^{34}Cl IT decay (31.99 min)

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ninel Nica, Balraj Singh	NDS 113, 1563 (2012)	28-May-2012

Parent: ^{34}Cl: E=146.36 *3*; $J^\pi=3^+$; $T_{1/2}$=31.99 min *3*; %IT decay=44.6 *6*

^{34}Cl-E: Based on Eγ In this dataset; other: 146.52 *26* (2012Er02).

^{34}Cl-%IT decay: From %I(β^++ε)=55.4 *6* (1980Wi13, see ^{34}Cl ε decay (31.99 min) dataset) and %I(β^++ε)+%I(IT)=100 for the isomeric level.

2006Ia05: see ^{34}Ar ε decay dataset.

1983Ko22: ^{12}C(^{28}Si,3p3n) E=115 MeV, tape transport system, 4π proportional counter, mass separated sources. Measured $T_{1/2}$.

1982Gr07: ^{35}Cl(p,d) E=72 MeV. RbCl target, Ge(Li) detector. Measured $T_{1/2}$.

1980Wi13: ^{31}P(α,nγ) E=10, 11 MeV, MnP pressed powder target, Ge(Li) detector. Measured $T_{1/2}$.

1975Va02: ^{24}Mg(^{12}C,pn) E=35 MeV, Ge(Li)-NaI(Tl) Compton-suppressed spectrometer. Measured Eγ, Iγ, $T_{1/2}$.

1973Ry01: ^{31}P(α,nγ) E=6.5, 6.65 MeV; ^{34}S(p,nγ). Plastic scintillator, multi-scaling decay spectra. Measured $T_{1/2}$, Eβ.

1972Ha82: ^{32}S(^{3}He,n) E=3.2 MeV, NE102 plastic scintillator for β^+. Measured $T_{1/2}$.

1971Sn01: ^{32}S(^{3}He,pγ), E=6.8 MeV. Measured Eγ, Iγ, DSAM.

1971Wa04: ^{35}Cl(n,2nγ)^{34}Cl E=14.8 MeV, Ge(Li), NaI(Tl), and plastic detectors. Measured $T_{1/2}$, Eγ, Iγ, Eβ, Iβ.

1965Eb01: ^{35}Cl(n,2nγ)^{34}Cl E=14.7 MeV, natural target, NaI(Tl) detectors. Measured $T_{1/2}$.

Other: 1953St42.

Theory: 2008To03, calculated isotopic mixing corrections; analyzed *ft* values for superallowed β decay.

Energy balance: total decay energy of 65.3 keV *8* deduced (using RADLIST code) from proposed decay scheme is in agreement with the expected value of 65.3 keV *9*, indicating that decay scheme is complete.

^{34}Cl Levels

E(level)†	J^π†	$T_{1/2}$†	Comments
0.0	0^+	1.5266 s *4*	$T_{1/2}$: from weighted average of 1.526 s *2* (1973Ry01), 1.5252 s *11* (1976Wi08), 1.5277 s *22* (1983Ko22), and 1.5268 s *5* (2006Ia05); other: 1.534 s *3* (1972Ha82, superseded by 2006Ia05).
146.36 *3*	3^+	31.99 min *3*	%IT=44.6 *6* E(level): based on Eγ; other: 146.52 *26* (2012Er02). $T_{1/2}$: from weighted average of 31.99 min *5* (1965Eb01), 32.06 min *8* (1975Va02), 31.93 min *9* (1980Wi13), and 31.98 min *5* (1982Gr07).

† Adopted values.

γ(^{34}Cl)

E_γ†	I_γ#	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	α@	Comments
146.36 *3*	85.79 *17*	146.36	3^+	0.0	0^+	[M3]	0.1656	α(K)=0.1512 *22*; α(L)=0.01322 *19*; α(M)=0.001194 *17* I_γ: deduced from I(γ+ce)=100 and α=0.1656 *23*. α(K)exp: 0.14 *4* (1953St42), 0.100 *9* (1971Wa04).

† Adopted value (1971Sn01, see ^{31}P(α,nγ)).

‡ Adopted value.

For absolute intensity per 100 decays, multiply by 0.446 *6*.

@ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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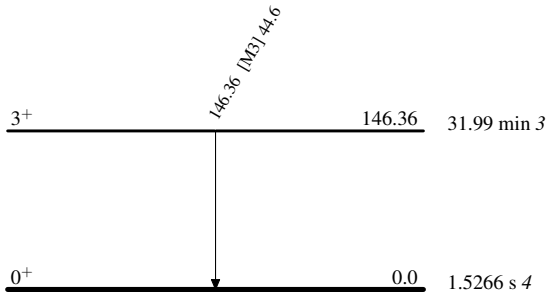
Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

%IT=44.6 *6*



$^{34}_{17}Cl_{17}$