

^{106}Te α decay

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	D. De Frenne	NDS 110, 1745 (2009)	31-Dec-2008

Parent: ^{106}Te : $E=0.0$; $J^\pi=0^+$; $T_{1/2}=60 \mu\text{s } 30$; $Q(\alpha)=4290 \text{ 9}$; $\% \alpha \text{ decay}=100.0$

$T_{1/2}(^{106}\text{Te})=60 \mu\text{s } +30-10$ was measured by [1981Sc17](#), $60 \mu\text{s } +40-20$ by [1994Pa11](#). $T_{1/2}(^{106}\text{Te})=60 \mu\text{s } 30$ is used in calculations here.

$\% \alpha(^{106}\text{Te})=100$. Any possible ε decay of ^{106}Te is taken as negligible; by using the gross β -decay theory, [1973Ta30](#) calculated $T_{1/2}(\varepsilon \text{ decay})>0.1 \text{ s}$. This partial half-life yields $\% \varepsilon < 0.06$.

The calculations by P. Moller, J. R. Nix and k.-L. Kratz ([1997Mo25](#)) give $T_{1/2}(\beta^+)=1.58 \text{ s}$, $T_{1/2}(\alpha)=2.19 \times 10^{-13} \text{ s}$.

The calculation of P. Mohr ([2007Mo03](#)) using double-folding potentials gives $T_{1/2}(^{106}\text{Te})=8.66 \times 10^{-6} \text{ s}$.

$Q(\alpha)(^{106}\text{Te})=4290 \text{ 9}$ is recommended by [2003Au03](#). The $E(\alpha)$ value of 4128 9 , measured by [1994Pa11](#), was used as input in their mass adjustment.

 ^{102}Sn Levels

E(level)	J^π
0.0	0^+

 α radiations

$E\alpha$	E(level)	$I\alpha^{\dagger\#}$	HF ‡	Comments
4128 9	0.0	100	1.0	$E\alpha$ was measured by 1994Pa11 . Earlier measurement: $E\alpha=4160 \text{ 30}$ (1981Sc17). $I\alpha$: only one α was observed. An upper limit of $I\alpha$ (to unobserved 2^+ state in ^{102}Sn) $< 4 \times 10^{-6} \%$ is obtained from $\text{HF}(\alpha \text{ to } 2^+) > 1$. $E(2^+ \text{ level})$ is taken as ≈ 1260 based on extrapolation from the first 2^+ state energies in heavier Sn isotopes: $E(2^+ \text{ in } ^{108}\text{Sn})=1205$, $E(2^+ \text{ in } ^{106}\text{Sn})=1206$, $E(2^+ \text{ in } ^{104}\text{Sn})=1259$.

† α intensity per 100 α decays.

‡ $r_0(^{102}\text{Sn})=1.70 \text{ 4}$ is computed from $\text{HF}(4128\alpha)=1.0$.

$\#$ Absolute intensity per 100 decays.