$Mg_{17}Al_{12}$	*cI*58	(217) *I*-43*m* – g^2ca

$Mg_{17}Al_{12}$ [2]
Structural features: 29-atom α Mn-type nested polyhedra units (a central Mg atom surrounded by a Mg_4 tetrahedron, an Al_{12} truncated tetrahedron and a Mg_{12} cuboctahedron) in a W-type (b.c.c.) arrangement. Ordering variant of α-Mn.

Schobinger Papamantellos P., Fischer P. (1970) [1]
$Al_{12}Mg_{17}$
a = 1.05438 nm, V = 1.1722 nm^3, Z = 2

site	Wyck.	sym.	x	y	z	occ.	atomic environment
Al1	24*g*	..*m*	0.0954	0.0954	0.2725		icosahedron Al_3Mg_9
Mg2	24*g*	..*m*	0.3582	0.3582	0.0393		pseudo Frank-Kasper Al_5Mg_8
Mg3	8*c*	.3*m*	0.324	0.324	0.324		16-vertex Frank-Kasper Mg_7Al_9
Mg4	2*a*	-43*m*	0	0	0		16-vertex Frank-Kasper $Al_{12}Mg_4$

Experimental: powder, diffractometer, neutrons, wR_p = 0.063

Remarks: Identical to the phase called (MgAl) γ, for which the homogeneity range 48.0-51.3 at.% Mg was, however, reported in [3]. Too short interatomic distances exist both in the ordered and the disordered structures proposed for $Mg_{17}Al_{12}$ in (229) *Im*-3*m* in [4] (the Wyckoff positions refer to space group (204) *Im*-3, however, the authors state that the structure can be described in (229) *Im*-3*m*).

References: [1] Schobinger Papamantellos P., Fischer P. (1970), Naturwissenschaften 57, 128-129. [2] Laves L., Löhberg K., Rahlfs P. (1934), Nachr. Ges. Wiss. Goettingen, Math.-Phys. Kl., Fachgruppe 1 1, 67-71. [3] Schürmann E., Geissler I.K. (1980), Giessereiforschung 32, 167-170. [4] Takeoshi K. (1971), Jpn. J. Appl. Phys. 10, 1311-1328.