

Adopted Levels

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

$Q(\beta^-)=2.30\times 10^4$ syst; $S(n)=8.\times 10^2$ syst; $S(p)=2.20\times 10^4$ syst; $Q(\alpha)=-1.92\times 10^4$ syst [2012Wa38](#)

Note: Current evaluation has used the following Q record 22728 syst 750 syst 21997 syst -19536 syst [2011AuZZ](#).

$\Delta Q^- = 511$, $\Delta S(n) = \Delta S(p) = \Delta Q(\alpha) = 780$ (syst, [2011AuZZ](#)).

$Q(\beta^-n) = 18270$ 504, $S(2n) = 3663$ 517 (syst, [2011AuZZ](#)). $S(2p) = 47960$ (calculated, [1997Mo25](#)).

$Q(\beta^-)$: 24170 900 from mass excess of 32760 900 (syst, [2003Au03](#)) for ^{34}Na and measured (also evaluated) mass excess of 8590 80 ([2007Ju03](#)) for ^{34}Mg .

Values in [2003Au03](#) (from syst): $Q(\beta^-) = 23950$ 930, $S(n) = 200$ 200, $S(p) = 20530$ 1200, $Q(\alpha) = -18570$ 1080, $Q(\beta^-n) = 19800$ 900, $S(2n) = 2450$ 970.

[1978De39](#), [1979De02](#), [1984La03](#), [1984Gu19](#): ^{34}Na produced and identified in In(p,X) reaction at 10 GeV, CERN-ISOLDE facility. Measured half-life, γ and β radiations.

[1997Ha11](#): U(p,X) at 1 GeV, REX-ISOLDE facility, measured yield.

Structure calculations (binding energies, deformation, quadrupole moments, radii, levels, J^π , etc.): [2004Ge02](#), [2004Kh16](#), [2004Lu10](#), [1991Pa19](#), [1989Ly01](#), [1975Ca27](#).

No details of ^{34}Ne decay to ^{34}Na are available. The possible beta-delayed neutron precursors ^{35}Ne and ^{36}Ne are not known experimentally.

This nuclide is of possible relevance to "island of inversion" near N=20.

 ^{34}Na Levels

E(level)	$T_{1/2}$	Comments
0	5.5 ms 10	$\% \beta^- = 100$; $\% \beta^- n \approx 15$; $\% \beta^- 2n \approx 50$ $\% \beta^- n$ and $\% \beta^- 2n$ estimated by 2003Au02 (also 2011AuZY) evaluation from measured $\% \beta^- n + \% \beta^- 2n = 115$ 20 (1984La03). Calculated $\% \beta^- n = 32$, $\% \beta^- 2n = 20$ (1997Mo25). J^π : 1^+ is listed in 2003Au02 and 2011AuZY , but no argument or source reference is provided. 1997Mo25 calculations predict $3/2^-$ for neutron and $3/2^+$ for proton valence orbitals which suggests negative parity. $T_{1/2}$: from neutron timing (1984La03). Calculated half-life = 4.9 ms (1997Mo25).