

Da-127 (12.7m) ECB+	Da-128 (2.43d) EC	Da-129 (2.23h) ECB+	Da-130 (11.50d)	Da-131 (STABLE)	Da-132 (10.52y) EC	Da-133 (STABLE)	Da-134 (STABLE)
Cs-126 (1.64m) ECB+	Cs-127 (6.25h) ECB+	Cs-128 (3.640m) ECB+	Cs-129 (3.15h) ECB+	Cs-130 (29.21m) ECB+B-	Cs-131 (9.01h) ECB+	Cs-132 (6.479d) ECB+B-	Cs-133 (2.0648y) B-EC
Xe-125 (16.9h) CB+	Xe-126 (STABLE)	Xe-127 (36.4d) EC	Xe-128 (STABLE)	Xe-129 (STABLE)	Xe-130 (STABLE)	Xe-131 (STABLE)	Xe-132 (5.243d) B-

CESIUM-130

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Cs-130

Atomic number (Z): 55

Mass number (A): 130

Neutron number (N): 75

RADIOACTIVE DECAY

Decay modes: β^- , β^+ , Electron capture

Half-life: 29.21 [m]

Decay constant: 3.9550e-04 [1/s]

Daughters: Xe-130 (98.4%), Ba-130 (1.6%)

Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]

Mean electron energy: 0.38685 [MeV]

Mean photon energy: 0.50259 [MeV]

Air kerma rate constant, Γ_{10} : 3.983e-18 [Gy·m²/Bq·s]

Air kerma coefficient, K_{air} : $2.084\text{e-}17$ [$\text{Gy} \cdot \text{m}^2/\text{Bq} \cdot \text{s}$]

Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 6.198e-14 [Gy·kg/Bq·s]

Equilibrium dose constant for alphas, Δ_a : 0.000e+00 [Gy·kg/Bq·s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta,\beta^+,e^-}$: 6.198×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 8.052×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

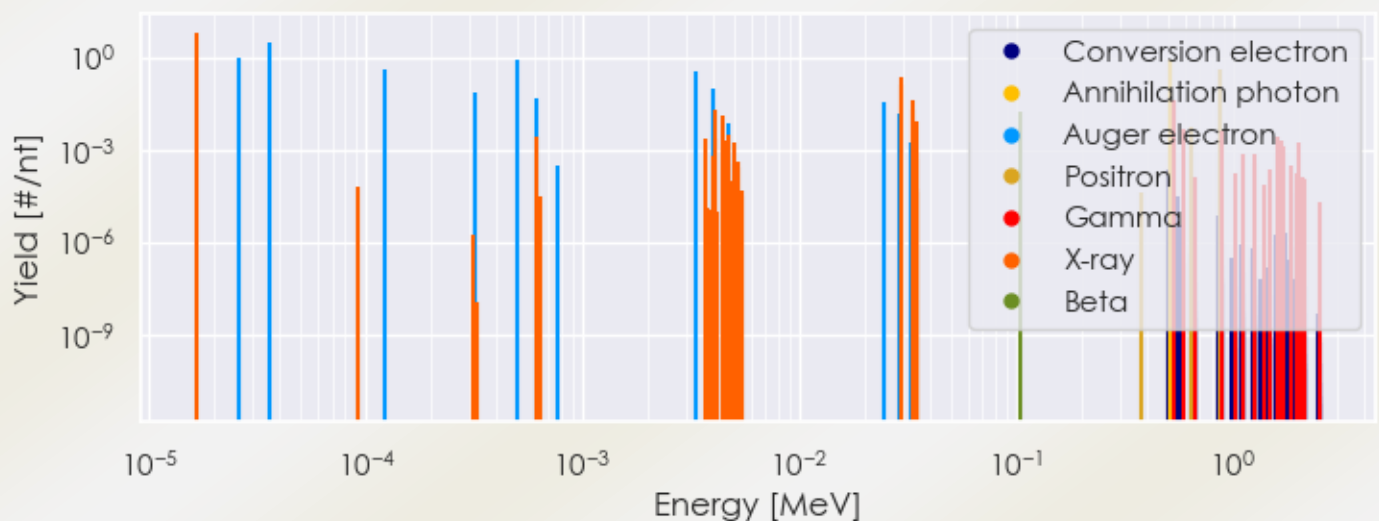
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Cs-130 DPK.csv

SUMMARY SPECTRA (PLOT)

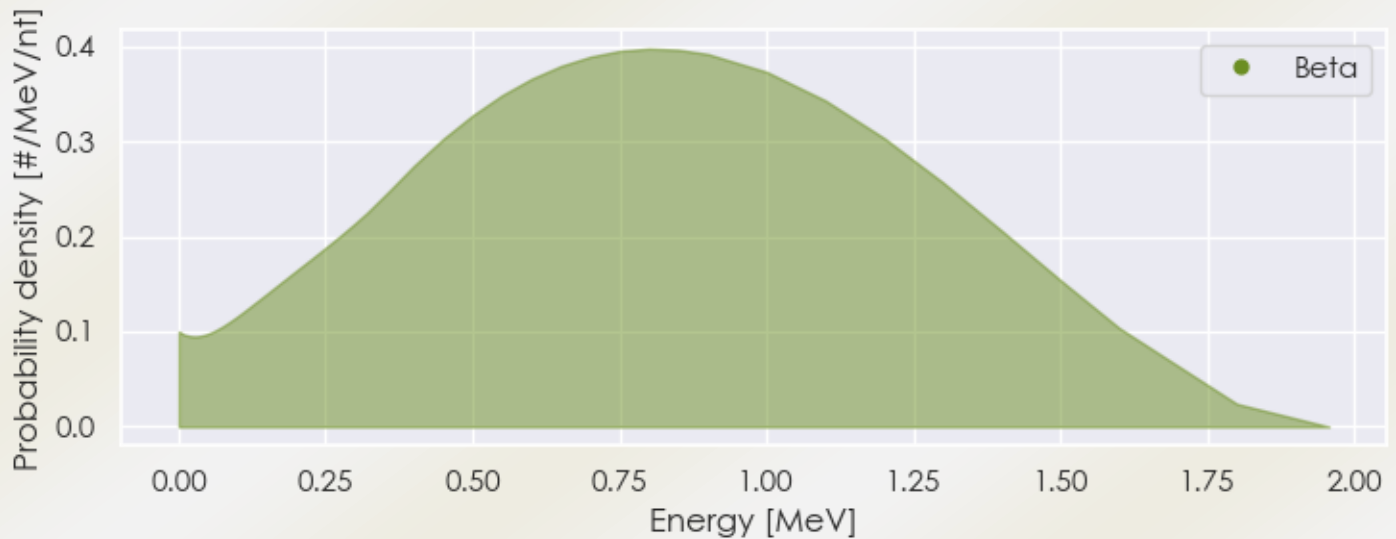
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Cs-130 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/Cs-130 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/Cs-130 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.66177e-05	6.505e+00	X-ray
4.09719e-03	2.081e-02	X-ray
4.41300e-03	1.206e-02	X-ray
2.94521e-02	1.200e-01	X-ray
2.97812e-02	2.223e-01	X-ray
3.35665e-02	2.087e-02	X-ray
3.36295e-02	4.045e-02	X-ray
5.11000e-01	8.711e-01	Annihilation photon
5.36100e-01	3.838e-02	Gamma
1.05293e-01	1.600e-02	Beta

8.78949e-01	4.297e-01	Positron
2.61907e-05	1.015e+00	Auger electron
3.62440e-05	3.093e+00	Auger electron
1.23733e-04	3.818e-01	Auger electron
3.22153e-04	7.339e-02	Auger electron
5.05183e-04	8.472e-01	Auger electron
6.17484e-04	4.850e-02	Auger electron
3.32555e-03	3.338e-01	Auger electron
4.00288e-03	9.904e-02	Auger electron
2.44715e-02	3.374e-02	Auger electron
2.86854e-02	1.510e-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/SNMML-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6