

A grid of isotopes is shown, with a magnifying glass focusing on Te-119. The isotopes are arranged in a grid with columns labeled by element and rows by mass number. The isotopes shown are:

Element	Mass Number	Half-life	Decay Mode
Te	115	5.8m	ECB+
Te	116	2.49h	ECB+
Te	117	62m	ECB+
Te	118	13.7m	ECB+
Te	119	16.05h	ECB+
Te	120	81.6m	ECB+
Te	121	2.12h	ECB+
Te	122	3.63m	ECB+
Te	123	13.27h	EC
Te	124	4.1760d	ECB+
Sb	114	3.49m	ECB+
Sb	115	32.1m	ECB+
Sb	116	15.8m	ECB+
Sb	117	2.80h	ECB+
Sb	118	38.1s	EC
Sb	119	38.1s	EC
Sb	120	15.89m	ECB+
Sb	121	(STABLE)	
Sb	122	2.7238d	B-ECB+

TELLURIUM-119

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Te-119

Atomic number (Z): 52

Mass number (A): 119

Neutron number (N): 67

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture

Half-life: 16.05 [h]

Decay constant: 1.1996e-05 [1/s]

Daughters: Sb-119 (100.0%)

Radioactive daughters: Sb-119

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]

Mean electron energy: 0.0143 [MeV]

Mean photon energy: 0.76793 [MeV]

Air kerma rate constant, Γ_{10} : 3.212e-17 [Gy·m²/Bq·s]

Air kerma coefficient, K_{air} : $3.291\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]

Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 2.291e-15 [Gy·kg/Bq·s]

Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

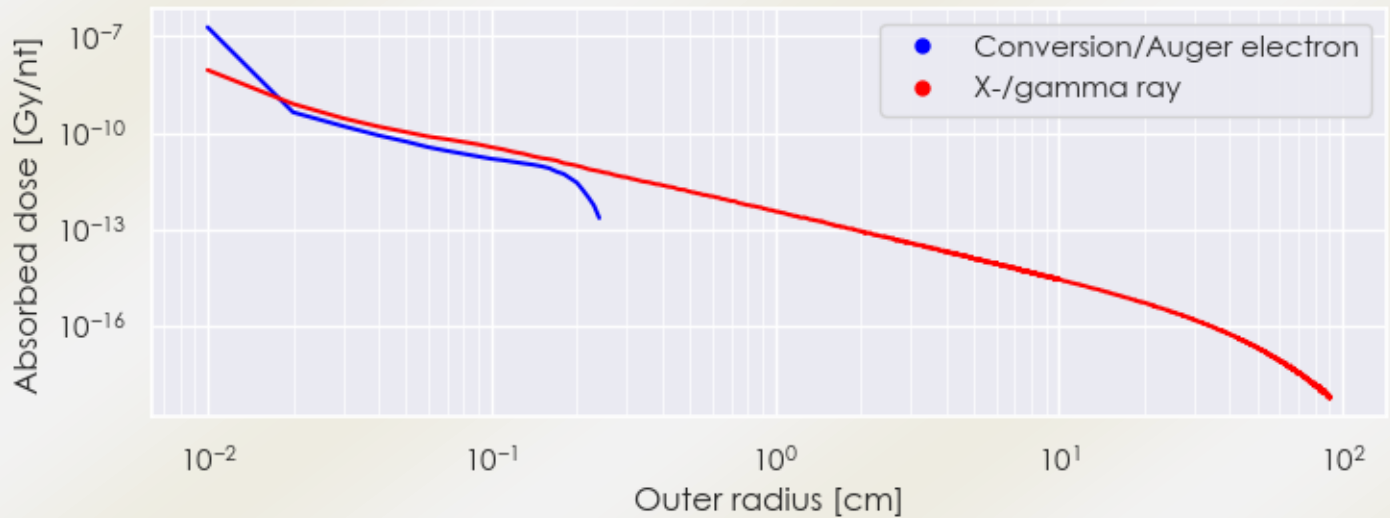
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 2.291×10^{-15} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.230×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

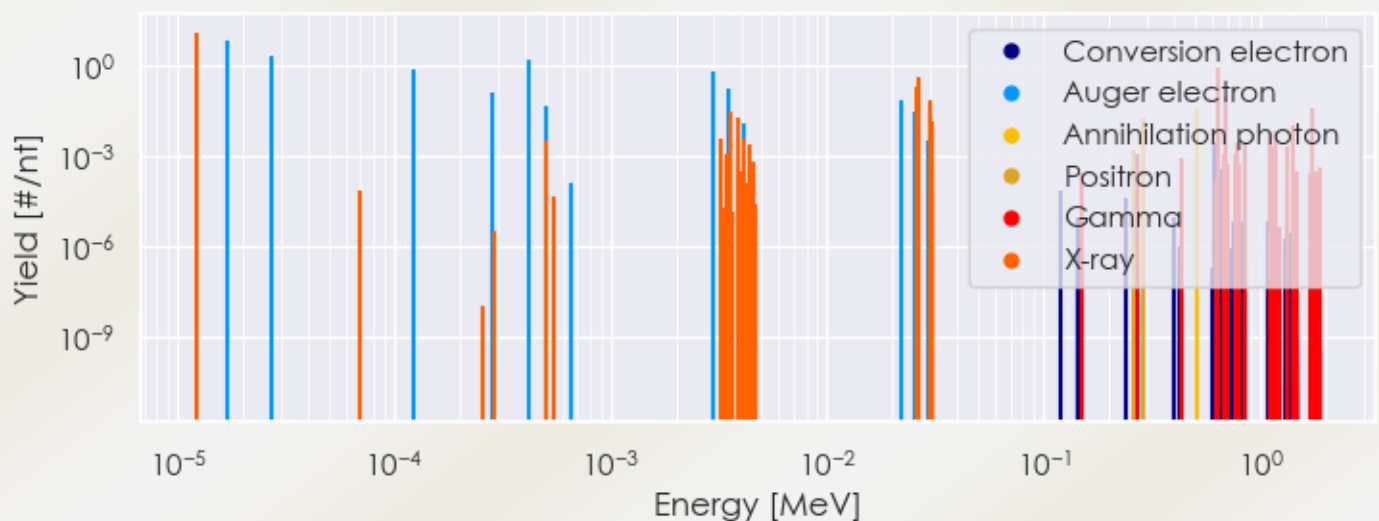
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Te-119 DPK.csv

SUMMARY SPECTRA (PLOT)

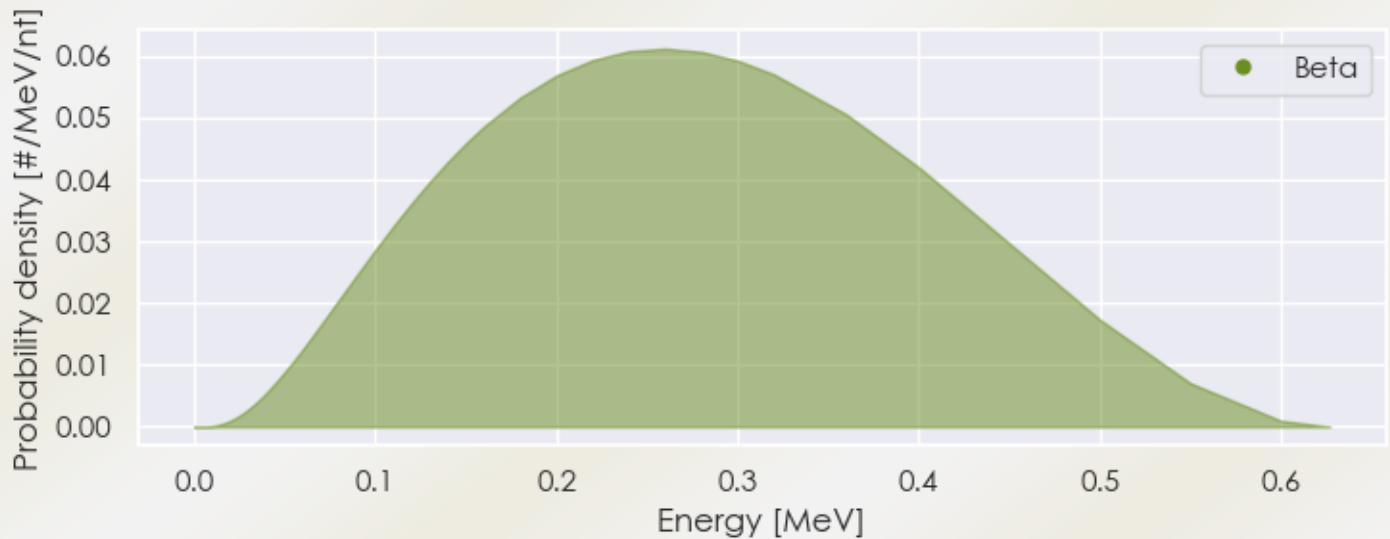
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Te-119 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/Te-119 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/Te-119 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.22327e-05	1.304e+01	X-ray
3.59266e-03	3.149e-02	X-ray
3.83820e-03	1.800e-02	X-ray
2.60930e-02	2.108e-01	X-ray
2.63486e-02	3.934e-01	X-ray
2.96698e-02	3.586e-02	X-ray
2.97173e-02	6.958e-02	X-ray
3.03709e-02	1.447e-02	X-ray
5.11000e-01	4.104e-02	Annihilation photon
6.44010e-01	8.400e-01	Gamma

6.99850e-01	1.008e-01	Gamma
1.41319e+00	1.092e-02	Gamma
1.74965e+00	3.948e-02	Gamma
2.85454e-01	1.892e-02	Positron
1.68964e-05	6.418e+00	Auger electron
2.73570e-05	2.167e+00	Auger electron
1.21987e-04	7.259e-01	Auger electron
2.83860e-04	1.322e-01	Auger electron
4.22566e-04	1.624e+00	Auger electron
5.05005e-04	4.919e-02	Auger electron
2.96545e-03	6.393e-01	Auger electron
3.52031e-03	1.730e-01	Auger electron
4.09584e-03	1.189e-02	Auger electron
2.17904e-02	7.350e-02	Auger electron
2.54497e-02	3.184e-02	Auger 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