

Recommended Nuclear Decay Data

Ba-133

Decay Mode: EC		Half-Life: (3848 ± 6) d		[2]	
Radiation Type		Energy (keV)	Intensity (%)		Ref.
Auger-L		3.55	133	6	[4]
Auger-K		25.5	13.8	16	[4]
ce-K-1		17.18	10.6	4	[4]
ce-K-2		43.64	3.43	16	[4]
ce-K-3		45.01	45.2	10	[4]
ce-L-1		47.45	1.45	20	[4]
ce-MNO-1		51.94	0.44	20	[4]
ce-L-2		73.91	0.54	10	[4]
ce-L-3		75.28	7.37	23	[4]
ce-MNOP-3		79.5	2.02	14	[4]
ce-K-7		266.87	0.70	6	[4]
ce-K-8		320.03	1.31	4	[4]
ce-K-9		347.87	0.154	5	[4]
ce-L-8		350.30	0.218	7	[4]
X-ray L	Σ	4.53	14.5	13	[2]
X-ray K α	Σ	30.85	98.0	14	[2]
X-ray K β	Σ	35.1	23.0	5	[2]
γ		53.16	2.199	22	[2]
γ		79.62	2.62	6	[2]
γ		81.00	34.06	27	[2]
γ		160.61	0.646	8	[2]
γ		223.25	0.450	4	[2]
γ		276.40	7.164	22	[2]
γ		302.85	18.33	6	[2]
γ		356.02	62.05	19	[2]
γ		383.85	8.94	3	[2]

Recommended Nuclear Decay Data

Ce-139

Decay Mode: ECL		Half-Life: (137.66 ± 0.06) d			[2]	
Radiation Type		Energy (keV)		Intensity (%)		Ref.
Auger-L		2.7	- 6.2	90.2	10	[1]
Auger-K		26.2	- 38.8	8.3	4	[1]
ce-K-1		126.93		17.15	8	[1]
ce-L-1		159.59		2.32	10	[1]
ce-MNO-1		164.49		0.639	16	[1]
X-ray L	Σ	5.0		12.0	6	[2]
X-ray K α	Σ	33.30		63.7	6	[2]
X-ray K β	Σ	38.0		15.40	21	[2]
γ		165.86		79.90	4	[2]

Recommended Nuclear Decay Data

Co-57

Decay Mode: EC		Half-Life: (271.83 ± 0.08) d					[2]
Radiation Type		Energy (keV)		Intensity (%)		Ref.	
Auger-L		0.6	- 0.7	255	16	[3]	
Auger-K		5.37	- 7.10	106	3	[3]	
ce-K-1		7.31		70.2	4	[3]	
ce-LMN-1		13.56		7.57	24	[3]	
ce-K-2		114.95		1.63	10	[3]	
ce-LMN-2		129.36		0.18	1	[3]	
ce-K-3		129.36		1.43	4	[3]	
ce-LMN-3		135.62		0.172	15	[3]	
X-ray L		0.71		1.27	21	[2]	
X-ray K	Σ	6.48		57.9	8	[2]	
γ		14.41		9.16	15	[2]	
γ		122.06		85.60	17	[2]	
γ		136.47		10.68	8	[2]	
γ		230.40		0.00040	12	[2]	
γ		339.69		0.0037	11	[2]	
γ		352.33		0.0030	9	[2]	
γ		366.80		0.0012	4	[2]	
γ		570.09		0.016	5	[2]	
γ		692.41		0.149	10	[2]	
γ		706.54		0.0050	15	[2]	

Recommended Nuclear Decay Data

Cs-137

Decay Mode: β^-		Half-Life: (11000 \pm 90) d			[2]		
Radiation Type		Energy (keV)			Intensity (%)		Ref.
Auger-L		2.6	-	5.9	7.28	12	[1]
Auger-K		25.31	-	37.41	0.76	4	[1]
ce-K-1		624.22			7.62	19	[1]
ce-L-1		656.0			1.42	19	[1]
ce-MN-1		661.0			0.33	1	[3]
β^- max		513.97			94.36	28	[1]
β^- av		174.3					[1]
β^- max		1175.6			5.64	28	[1]
β^- av		416.3					[1]
X-ray L	Σ	4.7			0.90	5	[2]
X-ray K α	Σ	32.06			5.53	10	[2]
X-ray K β	Σ	36.6			1.321	27	[2]
γ	Ba-137m	661.66			85.00	20	[2]

Cs-137 with Ba-137m (half-life: 2.552 m) in equilibrium

Recommended Nuclear Decay Data

Mn-54

Decay Mode: EC		Half-Life: (312.15 ± 0.08) d					[2]
Radiation Type		Energy (keV)			Intensity (%)		Ref.
Auger-L		0.4	-	0.7	143.0	6	[1]
Auger-K		4.55	-	5.99	63.3	5	[1]
ce-K-1		828.85			0.0224	11	[1]
ce-L-1		834.20			0.00220	13	[1]
X-ray L	Σ	0.57			0.65	13	[2]
X-ray K α	Σ	5.41			22.7	4	[2]
X-ray K β	Σ	5.95			3.05	7	[2]
γ		834.84			99.9750	12	[2]

Recommended Nuclear Decay Data

Sr-85

Decay Mode: EC		Half-Life: (64.849 ± 0.004) d		[2]	
Radiation Type		Energy (keV)	Intensity (%)	Ref.	
Auger-L		1.68	108.2	23	[3]
Auger-K		11.4	28.7	7	[3]
X-ray L	Σ	1.7	0.16	6	[2]
X-ray Kα	Σ	13.37	50.1	2	[2]
X-ray Kβ	Σ	15.0	8.7	2	[2]
γ		514.01	98.4	4	[2]
γ		868.06	0.012	2	[2]

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Y-88

Decay Mode: EC, β^+		Half-Life: (106.630 \pm 0.025) d		[2]	
Radiation Type		Energy (keV)	Intensity (%)	Ref.	
Auger-L		1.79	105	6	[3]
Auger-K		12.5	26.2	8	[3]
β^+ max		754.7	0.20	2	[3]
X-ray L	Σ	1.82	2.5	4	[2]
X-ray K α	Σ	14.14	52.2	6	[2]
X-ray K β	Σ	15.8	9.4	2	[2]
γ	Annih.	511.0	0.42	4	[2]
γ		850.6	0.065	13	[2]
γ		898.04	94.0	3	[2]
γ		1382.2	0.021	6	[2]
γ		1836.1	99.33	3	[2]
γ		2734.0	0.61	2	[2]
γ		3219.7	0.0071	20	[2]

Recommended Nuclear Decay Data

Zn-65

Decay Mode: EC, β^+		Half-Life: (243.94 \pm 0.21) d					[2]
Radiation Type		Energy (keV)			Intensity (%)		Ref.
Auger-L		0.7	-	1.0	126.7	6	[1]
Auger-K		6.76	-	8.90	47.5	4	[1]
β +max		329.3			1.41	2	[1]
X-ray L	Σ	0.93			1.24	6	[2]
X-ray K	Σ	8.15			39.5	4	[2]
γ		344.91			0.0030	3	[2]
γ	Annih.	511.0			2.82	4	[2]
γ		770.4			0.0030	3	[2]
γ		1115.5			50.60	22	[2]

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■ Decay Mode

α	Alpha
β^- , β^+	Beta
EC	Electron capture
IT	Isomeric transition

■ Half-Life

s	Seconds
m	Minutes
h	Hours
d	Days
y	Years

■ Energy

All energies are given in keV.
Normally there are energies listed with an intensity $\geq 1\%$.

■ Radiation Type

Auger-L/K	L or K-shell auger electron
ce-K-1	K-shell conversion electron transition 1
ce-L-2	L-shell conversion electron transition 2
α	Alpha particle
β^- max, β^+ max	Beta particle (maximal energy)
β^- av, β^+ av	Beta particle (average energy)
X-ray L	L X-ray
X-ray $K\alpha$, $K\beta$	K X-rays
γ	Gamma ray
γ Annih.	Annihilation radiation
Σ	Signifies weighted mean energies and intensities

■ Intensity

Values are given in percent. The format used for the uncertainties in the listed values can be illustrated by the following examples:

$$1.2 \quad 56 = 1.2 \pm 5.6$$
$$1.23 \quad 56 = 1.23 \pm 0.56$$

■ References

- [1] PTB-6.11-97-1, Braunschweig, Oktober 1997
- [2] PTB-Ra-16/5, Braunschweig, Mai 2000
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- [5] Table de Radionuclides, BNM-CEA/DTA/LPRI Commissariat à l'Énergie Atomique – France 1999
- [6] National Nuclear Data Center USA, Brookhaven National Laboratory Upton N.Y.
- [7] Table of Isotopes, 8th Edition, 1996
- [8] BNM-CEA/DTA/DAMRI Nuclear and Atomic Decay Data ; 19/12/98

Eckert & Ziegler Nuclitec GmbH

Gieselweg 1
38110 Braunschweig
Deutschland

Tel. +49 5307 932-555
Fax +49 5307 932-194
www.nuclitec.de