

### Comments on evaluation of decay data by V.P. Chechev and M.M. Bé

The first evaluation was completed by V. Chechev in 1998. It was updated in January 2012 to include the new  $Q(\beta^-)$  value of 167.33 (3) keV (2011AuZZ), compared to 167.14 (8) keV, used in the original evaluation. The literature available by January 2012 was included.

## Nuclear Data

### Half-Life

In literature there are many measurements of the <sup>35</sup>S half-life. They are listed in Table 1.

Table 1. Measurements results and recommended value of <sup>35</sup>S half-life.

Reference	Value (d)	Uncertainty (d)	Remarks
1940Le**	88	5	GM, omitted
1941Ka**	88	3	GM, omitted
1943He**	87,1	1,2	GM
1949Ma**	88		Omitted
1952Ru23	80		Omitted
1958Se49	87,16	0,10	PC
1959Ca12	88,8	1,0	PC
1959Co56	86,35	0,17	PC
1961Wy01	89,0	0,5	PC
1961Oz01	87,1	0,9	Calorimetry
1965Fl02	87,9	0,3	PC
1968Wo06	87,39	0,10	4 $\pi$ PC
1969La34	87,48	0,14	4 $\pi$ PC, original Uc/3
1999Pa18	87,38	0,03	Omitted, $\beta$ -spectrometer
$\chi^2/n-1 = 6,6$			
$\chi^2$ crit. = 2,5			
UWM =	87,59		
LWM = (recommended)	87,25	0,15	Uc <sub>int</sub> = 0,06 ; Uc <sub>ext</sub> = 0,15

Conventional designations in the fourth column:

Measurement of counting rate decrease by Geiger-Müller counter (GM), proportional counter (PC), calorimeter (calorimetry), 4 $\pi$  proportional counter (4 $\pi$ PC).

The two values without uncertainty and the two oldest ones with high uncertainty were omitted from statistical analysis.

The value of Palermo *et al.* (1999Pa18) has been omitted because the measurement was carried out to check a source preparation process, only the statistical uncertainty was taken into account; in the publication, the uncertainty bars associated to each result, are significantly greater than the claimed uncertainty, moreover an impurity was observed in the source. It was then difficult to assess a real uncertainty and this value was rejected.

### Decay Energy and Characteristics of Electron Emission ( $\beta^-$ )

The decay energy of <sup>35</sup>S has been adopted using the evaluations of Audi *et al.* (2011).

The end-point of the <sup>35</sup>S  $\beta^-$ -spectrum has been obtained from the correlation:

$E_{\beta^-} = Q_{\beta^-} - E_r$  where  $E_r = 3$  eV is the maximum recoil energy of <sup>35</sup>Cl atom.

The average energy of the electrons per disintegration has been calculated for an allowed form of  $\beta^-$ - spectrum taking into account the adopted value of  $Q_{\beta^-}$ .

### References

- |          |  |                               |
|----------|--|-------------------------------|
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| 2011AuZZ | G. Audi and W. Meng, private communication (2011)                          | [Q <sub>β<sup>-</sup></sub> ] |