

Table 12.19 from (1980AJ01): States of ^{12}C from $^{12}\text{C}(^3\text{He}, ^3\text{He})$, $^{12}\text{C}(\alpha, \alpha)$ and $^{14}\text{N}(\text{d}, \alpha)$ ^a

$E_x^{\text{b,c,d}}$ (MeV \pm keV)	Γ^{d} MeV	$L^{\text{c,d}}$ (MeV)	$E_x^{\text{b,g}}$ (MeV \pm keV)	Γ (MeV)	$J^\pi; T^{\text{u}}$
0		0	0		$0^+; 0$
$4.4422 \pm 1.5^{\text{e}}$		2	4.44^{h}		$2^+; 0$
7.67			7.67^{h}		$0^+; 0$
9.64		3	$9.642 \pm 14^{\text{h,i}}$	$0.030 \pm 0.008^{\text{i}}$	$3^-; 0$
10.84		j	10.84^{j}		$1^-; 0^{\text{v}}$
11.83		j	11.83^{j}		$2^-; 0$
12.71		0	$12.7 \pm 70^{\text{j,k}}$		$1^+; 0$
			13.29^{l}	$0.355 \pm 0.050^{\text{l}}$	
14.08			$14.08 \pm 30^{\text{m}}$		$4^+{}^{\text{n,v}}; 0$
15.11^{f}		0			$1^+; 1$
15.2 ± 300	1.8 ± 0.3	2	$15.5 \pm 100^{\text{o,q}}$	$2.1 \pm 0.3^{\text{o}}$	$(2^+; 0)^{\text{o}}$
16.11^{f}		2			$2^+; 1$
16.58^{f}					$2^-; 1$
$18.40 \pm 60^{\text{f}}$	0.4 ± 0.1	2	$18.5 \pm 150^{\text{j,o,q}}$		$(2^+)^{\text{d}}$
$18.9 \pm 150^{\text{f}}$	0.7 ± 0.15	2			$(2^+)^{\text{d}}$
			$19.50 \pm 100^{\text{o,r}}$	$\approx 0.25^{\text{r}}$	$(1, 2, 3)^+{}^{\text{r}}$
$19.58 \pm 60^{\text{f}}$			$20.55 \pm 100^{\text{r}}$	$\approx 0.2^{\text{r}}$	$(2, 3)^+{}^{\text{r}}$
$21.3 \pm 150^{\text{s}}$	1.4 ± 0.2	2	$21.65 \pm 100^{\text{j,o,p,q}}$	$0.43 \pm 0.08^{\text{g}}$	$2^+{}^{\text{d,v}}$
			$22.4 \pm 100^{\text{o,r}}$	≈ 0.25	$2^+{}^{\text{d,r}}$
23.5 ± 200	0.6 ± 0.2	2	$23.9 \pm 100^{\text{j,r,t}}$	≈ 0.4	
25.9 ± 300	2.2 ± 0.3	2	$^{\text{q}}$		$(2^+)^{\text{d}}$
			27^{p}	3.8^{p}	$(2^+)^{\text{v}}$
28.8 ± 400	2.7 ± 0.4	2			$(2^+)^{\text{d}}$

- ^a See also [Table 12.23 in \(1975AJ02\)](#).
- ^b When no errors are shown, values are from [Table 12.8](#).
- ^c $E(^3\text{He}) = 49.8 \text{ MeV}$ ([1969BA06](#)).
- ^d $E(^3\text{He}) = 130 \text{ MeV}$ ([1977BU03](#)).
- ^e ([1971ST22](#)).
- ^f $T = 1$ ([1969BA06](#)).
- ^g ([1972FA07](#)): $E_\alpha = 90 \text{ MeV}$ and $E_d = 52 \text{ MeV}$; except where other footnotes are shown.
- ^h See [Table 12.8](#).
- ⁱ ([1956DO41](#)): $^{14}\text{N}(d, \alpha)^{12}\text{C}$.
- ^j Angular distribution not obtained.
- ^k ([1965PE17](#)): $^{14}\text{N}(d, \alpha)^{12}\text{C}$.
- ^l ([1965SC12](#)): $^{14}\text{N}(d, \alpha)^{12}\text{C}$.
- ^m ([1972FA07](#)) suggests $J^\pi = 3^-$ for $^{12}\text{C}^*(14.08)$ and 4^+ for $^{12}\text{C}^*(15.6)$.
- ⁿ ([1977MC07](#)): the decay is $(9 \pm 3)\%$ to $^8\text{Be}_{\text{g.s.}}$. [this branching ratio is somewhat uncertain because there may be an appreciable effect due to continuum breakup].
- ^o ([1975BU1F](#), [1977BU19](#)): $E_\alpha = 60 \text{ MeV}$.
- ^p ([1975RO1L](#)): $E_\alpha = 100 \text{ MeV}$; preliminary results.
- ^q ([1976KN05](#)): $E_\alpha = 150 \text{ MeV}$.
- ^r ([1976VA07](#)): $E_d = 40 \text{ MeV}$.
- ^s Possibly unresolved.
- ^t Weakly populated.
- ^u Best values: see [Table 12.7](#) when other footnotes are not given.
- ^v ([1978RI03](#)): $E_\alpha = 104 \text{ MeV}$.