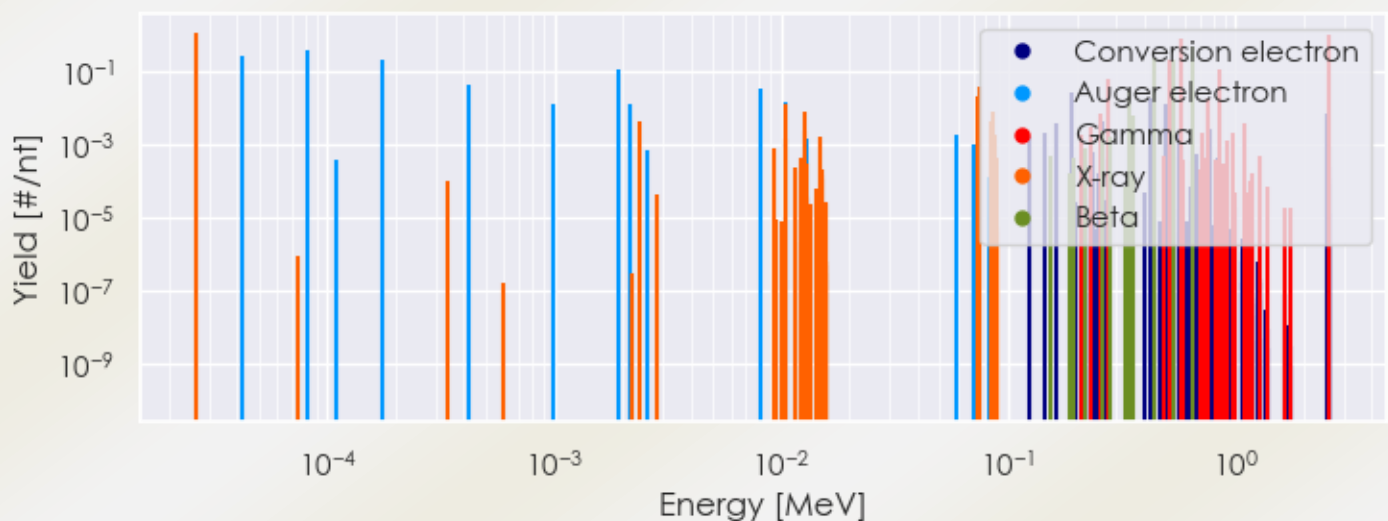
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/TI-208 DPK.csv

SUMMARY SPECTRA (PLOT)

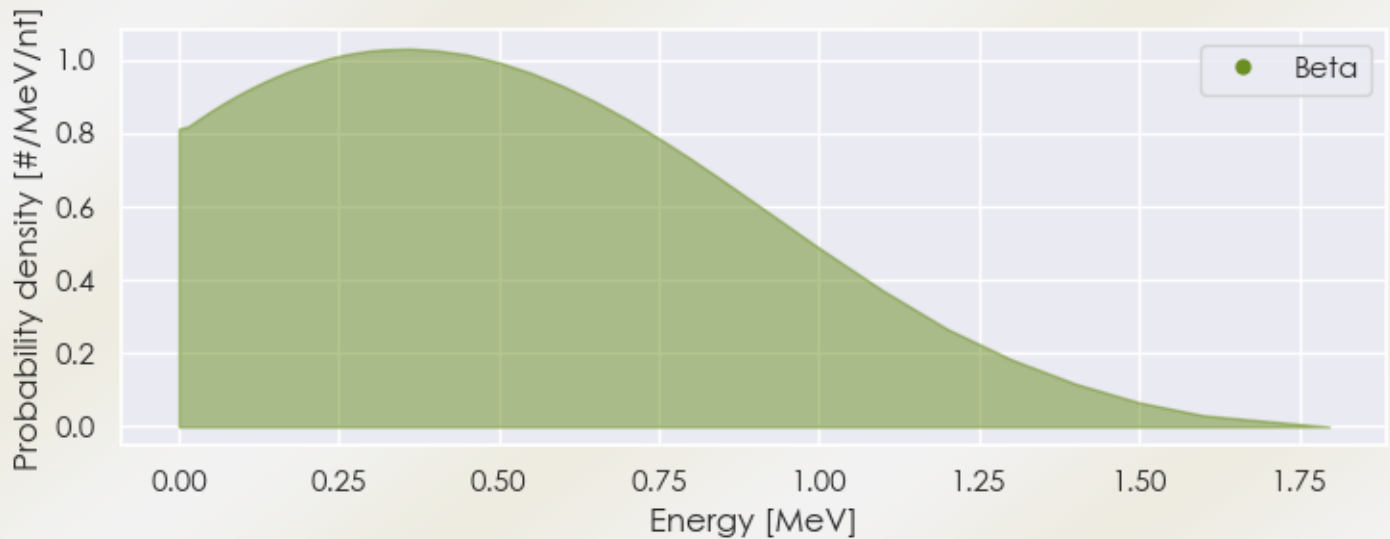
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/TI-208 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/TI-208 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/TI-208 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
2.66211e-05	1.230e+00	X-ray
1.05510e-02	1.308e-02	X-ray
7.30390e-02	2.272e-02	X-ray
7.52501e-02	3.815e-02	X-ray
2.77358e-01	6.307e-02	Gamma
5.10770e-01	2.261e-01	Gamma
5.83191e-01	8.448e-01	Gamma
7.63130e-01	1.815e-02	Gamma
8.60564e-01	1.242e-01	Gamma
2.61453e+00	9.916e-01	Gamma

3.40873e-01	3.110e-02	Beta
4.39430e-01	2.466e-01	Beta
5.33213e-01	2.194e-01	Beta
6.47222e-01	4.901e-01	Beta
4.21774e-05	2.762e-01	Auger electron
8.22380e-05	3.982e-01	Auger electron
1.73800e-04	2.099e-01	Auger electron
4.21687e-04	4.644e-02	Auger electron
9.80189e-04	1.392e-02	Auger electron
1.91050e-03	1.121e-01	Auger electron
2.17077e-03	1.397e-02	Auger electron
8.04568e-03	3.327e-02	Auger electron
1.04208e-02	1.472e-02	Auger electron
1.89068e-01	2.883e-02	Conversion electron
4.22480e-01	2.002e-02	Conversion electron
4.94901e-01	1.287e-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