



## 1 Decay Scheme

Be-7 disintegrates by electron capture either directly to the ground state of Li-7 (89.56%) or via the 477 keV of Li-7 (10.44%). Recent experiments have shown that the half-life of Be-7 increases as much as 0.7% by embedding this radionuclide in different matrices. The recommended value presented in this evaluation should be adequate for Be and BeO sample.

*Le Be-7 se désintègre par capture électronique soit directement vers le niveau fondamental de Li-7, soit via le niveau excité de 477 keV. Des expériences récentes ont montré que la valeur de la période pouvait être affectée jusqu'à 0,7% par une modification de l'environnement extérieur, par exemple la composition chimique. La valeur retenue pour cette évaluation s'applique plutôt à des échantillons de Be ou BeO.*

## 2 Nuclear Data

$$T_{1/2}({}^7\text{Be}) : 53,22 \quad (6) \quad \text{d}$$

$$Q^+({}^7\text{Be}) : 861,815 \quad (18) \quad \text{keV}$$

### 2.1 Electron Capture Transitions

	Energy keV	Probability × 100	Nature	lg <i>ft</i>	$P_K$	$P_L$
$\epsilon_{0,1}$	384,194 (18)	10,44 (4)	Allowed	3,56	0,908 (12)	0,092 (12)
$\epsilon_{0,0}$	861,815 (18)	89,56 (4)	Allowed	3,32	0,908 (12)	0,092 (12)

### 2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	$\alpha_T$
$\gamma_{1,0}(\text{Li})$	477,621 (2)	10,44 (4)	M1+4%E2	0,00000073 (11)

### 3 Atomic Data

#### 3.1 Li

$$\omega_K : 0,00029 \quad (15)$$

##### 3.1.1 X Radiations

	Energy keV	Relative probability
$X_K$		
$K\alpha$	0,0543	

### 4 Photon Emissions

#### 4.1 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{1,0}(\text{Li})$	477,6035 (20)	10,44 (4)

### 5 Main Production Modes

- { Li – 6(d,n)Be – 7
- { Possible impurities : Li – 7
- { B – 10(p, $\alpha$ )Be – 7
- { Possible impurities : C – 9,C – 11
- { C – 12(He – 3, $2\alpha$ )Be – 7
- { Possible impurities : C – 11,N – 13

## 6 References

- E.SEGRE, C.E.WIEGAND. Phys Rev. 75 (1949) 39  
(Half-life chem. eff.)
- J.J.KRAUSHAAR, E.D.WILSON, K.T.BAINBRIDGE. Phys. Rev. 90 (1953) 610  
(Half-life chem. eff.)
- P.BOUCHEZ, J.TOBAILEM, J.ROBERT, R.MUXART, R.MELLET, P.DAUDEL. J. Phys. Radium 17 (1956) 363  
(Half-life chem. eff.)
- H.W.WRIGHT, E.I.WYATT, S.A.REYNOLDS, W.S.LYON, T.H.HANDLEY. Nuclear Sci. Eng. 2 (1957) 427  
(Half-life)
- A.KRIESTER. Kernenergie 7 (1964) 748  
(ICC)
- J.B.A.ENGLAND. Nucl. Phys. 72 (1965) 449  
(Half-life)
- W.POENITZ. J. Nucl. Energy 20 (1966) 825  
(Elec. Capt. Probabilities)
- J.G.V.TAYLOR. Report AECL-3512 (1969) 29  
(Elec. Capt. Probabilities)
- M.MUTTERER. Neutr.Stand. 452, Flux Normalization 452, AEC Symp.Series 23 (1970)  
(Elec. Capt. Probabilities)
- H.W.JOHLIGE, D.C.AUMANN, H.J.BORN. Phys. Rev. C2 (1970) 1616  
(Half-life chem. eff.)
- F.YIOU, G.M.RAISBECK. Phys. Rev. Lett. 29 (1972) 372  
(Half-life)
- M.MUTTERER. Phys. Rev. C8 (1973) 2089  
(Elec. Capt. Probabilities)
- W.P.POENITZ, A.DEVOLPI. Int. J. Appl. Radiat. Isotop. 24 (1973) 471  
(Gamma emission probabilities, Elec. Capt. Probabilities)
- P.J.CRESSY JR.. Nucl. Sci. Eng. 55 (1974) 450  
(Half-life)
- I.W.GOODIER, J.L.MAKEPEACE, A.WILLIAMS. Int. J. Appl. Radiat. Isotop. 25 (1974) 373  
(Gamma emission probabilities, Elec. Capt. Probabilities)
- F.LAGOUTINE, J.LEGRAND, C.BAC. Int. J. Appl. Radiat. Isotop. 26 (1975) 131  
(Half-life)
- M.H.CHEN, B.CRASEMANN. Phys. Rev. Lett. 40 (1978) 1423  
(PL/PK)
- H.SANJEEVIAH, B.SANJEEVIAH. Phys. Rev. C18 (1978) 974  
(Gamma emission probabilities)
- R.G.HELMER, P.H.M.VAN ASSCHE, C.VAN DER LEUN. At.Data.Nuc.Data.Tables 24 (1979) 39  
(EGamma)
- A.R.RUTLEDGE, L.V.SMITH, J.S.MERRITT. Report AECL-6692 (1980) 2  
(Half-life, Gamma emission probabilities)
- P.CHRISTMAS. Report NBS-SP-626 (1982) 100  
(Half-life)
- A.R.RUTLEDGE, L.V.SMITH, J.S.MERRITT. Report NBS-SP-626 (1982) 5  
(Half-life)
- G.J.MATHEWS, R.C.HAIGHT, R.G.LANIER, R.M.WHITE. Phys. Rev. C28 (1983) 879  
(Gamma emission probabilities, Elec. Capt. Probabilities)
- C.N.DAVIDS, A.J.ELWYN, B.W.FILIPPONE, S.B.KAUFMAN, K.E.REHM, J.P.SCHIFFER. Phys. Rev. C28 (1983) 885  
(Gamma emission probabilities, Elec. Capt. Probabilities)
- S.A.FISHER, R.L.HERSHBERGER. Bull. Am. Phys. Soc. 28 (1983) 713  
(Gamma emission probabilities, Elec. Capt. Probabilities)
- H.KUMAHORA, H.INOUE, Y.YOSHIZAWA. Nucl.Instr.and Meth. 206 (1983) 489  
(Gamma energy)
- S.A.FISHER, R.I.HERSHBERGER. Nucl. Phys. A423 (1984) 121  
(Gamma emission probabilities, Elec. Capt. Probabilities)
- R.T.SKELTON, R.W.KAVANAGH. Nucl. Phys. A414 (1984) 141  
(Gamma emission probabilities, Elec. Capt. Probabilities)

- F.AJZENBERG-SELOVE. Nucl. Phys. A490 (1988) 1  
(Levels, Elec. Capt. Probabilities)
- G.AUDI, A.H.WAPSTRA. Nucl. Phys. A565 (1993) 1  
(Q)
- T.CHANG, S.WANG, H.WANG. Nucl. Instr. Meth. A325 (1993) 196  
(Gamma energy)
- J.H.HUBBELL, P.N.TREHAN, NIRMAL SINGH, B.CHAND, D.MEHTA, M.L.GARG, R.R.GARG, SURINDER SINGH, S.PURI. J.Phys.Chem.Ref.Data 23 (1994) 339  
(L fluorescence yield)
- C.-A. HUH, L.-G.LIU. J. Radioanal. Nucl. Chem. 246 (2000) 229  
(Half-life)
- R.G.HELMER, C.VAN DER LEUN. Nucl. Instr. Meth. A450 (2000) 35  
(Gamma energy)
- L.-G.LIU, C.-A. HUH. Earth and Planetary Science Letters 180 (2000) 163  
(Half-life)

