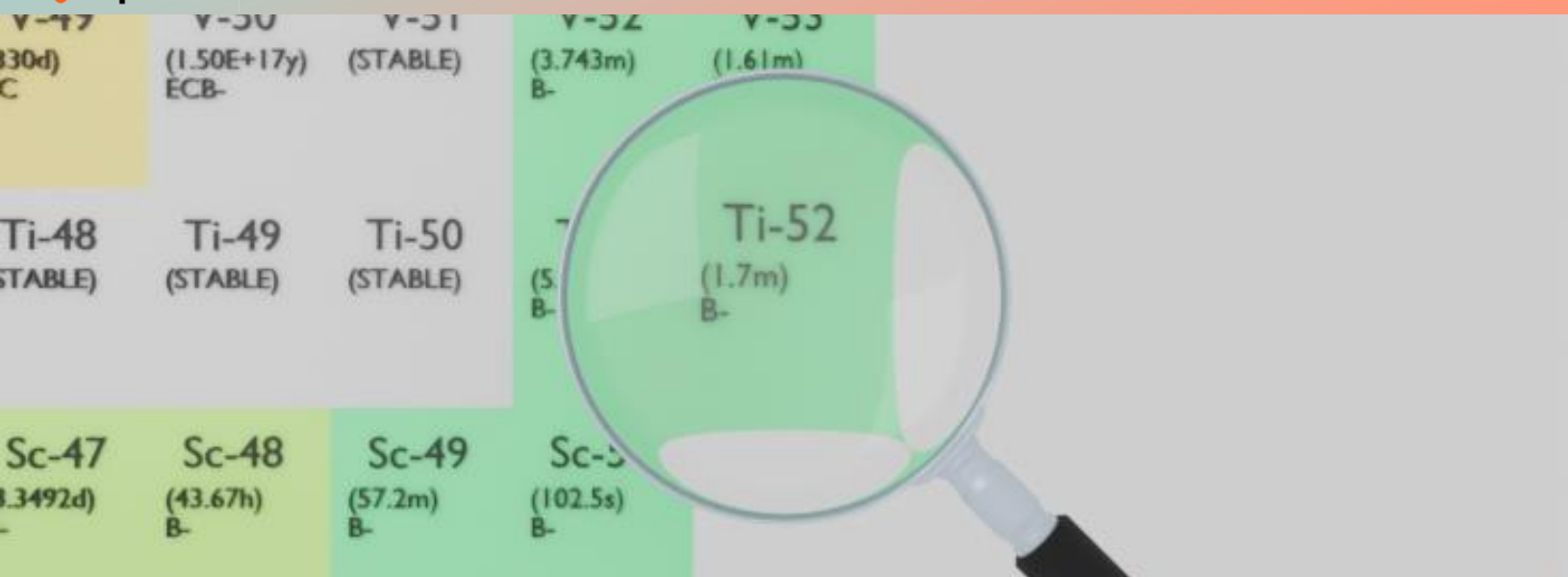




TITANIUM-52

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ti-52
Atomic number (Z): 22
Mass number (A): 52
Neutron number (N): 30

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 1.7 [m]
Decay constant: 6.7956×10^{-3} [1/s]
Daughters: V-52 (100.0%)
Radioactive daughters: V-52

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.75304 [MeV]
Mean photon energy: 0.12819 [MeV]
Air kerma rate constant, Γ_{10} : 7.232×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Air kerma coefficient, K_{air} : 7.232×10^{-18} [Gy $\cdot$ m²/Bq $\cdot$ s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.207×10^{-13} [Gy $\cdot$ kg/Bq $\cdot$ s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000×10^0 [Gy $\cdot$ kg/Bq $\cdot$ s]

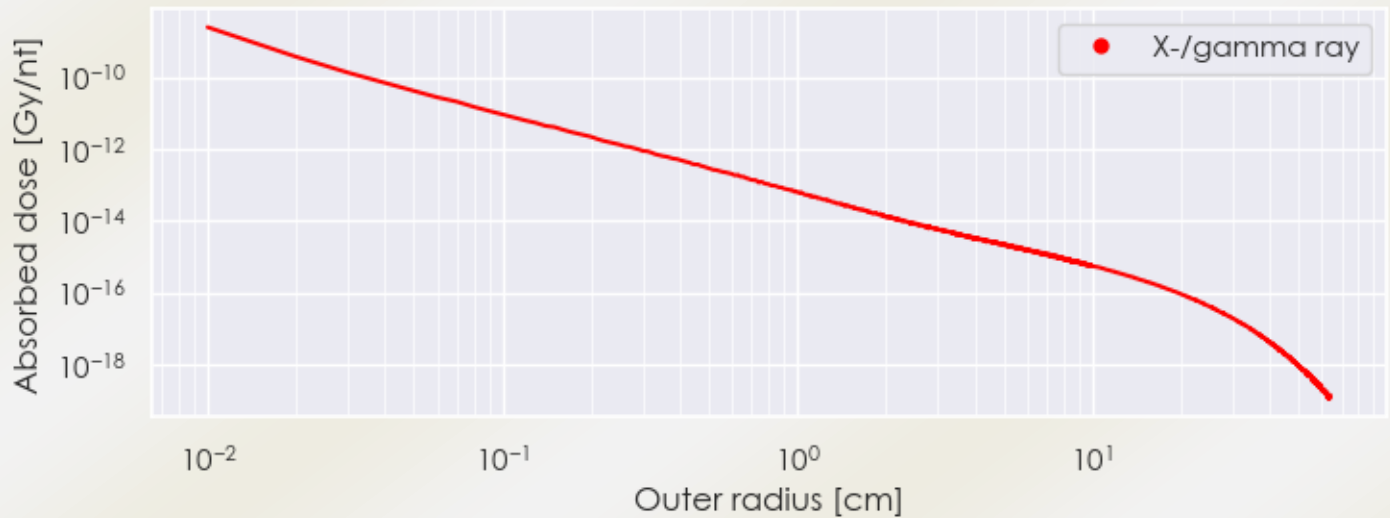
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e^-}$: 1.207×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 2.054×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

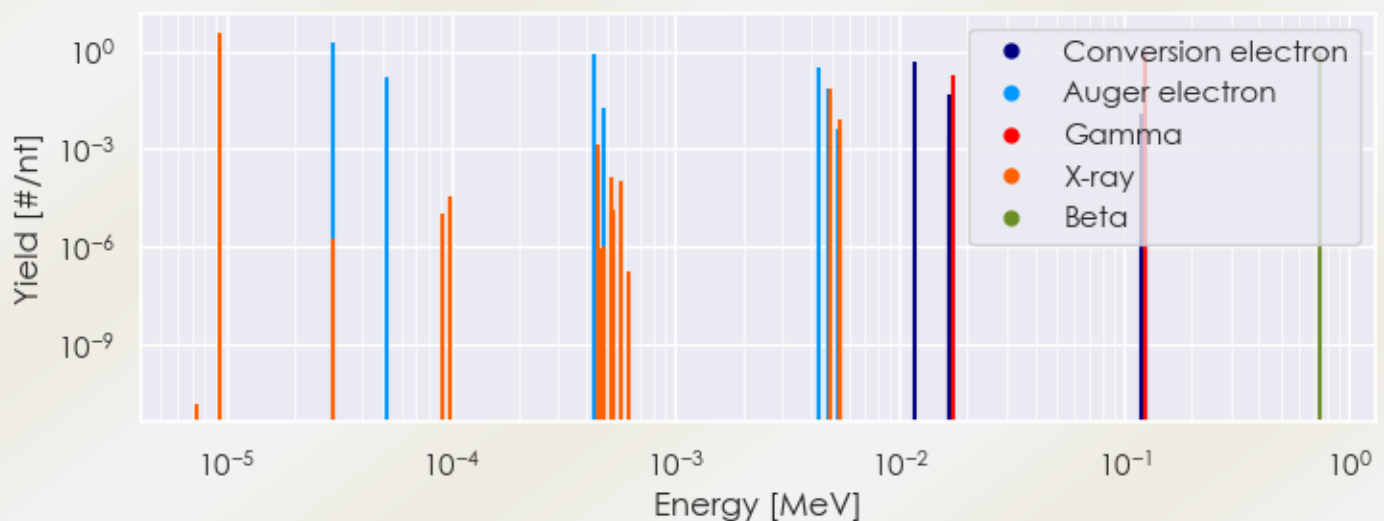
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ti-52 DPK.csv

SUMMARY SPECTRA (PLOT)

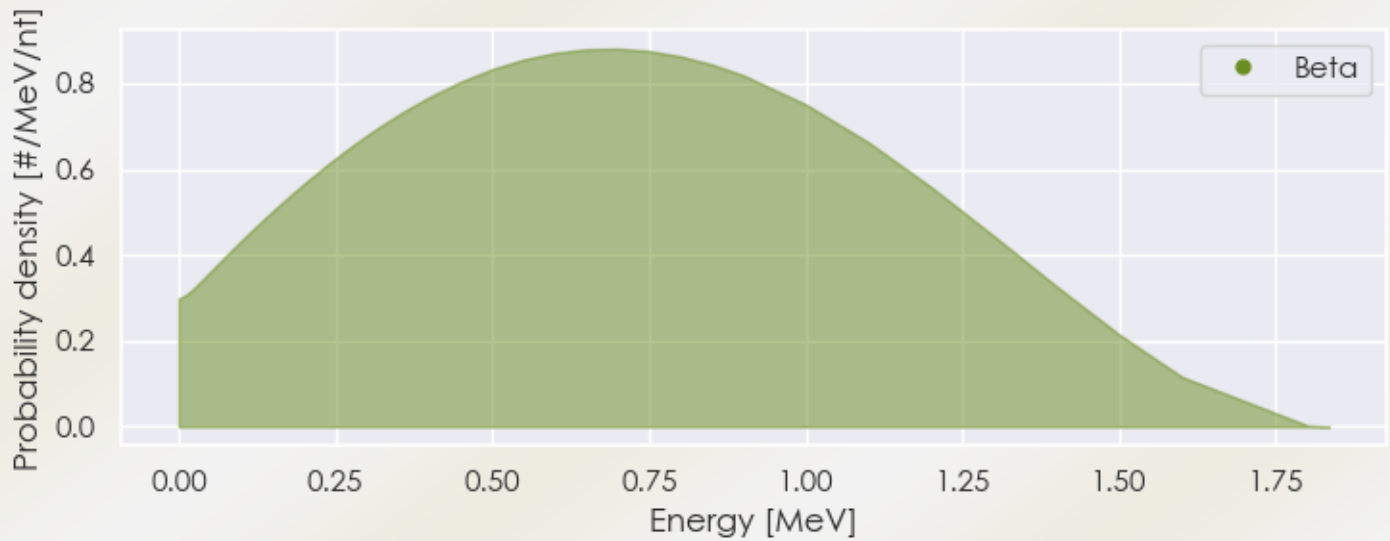
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Ti-52 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-52 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-52 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
9.23982e-06	3.889e+00	X-ray
4.90772e-03	3.759e-02	X-ray
4.91506e-03	7.389e-02	X-ray
1.71530e-02	1.800e-01	Gamma
1.24453e-01	1.000e+00	Gamma
7.42688e-01	1.000e+00	Beta
3.00131e-05	1.912e+00	Auger electron
5.14571e-05	1.705e-01	Auger electron
4.35347e-04	8.374e-01	Auger electron
4.81733e-04	1.730e-02	Auger electron

4.34375e-03	3.110e-01	Auger electron
4.83456e-03	7.319e-02	Auger electron
1.17134e-02	5.014e-01	Conversion electron
1.65292e-02	4.594e-02	Conversion electron
1.19013e-01	1.147e-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