Mn_8Al_{39}	*cP*564	(198) $P2_13 - b^{47}$

Mn_8Al_{39} [1]
Structural features: Commensurate approximant of icosahedral quasicrystals.

Hansen V., Gjonnes J. (1996) [1]
$Al_{39}Mn_8$
$a = 2.0516$ nm, $V = 8.6353$ nm^3, $Z = 12$

site	Wyck.	sym.	*x*	*y*	*z*	occ.	atomic environment
Al1	12*b*	1	0.0	0.1	0.03		11-vertex polyhedron $Al_{10}Mn$
Al2	12*b*	1	0.01	0.09	0.66		11-vertex polyhedron $MnAl_{10}$
Al3	12*b*	1	0.01	0.1	0.53		11-vertex polyhedron $MnAl_{10}$
Al4	12*b*	1	0.01	0.59	0.34		11-vertex polyhedron $Al_{10}Mn$
Al5	12*b*	1	0.02	0.03	0.41		13-vertex polyhedron Mn_3Al_{10}
Al6	12*b*	1	0.02	0.17	0.41		14-vertex polyhedron Mn_3Al_{11}
Mn7	12*b*	1	0.02	0.29	0.6		bicapped square prism Al_{10}
Al8	12*b*	1	0.02	0.4	0.17		13-vertex polyhedron $Al_{10}Mn_3$
Al9	12*b*	1	0.02	0.53	0.22		tricapped pentagonal prism $Al_{10}Mn_3$
Al10	12*b*	1	0.02	0.66	0.22		tricapped pentagonal prism $Al_{10}Mn_3$
Al11	12*b*	1	0.02	0.79	0.17		pseudo Frank-Kasper Mn_3Al_{10}
Al12	12*b*	1	0.03	0.2	0.1		11-vertex polyhedron $MnAl_{10}$
Al13	12*b*	1	0.03	0.28	0.21		tricapped pentagonal prism Mn_2Al_{11}
Mn14	12*b*	1	0.03	0.39	0.4		icosahedron Al_{12}
Mn15	12*b*	1	0.03	0.8	0.4		11-vertex polyhedron Al_{11}
Al16	12*b*	1	0.09	0.1	0.33		tricapped pentagonal prism Mn_3Al_{10}
Al17	12*b*	1	0.09	0.21	0.52		14-vertex polyhedron Mn_2Al_{12}
Al18	12*b*	1	0.09	0.21	0.67		12-vertex polyhedron $Al_{10}Mn_2$
Al19	12*b*	1	0.09	0.29	0.39		icosahedron Mn_2Al_{10}
Al20	12*b*	1	0.09	0.48	0.33		tricapped pentagonal prism Mn_3Al_{10}
Al21	12*b*	1	0.09	0.48	0.48		tricapped pentagonal prism $Al_{10}Mn_3$
Al22	12*b*	1	0.09	0.59	0.14		tricapped pentagonal prism $Al_{10}Mn_3$
Al23	12*b*	1	0.09	0.71	0.34		12-vertex polyhedron $Al_{10}Mn_2$
Al24	12*b*	1	0.09	0.71	0.47		tricapped pentagonal prism Mn_2Al_{11}
Mn25	12*b*	1	0.09	0.72	0.1		11-vertex polyhedron Al_{11}
Mn26	12*b*	1	0.1	0.1	0.47		11-vertex polyhedron Al_{11}
Al27	12*b*	1	0.1	0.16	0.2		11-vertex polyhedron $MnAl_{10}$
Mn28	12*b*	1	0.1	0.22	0.3		icosahedron Al_{12}
Al29	12*b*	1	0.1	0.36	0.29		14-vertex polyhedron Mn_3Al_{11}
Al30	12*b*	1	0.11	0.36	0.49		bicapped square prism Mn_3Al_7
Mn31	12*b*	1	0.11	0.59	0.28		11-vertex polyhedron Al_{11}
Al32	12*b*	1	0.12	0.81	0.29		pseudo Frank-Kasper $Al_{11}Mn_2$
Al33	12*b*	1	0.13	0.6	0.41		tricapped pentagonal prism Mn_3Al_{10}
Al34	12*b*	1	0.15	0.5	0.22		14-vertex Frank-Kasper Mn_3Al_{11}
Al35	12*b*	1	0.16	0.18	0.4		pseudo Frank-Kasper $Al_{10}Mn_3$
Al36	12*b*	1	0.16	0.68	0.21		pseudo Frank-Kasper $Al_{11}Mn_2$
Al37	12*b*	1	0.17	0.28	0.21		tricapped pentagonal prism Mn_3Al_{10}
Al38	12*b*	1	0.17	0.4	0.4		14-vertex polyhedron $Al_{11}Mn_3$
Al39	12*b*	1	0.2	0.67	0.32		icosahedron $Al_{10}Mn_2$
Al40	12*b*	1	0.21	0.27	0.63		pseudo Frank-Kasper $Al_{11}Mn_2$
Mn41	12*b*	1	0.21	0.41	0.28		11-vertex polyhedron Al_{11}
Al42	12*b*	1	0.22	0.29	0.33		14-vertex polyhedron Mn_3Al_{11}
Al43	12*b*	1	0.22	0.29	0.48		14-vertex Frank-Kasper Mn_2Al_{12}

Al44	12*b*	1	0.22	0.52	0.33	14-vertex polyhedron Mn_3Al_{11}
Al45	12*b*	1	0.22	0.52	0.48	14-vertex polyhedron Mn_3Al_{11}
Al46	12*b*	1	0.3	0.4	0.47	11-vertex polyhedron $MnAl_{10}$
Al47	12*b*	1	0.3	0.41	0.34	11-vertex polyhedron $MnAl_{10}$

Transformation from published data: $^1/_4+y,^1/_4+x,^1/_4+z$
Experimental: polycrystalline sample, electron diffraction

Remarks: Model tested on diffraction data from [2].

References: [1] Hansen V., Gjonnes J. (1996), Acta Crystallogr. A 52, 125-132. [2] Gratias D., Cahn J.W., Mozer B. (1988), Phys. Rev. B: Condens. Matter 38, 1643-1646.