

$\text{Mn}_2\text{Al}_2\text{Si}_3$	$hP21$	$(174) P-6 - k^3j^3fca$
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$\text{Al}_2\text{Mn}_2\text{Si}_3$ τ_1 -phase [1]

Structural features: $\text{Mn}(\text{Al}_4\text{Si}_2)\text{Si}_3$ and $\text{Mn}(\text{Al}_2\text{Si}_4)(\text{AlSi}_2)$ tricapped trigonal prisms share atoms to form a 3D-framework (partial vacancies ignored); additional Al in channels of hexagonal cross-section parallel to [001].

Krendelsberger N. et al. (2002) [1]

$\text{Al}_{1.87}\text{Mn}_{1.85}\text{Si}_{2.87}$

$a = 0.96121$, $c = 0.3564$ nm, $c/a = 0.371$, $V = 0.2852$ nm³, $Z = 3$

site	Wyck.	sym.	x	y	z	occ.	atomic environment
Al1	$3k$	$m..$	0.0544	0.5689	$\frac{1}{2}$		13-vertex polyhedron $\text{Mn}_3\text{Si}_7\text{Al}_3$
Mn2	$3k$	$m..$	0.1502	0.1872	$\frac{1}{2}$		pseudo Frank-Kasper $\text{Si}_6\text{Al}_3\text{Mn}_2$
Si3	$3k$	$m..$	0.325	0.0757	$\frac{1}{2}$		bicapped square prism $\text{Mn}_4\text{Si}_4\text{Al}_2$
Si4	$3j$	$m..$	0.1353	0.3819	0		pentagonal pyramid AlSi_2Mn_3
Si5	$3j$	$m..$	0.3509	0.265	0	0.869	8-vertex polyhedron $\text{Mn}_4\text{Si}_2\text{Al}_2$
Mn6	$3j$	$m..$	0.5181	0.1386	0	0.849	pseudo Frank-Kasper $\text{Si}_5\text{Al}_4\text{Mn}_2$
Al7	$1f$	$-6..$	$\frac{2}{3}$	$\frac{1}{3}$	$\frac{1}{2}$		trigonal prism Mn_6
Al8	$1c$	$-6..$	$\frac{1}{3}$	$\frac{2}{3}$	0		tricapped trigonal prism Si_3Al_6
Al9	$1a$	$-6..$	0	0	0	0.62	trigonal prism Mn_6

Experimental: powder, diffractometer, X-rays, $R_B = 0.066$

Remarks: In table 3 of [1] the Wyckoff positions of former Al2 and Al3 are misprinted as $1e$ and $1d$ instead of $1f$ and $1c$, respectively.

References: [1] Krendelsberger N., Gulay L.D., Weitzer F., Schuster J.C., Hiebl K. (2002), J. Alloys Compd. 336, 67-72.