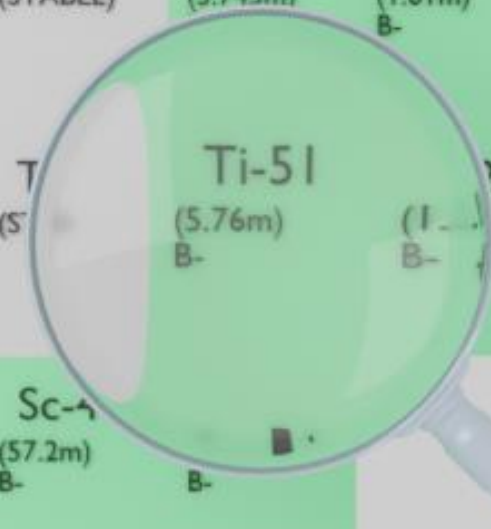




V-48 (5.9735d) CB+	V-49 (330d) EC	V-50 (1.50E+17y) ECB-	V-51 (STABLE)	V-52 (3.743m) B-	V-53 (1.61m) B-
Ti-47 (STABLE)	Ti-48 (STABLE)	Ti-49 (STABLE)	Ti-50 (STABLE)	Ti-51 (5.76m) B-	Ti-52 (1.1m) B-
Sc-46 (33.79d) B-	Sc-47 (3.3492d) B-	Sc-48 (43.67h) B-	Sc-49 (57.2m) B-	Sc-50 (1.1m) B-	Sc-51 (1.1m) B-

TITANIUM-51

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Ti-51
Atomic number (Z): 22
Mass number (A): 51
Neutron number (N): 29

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 5.76 [m]
Decay constant: 2.0056e-03 [1/s]
Daughters: V-51 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.86915 [MeV]
Mean photon energy: 0.36916 [MeV]
Air kerma rate constant, Γ_{10} : 1.359e-17 [Gy·m²/Bq·s]
Air kerma coefficient, K_{air} : 1.359e-17 [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.393e-13 [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

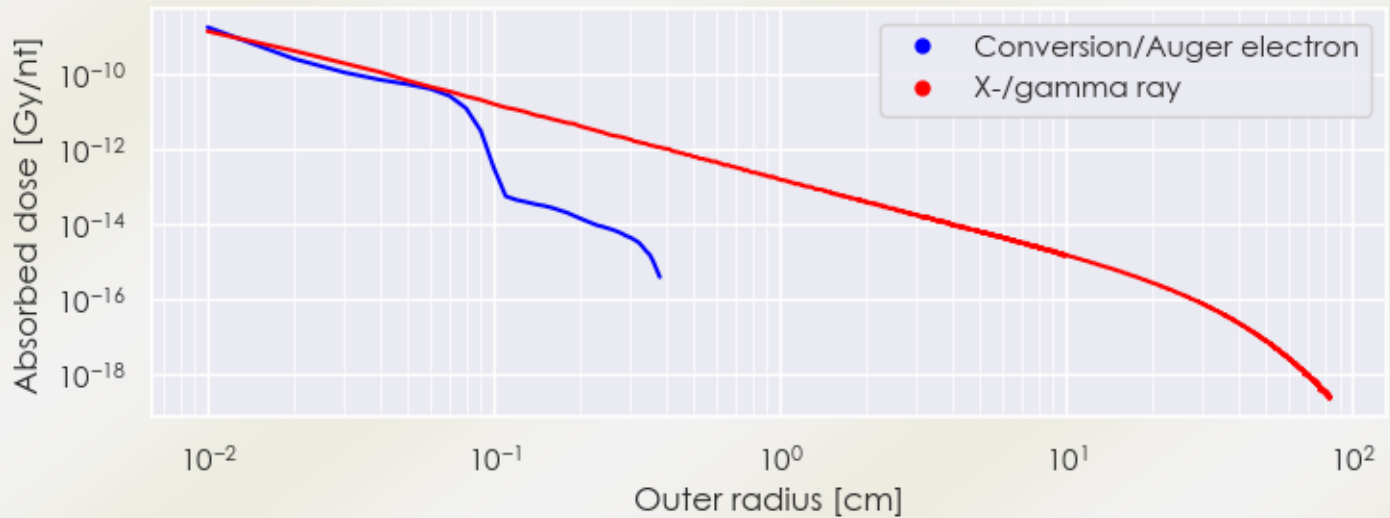
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 1.393×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 5.915×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

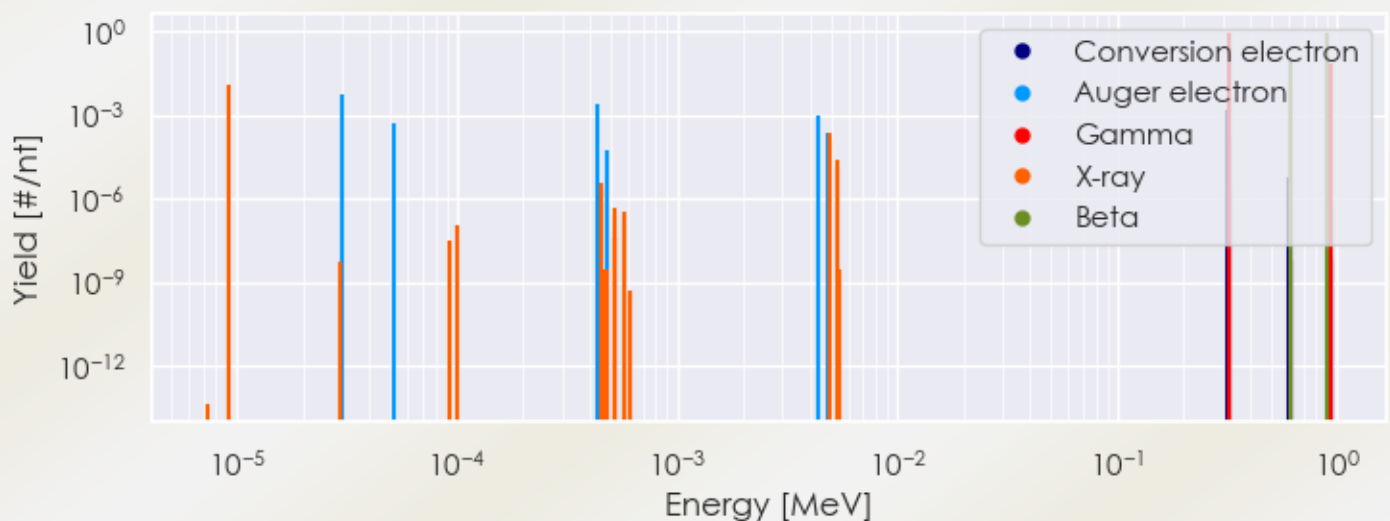
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Ti-51 DPK.csv

SUMMARY SPECTRA (PLOT)

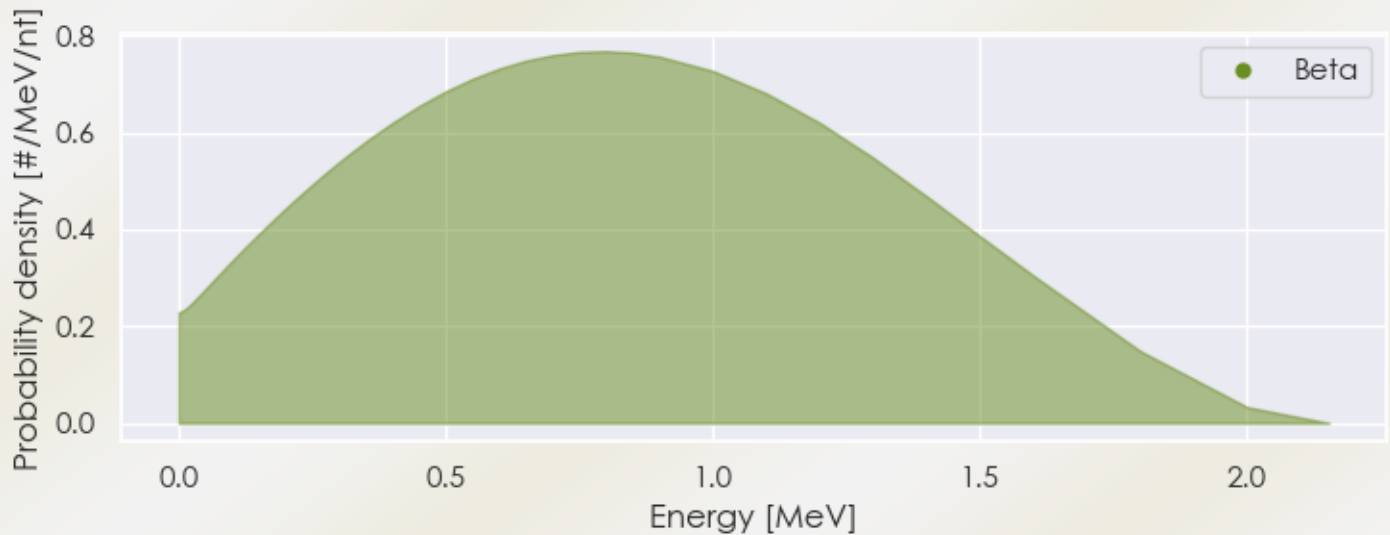
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Ti-51 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-51 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-51 Summary Spectrum.csv

Energy [MeV]	Yield [# /nt] if > 0.01	Radiation type
9.23980e-06	1.171e-02	X-ray
3.20076e-01	9.310e-01	Gamma
6.08550e-01	1.182e-02	Gamma
9.28630e-01	6.889e-02	Gamma
6.09851e-01	8.100e-02	Beta
8.91411e-01	9.190e-01	Beta

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