

^{36}K $\varepsilon\alpha$ decay (342 ms) [1996II02,1980Es01,1980Ew01](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Christian Ouellet, Balraj Singh		NDS 112,2199 (2011)	24-Aug-2011

Parent: ^{36}K : $E=0.0$; $J^\pi=2^+$; $T_{1/2}=342$ ms 2; $Q(\varepsilon\alpha)=6173.7$ 4; $\% \varepsilon\alpha$ decay=0.0031 6

^{36}K - $Q(\varepsilon\alpha)$: Deduced from mass excesses of ^{36}K , ^{32}S and ^4He from [2011AuZZ](#). Other: 6164 8 using values from [2003Au03](#).

^{36}K - $T_{1/2}$: Weighted average of 336 ms 4 ([1971Go18](#)), 345 ms 5 ([1971Ja09](#)), 341 ms 6 ([1972Mi13](#)), and 344 ms 3 ([1976Fr03](#)).

^{36}K - $\% \varepsilon\alpha$ decay: $\% \varepsilon\alpha=0.0031$ 6 ([1996II02](#)), 0.0034 13 ([1980Es01](#)), $\% \varepsilon p=0.048$ 14 ([1980Es01](#)).

[1996II02](#) (also [1997II03](#)): ^{36}K from spallation on CaO with 500 MeV protons from the TRIUMF cyclotron. Silicon surface barrier detector, microchannel plate in back-to-back geometry. Measured α and proton groups.

[1980Es01](#): ^{36}K from $^{36}\text{Ar}(p,n)$ reaction on ^{36}Ar implanted in Al foils with 20 MeV protons from University of Jyvaskyla $\alpha(M)-20$ cyclotron. Fast tape He-jet transport system. Silicon surface barrier detectors measured α and proton groups.

[1980Ew01](#) detected 4 α groups.

α branches given here are in percent of total delayed α -particle emission from ^{36}K . These are deduced from $I(\alpha)/100$ decays of ^{36}K , as listed by [1996II02](#).

 ^{32}S Levels

E(level)	J^π
0.0	0^+

Delayed Alphas (^{32}S)

All data from [1996II02](#), except for 4443-keV level.

E(α)	E(^{32}S)	I(α) [†]	E(^{36}Ar)	Comments
1522 3	0.0	1.6 3	8352	
1562 3	0.0	0.77 26	8397	
1963 3	0.0	1.9 6	8847	
2016 3	0.0	48 13	8907	
2229 3	0.0	4.8 13	9147	
2419 3	0.0	0.35 10	9360	
2513 3	0.0	0.26 10	9467	
2727 3	0.0	32 10	9708	
2982 3	0.0	0.26 6	9994	
3170 3	0.0	0.35 13	10205	
3278 3	0.0	1.3 3	10327	
3385 3	0.0	0.83 22	10447	
3487 3	0.0	3.5 10	10562	
3518 3	0.0	1.9 6	10597	
3613 4	0.0	0.13 6	10704	
3748 3	0.0	0.55 16	10856	
3849 4	0.0	0.11 5	10969	
3926 3	0.0	0.90 26	11056	
4086 4	0.0	0.19 6	11236	
4443 [‡] 20	0.0	0.12 6	11639	E(α): from 1980Es01 , branching ration given relative to the 2725 keV branch, neon contamination not entirely ruled out by authors, ^{20}Na contamination claimed by 1996II02 .

[†] For absolute intensity per 100 decays, multiply by 3.1×10^{-5} 6.

[‡] Placement of transition in the level scheme is uncertain.

^{36}K $\varepsilon\alpha$ decay (342 ms) 1996I02,1980Es01,1980Ew01**Decay Scheme**I(α) Intensities: I(α) per 100 parent decays