

	Ba-120 (100m) ECB+	Ba-127 (12.7m) ECB+	Ba-128 (2.43d) EC	Ba-129 (2.23h)	Ba-131 (11.50d) EC	Ba-132 (STABLE)	Ba-133 (10.52y) EC	
Cs-124 (10.8s) ECB+	Cs-125 (45m) ECB+	Cs-126 (1.64m) ECB+	Cs-127 (6.49h) ECB+	Cs-128 (3.640m) ECB+	Cs-129 (3.2y) ECB+	Cs-130 (29.21m) ECB+B-	Cs-131 (9.689d) EC	Cs-132 (6.479d) ECB+B-
Xe-123 (2.08h) ECB+		Xe-125 (16.9h) ECB+	Xe-126 (1.2s) ECB+	Xe-128 (1.9s) EC	Xe-129 (17.7s) EC	Xe-130 (STABLE)	Xe-131 (11.9d) EC	Xe-132 (STABLE)

CESIUM-128

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Cs-128
Atomic number (Z): 55
Mass number (A): 128
Neutron number (N): 73

RADIOACTIVE DECAY

Decay modes: β^+ , Electron capture
Half-life: 3.64 [m]
Decay constant: $3.1738\text{e-}03$ [1/s]
Daughters: Xe-128 (100.0%)
Radioactive daughters: None

DOSIMETRIC CONSTANTS

Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.87344 [MeV]
Mean photon energy: 0.89165 [MeV]
Air kerma rate constant, Γ_{10} : $7.985\text{e-}18$ [Gy·m²/Bq·s]
Air kerma coefficient, K_{air} : $3.463\text{e-}17$ [Gy·m²/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (α and/or electrons), Δ_{wp} : $1.399\text{e-}13$ [Gy·kg/Bq·s]
Equilibrium dose constant for alphas, Δ_{α} : $0.000\text{e+}00$ [Gy·kg/Bq·s]

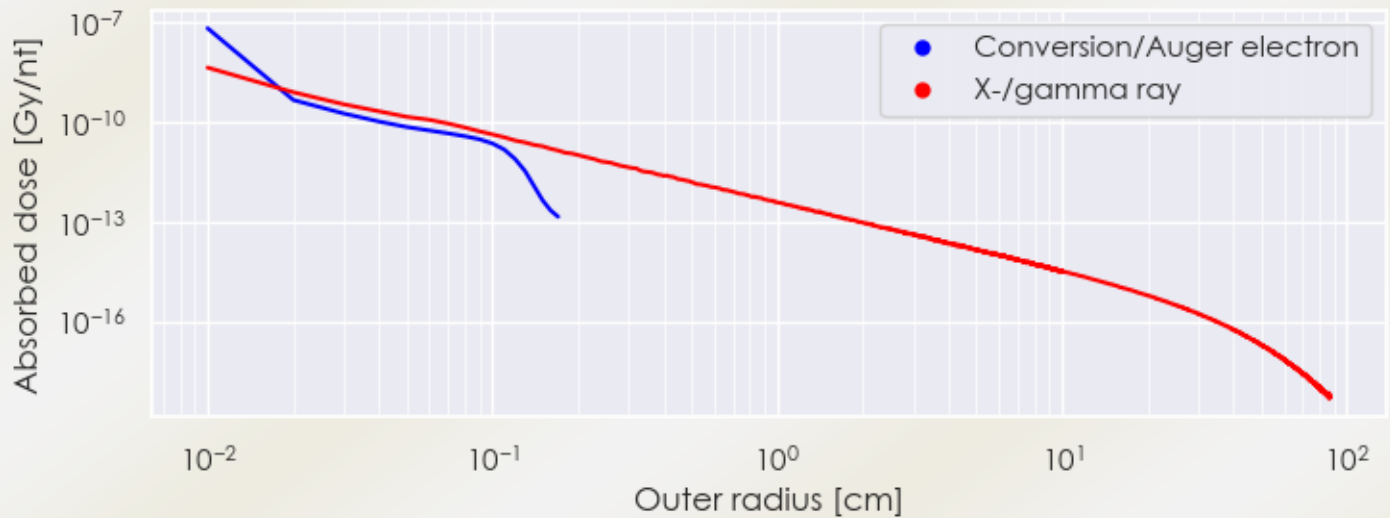
Equilibrium dose constant for betas/electrons, $\Delta_{\beta, \beta^+, e^-}$: 1.399×10^{-13} [Gy·kg/Bq·s]

Equilibrium dose constant for photons, Δ_p : 1.429×10^{-13} [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

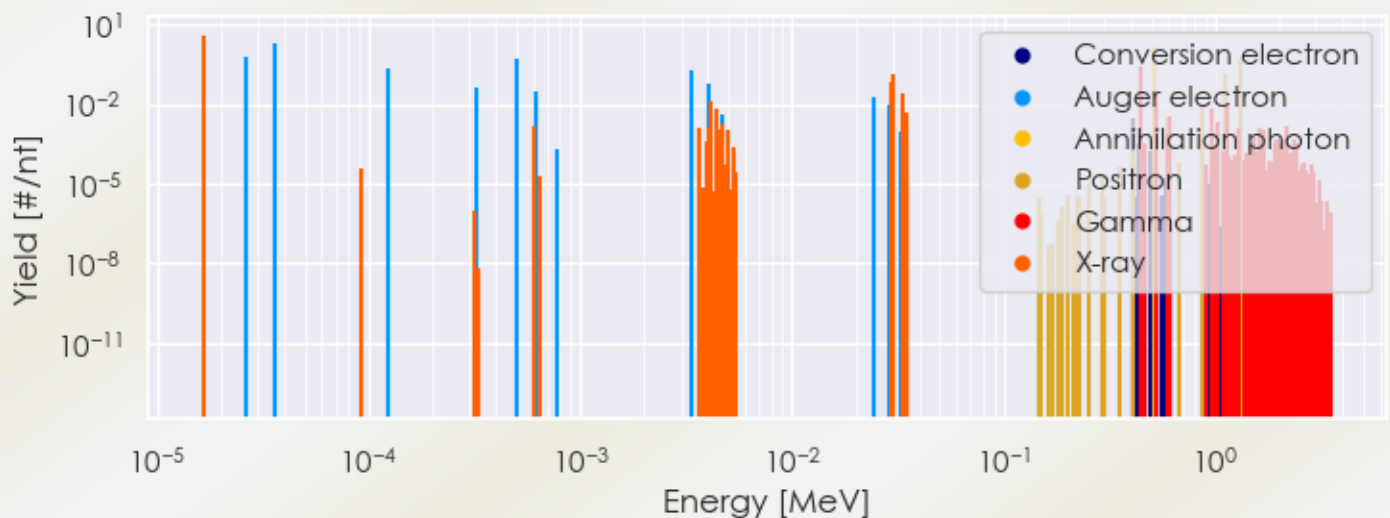
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Cs-128 DPK.csv

SUMMARY SPECTRA (PLOT)

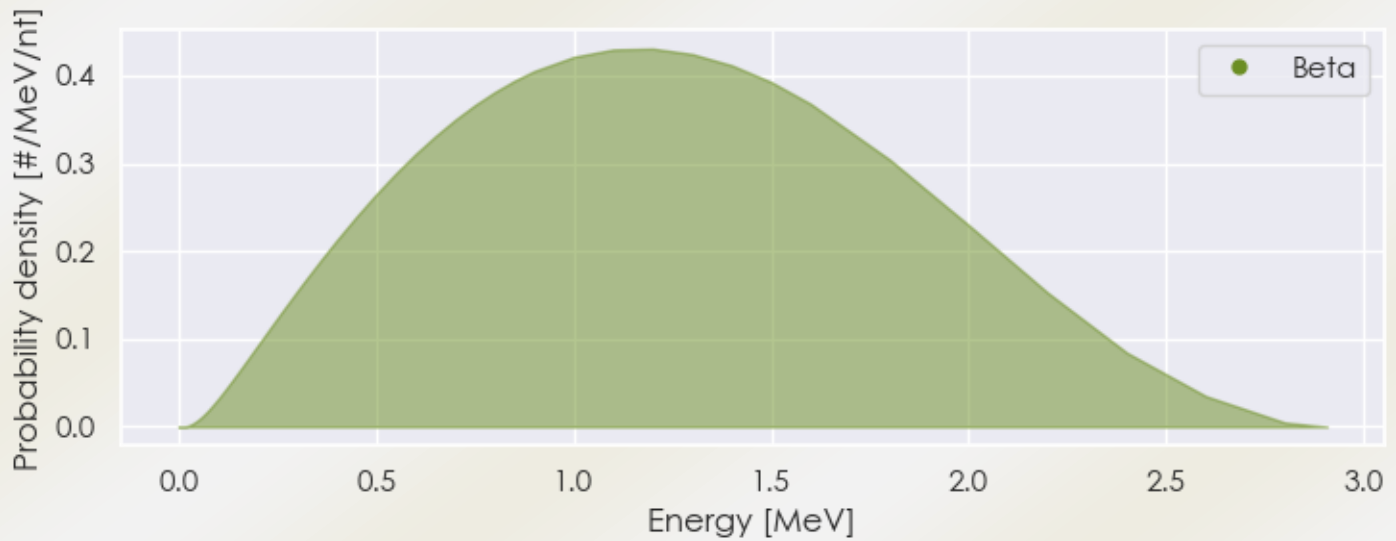
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Cs-128 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-128 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-128 Summary Spectrum.csv

Energy [MeV]	Yield [# / nt] if > 0.01	Radiation type
1.66177e-05	3.736e+00	X-ray
4.09719e-03	1.196e-02	X-ray
2.94521e-02	6.898e-02	X-ray
2.97812e-02	1.278e-01	X-ray
3.35665e-02	1.199e-02	X-ray
3.36295e-02	2.325e-02	X-ray
4.42901e-01	2.680e-01	Gamma
5.11000e-01	1.377e+00	Annihilation photon
5.26557e-01	2.412e-02	Gamma
1.14008e+00	1.168e-02	Gamma

1.11091e+00	1.440e-01	Positron
1.31581e+00	5.322e-01	Positron
2.61889e-05	5.827e-01	Auger electron
3.62437e-05	1.777e+00	Auger electron
1.23733e-04	2.192e-01	Auger electron
3.21976e-04	4.207e-02	Auger electron
5.05176e-04	4.867e-01	Auger electron
6.17465e-04	2.786e-02	Auger electron
3.32543e-03	1.918e-01	Auger electron
4.00275e-03	5.690e-02	Auger electron
2.44715e-02	1.939e-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