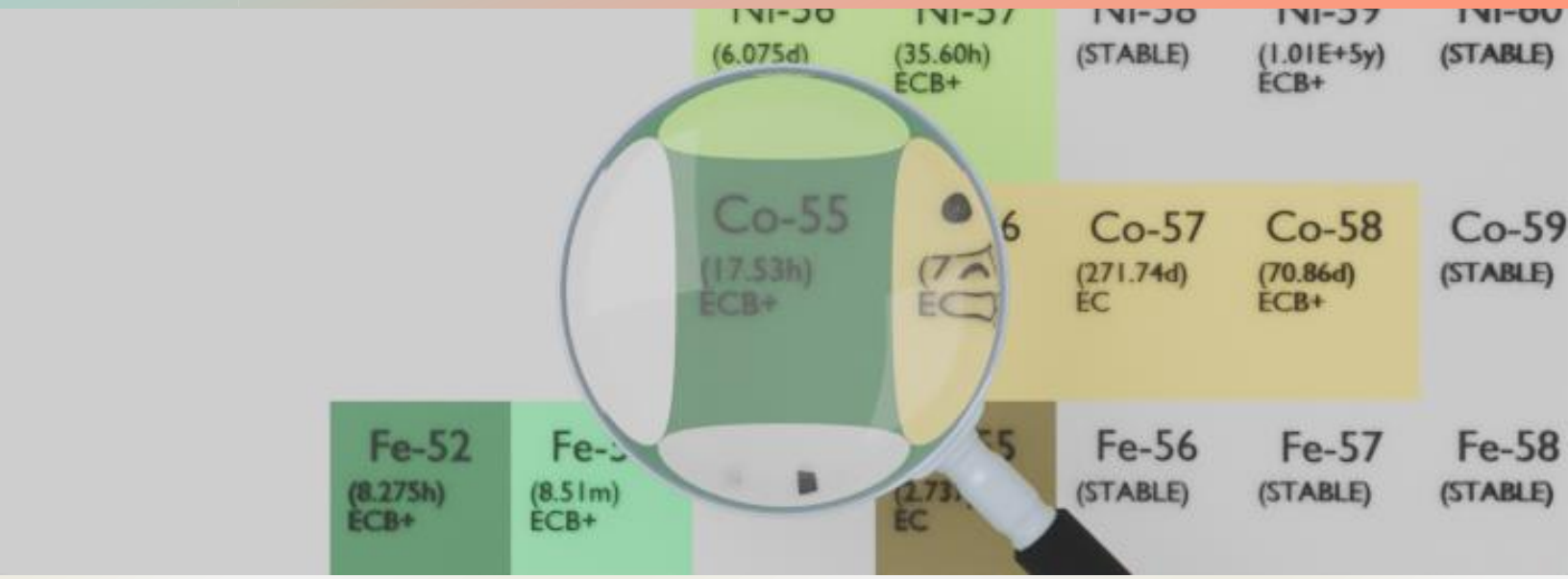


COBALT-55

SUMMARY DATA

GENERAL

CLASSIFICATION

Isotope: Co-55
Atomic number (Z): 27
Mass number (A): 55
Neutron number (N): 28

RADIOACTIVE DECAY

Decay modes: β+, Electron capture
Half-life: 17.53 [h]
Decay constant: 1.0984e-05 [1/s]
Daughters: Fe-55 (100.0%)
Radioactive daughters: Fe-55

DOSIMETRIC CONSTANTS

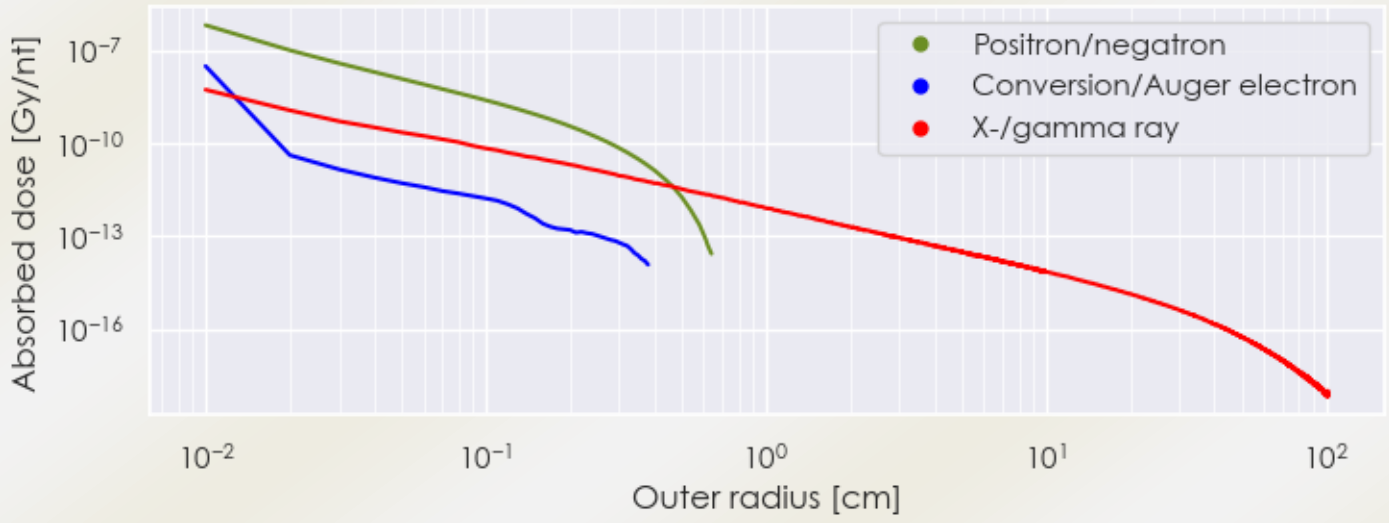
Mean alpha energy: 0.0 [MeV]
Mean electron energy: 0.43119 [MeV]
Mean photon energy: 1.99597 [MeV]
Air kerma rate constant, Γ_{10}: 4.306e-17 [Gy·m^2/Bq·s]
Air kerma coefficient, K_{air}: 7.242e-17 [Gy·m^2/Bq·s]
Equilibrium dose constant for weakly-penetrating radiations (a and/or electrons), Δ_{wp}: 6.908e-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, $\Delta_{\beta-,\beta+,e-}$: 6.908e-14 [Gy·kg/Bq·s]
Equilibrium dose constant for photons, Δ_{p}: 3.198e-13 [Gy·kg/Bq·s]

DOSE POINT KERNELS (PLOT)

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

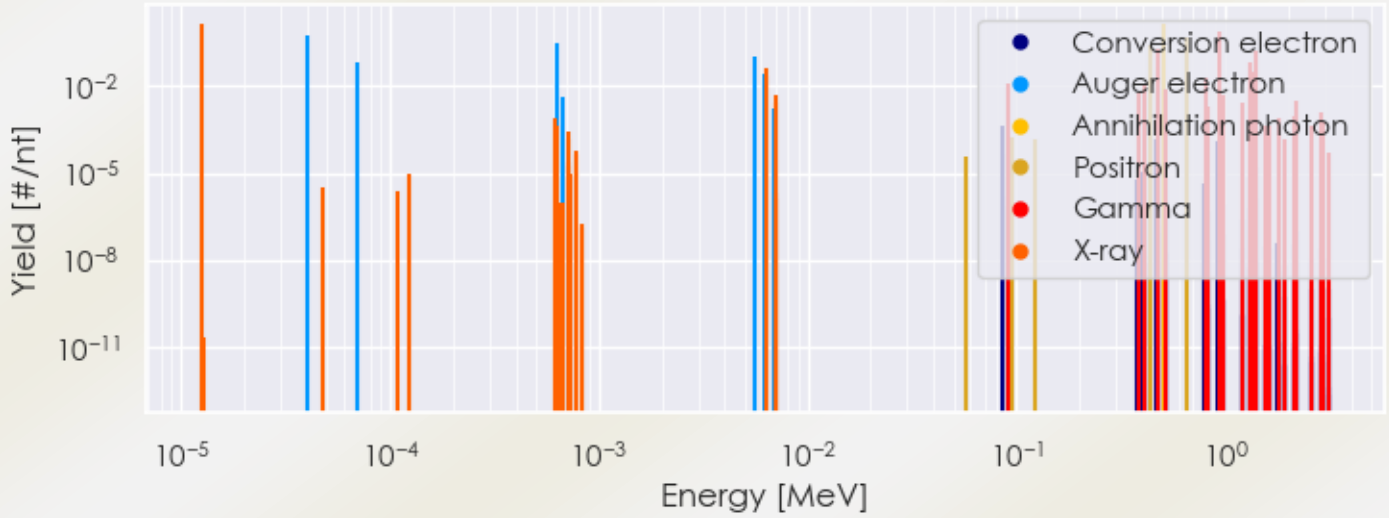
Note: Bins are spaced every 0.1 mm until a radius of 10 cm, and every 1 mm until a radius of 2 m.



Download tabulated dose point kernel file here: www.mirdsoft.org/products/MIRDspecs/Co-55 DPK.csv

SUMMARY SPECTRA (PLOT)

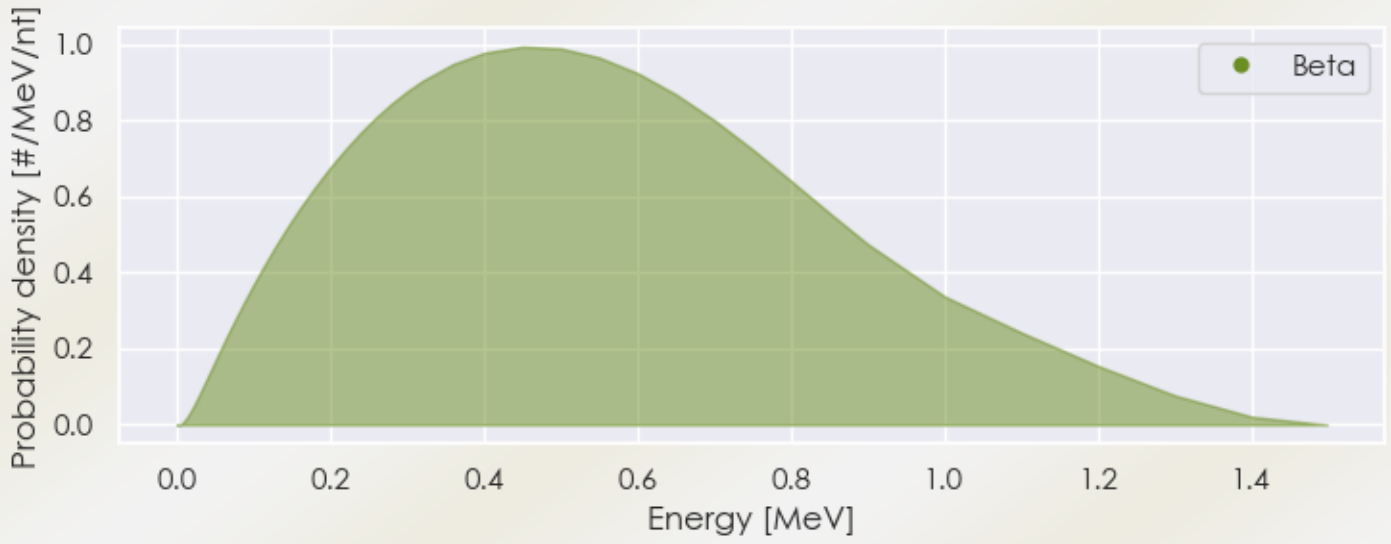
Spectra source: **ICRP Publication 107: Nuclear Decay Data for Dosimetric Calculations. Ann. ICRP 2008, 38 (3).**



Download tabulated summary spectra file here: www.mirdsoft.org/products/MIRDspecs/Co-55 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/Co-55 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/Co-55 Summary Spectrum.csv

Energy [MeV]	Yield [#/nt] if > 0.01	Radiation type
1.25308e-05	1.389e+00	X-ray
6.34985e-03	2.182e-02	X-ray
6.36272e-03	4.274e-02	X-ray
9.19000e-02	1.162e-02	Gamma
4.11500e-01	1.073e-02	Gamma
4.77200e-01	2.018e-01	Gamma
5.11000e-01	1.517e+00	Annihilation photon
8.03700e-01	1.868e-02	Gamma
9.31100e-01	7.500e-01	Gamma
1.31660e+00	7.087e-02	Gamma

1.37000e+00	2.917e-02	Gamma
1.40850e+00	1.688e-01	Gamma
4.35589e-01	2.564e-01	Positron
4.76131e-01	4.290e-02	Positron
6.48717e-01	4.589e-01	Positron
4.00282e-05	5.973e-01	Auger electron
6.97184e-05	6.568e-02	Auger electron
6.26750e-04	3.359e-01	Auger electron
5.58186e-03	1.134e-01	Auger electron
6.25798e-03	2.774e-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