

# Recommended Nuclear Decay Data

## Cs-137

Decay Mode: $\beta^-$		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]
$\beta^-$ max		513.97			94.36	28	[1]
$\beta^-$ av		174.3					[1]
$\beta^-$ max		1175.6			5.64	28	[1]
$\beta^-$ av		416.3					[1]
X-ray L	$\Sigma$	4.7			0.90	5	[2]
X-ray K $\alpha$	$\Sigma$	32.06			5.53	10	[2]
X-ray K $\beta$	$\Sigma$	36.6			1.321	27	[2]
$\gamma$	Ba-137m	661.66			85.00	20	[2]

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

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## ■ Decay Mode

$\alpha$	Alpha
$\beta^-$ , $\beta^+$	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
$\alpha$	Alpha particle
$\beta^-$ max, $\beta^+$ max	Beta particle (maximal energy)
$\beta^-$ av, $\beta^+$ av	Beta particle (average energy)
X-ray L	L X-ray
X-ray $K\alpha$ , $K\beta$	K X-rays
$\gamma$	Gamma ray
$\gamma$ Annih.	Annihilation radiation
$\Sigma$	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:

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

## ■ References

- [1] PTB-6.11-97-1, Braunschweig, Oktober 1997
- [2] PTB-Ra-16/5, Braunschweig, Mai 2000
- [3] LMRI. Table de radionuclides. 1982 ff
- [4] NCRP Report No.58, 2nd Edition, February 1985
- [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

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