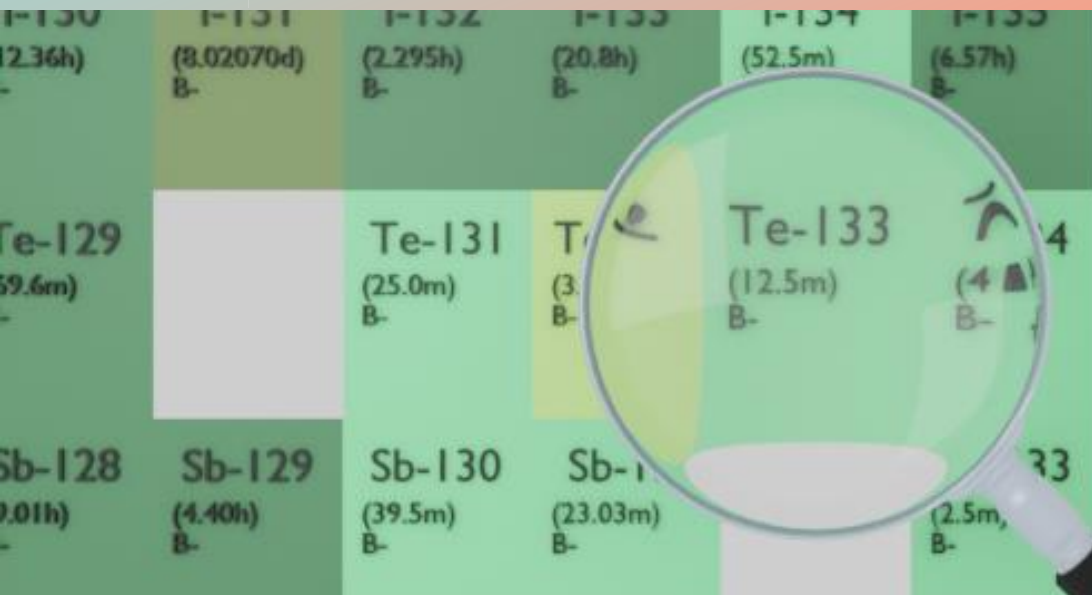




TELLURIUM-133

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Te-133
Atomic number (Z): 52
Mass number (A): 133
Neutron number (N): 81

RADIOACTIVE DECAY

Decay modes: β^-
Half-life: 12.5 [m]
Decay constant: $9.2420\text{e-}04$ [1/s]
Daughters: I-133 (100.0%)
Radioactive daughters: I-133

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.6897 [MeV]
Mean photon energy: 1.20067 [MeV]
Air kerma rate constant, Γ_{10} : $4.153\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Air kerma coefficient, K_{air} : $4.153\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $1.105\text{e-}13$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [$\text{Gy} \cdot \text{kg}/\text{Bq} \cdot \text{s}$]

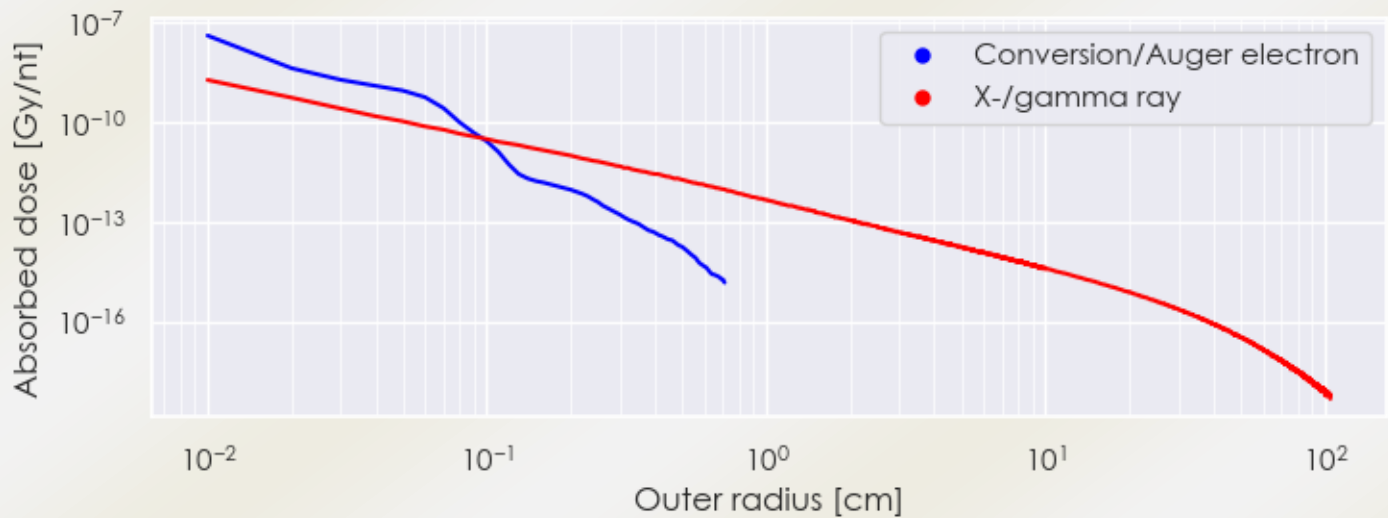
Equilibrium dose constant for betas/electrons, $\Delta_{\beta-, \beta+, e-}$: 1.105×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.924×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

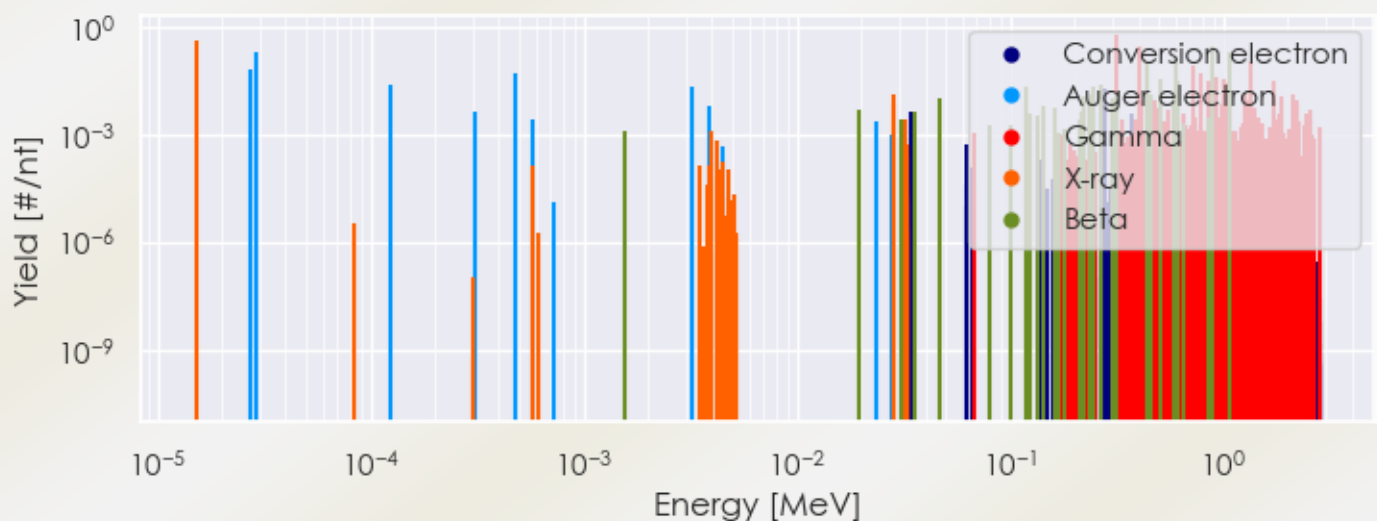
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Te-133 DPK.csv

SUMMARY SPECTRA (PLOT)

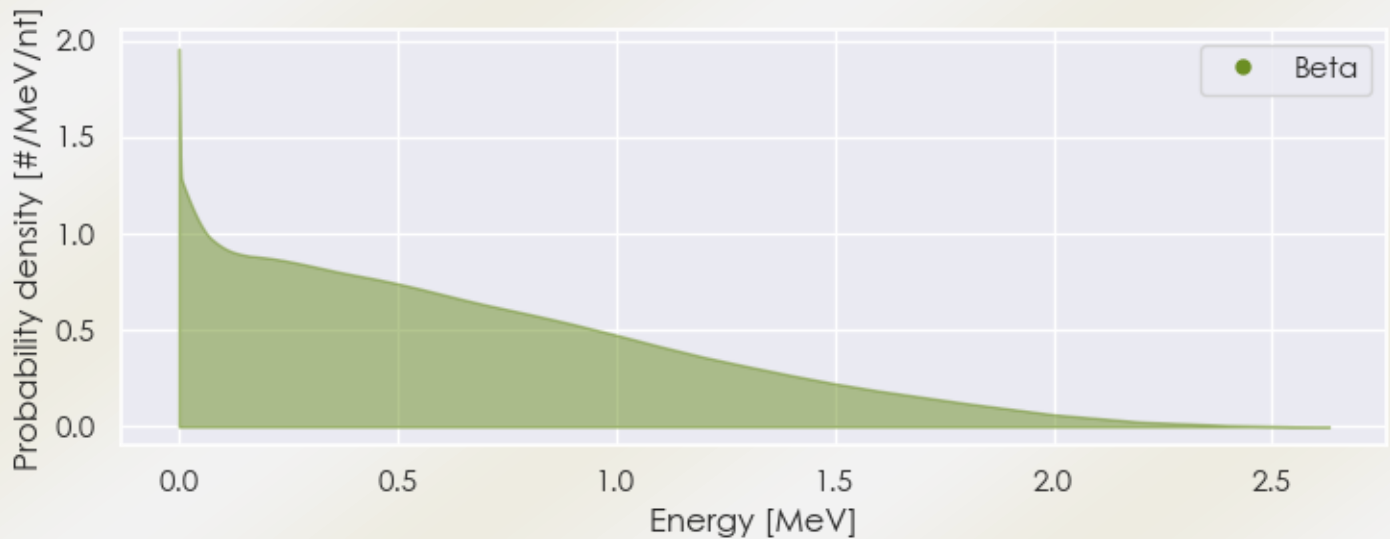
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Te-133 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-133 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-133 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.52660e-05	4.200e-01	X-ray
2.86096e-02	1.391e-02	X-ray
3.12080e-01	6.240e-01	Gamma
4.07630e-01	2.708e-01	Gamma
7.19710e-01	8.861e-02	Gamma
7.86930e-01	5.398e-02	Gamma
8.44360e-01	3.307e-02	Gamma
9.30710e-01	3.806e-02	Gamma
9.97660e-01	1.036e-02	Gamma
1.00072e+00	3.619e-02	Gamma

1.02113e+00	2.808e-02	Gamma
1.06161e+00	1.186e-02	Gamma
1.25208e+00	1.435e-02	Gamma
1.33321e+00	1.067e-01	Gamma
1.71761e+00	3.182e-02	Gamma
1.88152e+00	1.217e-02	Gamma
2.13651e+00	1.248e-02	Gamma
4.71302e-02	1.047e-02	Beta
1.18768e-01	2.153e-02	Beta
2.21984e-01	1.234e-02	Beta
2.39273e-01	1.313e-02	Beta
2.45499e-01	2.251e-02	Beta
2.67737e-01	2.360e-02	Beta
3.00536e-01	1.066e-02	Beta
3.11784e-01	1.382e-02	Beta
4.38924e-01	1.027e-01	Beta
4.58551e-01	1.313e-02	Beta
5.04454e-01	3.456e-02	Beta
5.87267e-01	1.185e-02	Beta
6.05043e-01	1.294e-01	Beta
6.14039e-01	3.259e-02	Beta
8.80273e-01	2.795e-01	Beta
1.06727e+00	2.054e-01	Beta
2.70121e-05	6.293e-02	Auger electron
2.89499e-05	2.024e-01	Auger electron
1.25013e-04	2.318e-02	Auger electron
4.76928e-04	5.397e-02	Auger electron
3.20445e-03	2.119e-02	Auger electron
2.78916e-01	1.851e-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