



Ba-127 (2.7m) CB+	Ba-128 (2.43d) EC	Ba-129 (2.23h) ECB+	Ba-131 (11.50d)	Ba-132 (STABLE)	Ba-133 (10.52y) EC	Ba-134 (STABLE)	Ba-135 (STABLE)
Cs-126 (1.64m) CB+	Cs-127 (6.25h) ECB+	Cs-128 (3.640m) ECB+	Cs-130m (3.46m) ITEC	Cs-131 (9.7d) EC	Cs-132 (6.479d) ECB+B-	Cs-133 (STABLE)	Cs-134 (2.0648y) B-EC
Xe-125 (16.9h) CB+	Xe-126 (STABLE)	Xe-127 (36.4d) EC	Xe-128 (STABLE)	Xe-129 (1.12m) EC	Xe-130 (STABLE)	Xe-131 (STABLE)	Xe-132 (STABLE)
							Xe-133 (5.243d) B-

CESIUM-130M

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Cs-130m
Atomic number (Z): 55
Mass number (A): 130
Neutron number (N): 75

RADIOACTIVE DECAY

Decay modes: Electron capture, Internal transition
Half-life: 3.46 [m]
Decay constant: 3.3389×10^{-3} [1/s]
Daughters: Cs-130 (99.8%), Xe-130 (0.16%)
Radioactive daughters: Cs-130

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.09373 [MeV]
Mean photon energy: 0.07368 [MeV]
Air kerma rate constant, Γ_{10} : 6.157×10^{-18} [Gy·m²/Bq·s]
Air kerma coefficient, K_{air} : 6.157×10^{-18} [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : 1.502×10^{-14} [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α} : 0.000e+00 [Gy·kg/Bq·s]

Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 1.502×10^{-14} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.180×10^{-14} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

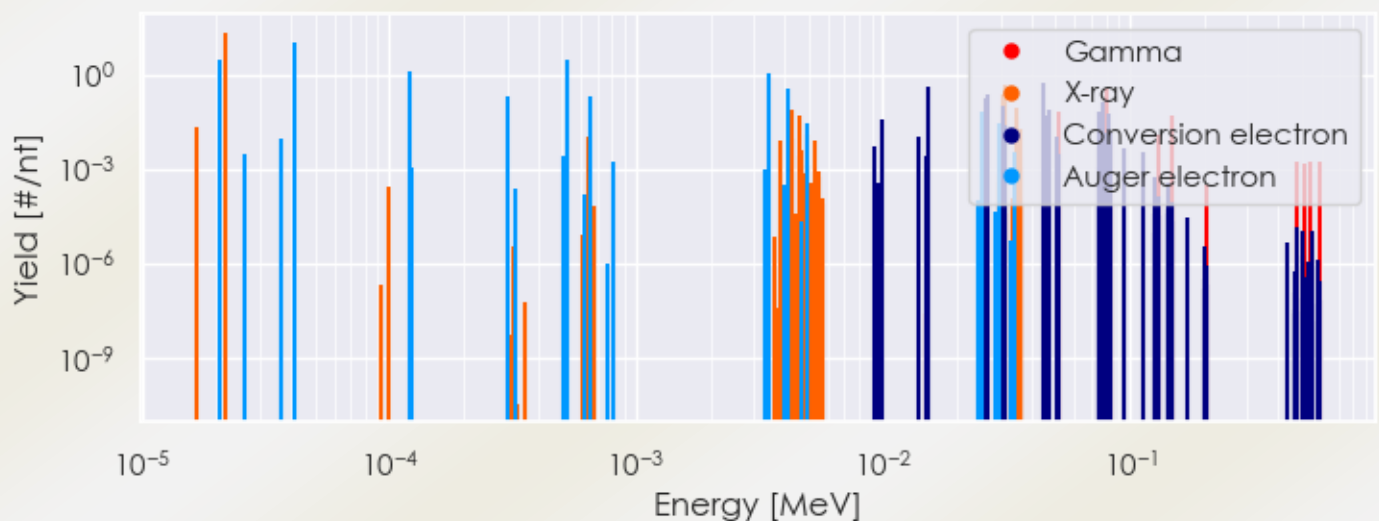
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Cs-130m 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-130m Summary 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-130m Summary Spectrum.csv](http://www.mirdsoft.org/products/MIRDspecs/Cs-130m%20Summary%20Spectrum.csv)

Energy [MeV]	Yield [# / n ^t] if > 0.01	Radiation type
1.66177e-05	1.993e-02	X-ray
2.18853e-05	2.230e+01	X-ray
6.46432e-04	1.054e-02	X-ray
4.27312e-03	7.729e-02	X-ray
4.61550e-03	5.028e-02	X-ray
4.92286e-03	1.178e-02	X-ray
3.06218e-02	2.511e-01	X-ray
3.09789e-02	4.636e-01	X-ray
3.49256e-02	4.392e-02	X-ray
3.49944e-02	8.514e-02	X-ray
3.58172e-02	1.801e-02	X-ray
5.11800e-02	7.027e-02	Gamma
8.04500e-02	3.462e-01	Gamma
1.31500e-01	1.293e-02	Gamma
1.48350e-01	5.092e-02	Gamma
2.07154e-05	2.955e+00	Auger electron
4.14118e-05	1.060e+01	Auger electron
1.20223e-04	1.291e+00	Auger electron
3.04288e-04	2.022e-01	Auger electron
5.27895e-04	2.942e+00	Auger electron
6.51596e-04	1.925e-01	Auger electron
3.43896e-03	1.143e+00	Auger electron
4.15857e-03	3.524e-01	Auger electron
4.90566e-03	2.709e-02	Auger electron
9.89390e-03	3.499e-02	Conversion electron
1.39093e-02	1.088e-02	Conversion electron
1.51950e-02	3.845e-01	Conversion electron

2.53980e-02	6.585e-02	Auger electron
2.61368e-02	1.740e-01	Conversion electron
2.64939e-02	2.355e-01	Conversion electron
2.98089e-02	2.993e-02	Auger electron
3.05093e-02	1.000e-01	Conversion electron
3.15000e-02	2.404e-02	Conversion electron
4.44650e-02	5.085e-01	Conversion electron
4.54951e-02	4.722e-02	Conversion electron
4.69150e-02	7.378e-02	Conversion electron
5.01893e-02	1.068e-02	Conversion electron
7.47651e-02	6.253e-02	Conversion electron
7.75368e-02	1.179e-01	Conversion electron
7.78939e-02	1.281e-01	Conversion electron
7.94593e-02	1.404e-02	Conversion electron
8.19093e-02	5.764e-02	Conversion electron
8.29000e-02	1.390e-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/SNMMI-MAIN/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=0-932004-80-6