WAl_5	*hP*12	(182) $P6_322$ – gdcb

WAl_5 [1]
Structural features: Close-packed Al_3 and WAl_2 layers in hc stacking.

Adam J., Rich J.B. (1955) [1]
Al_5W
$a = 0.49020$, $c = 0.88570$ nm, $c/a = 1.807$, $V = 0.1843$ nm^3, $Z = 2$

site	Wyck.	sym.	*x*	*y*	*z*	occ.	atomic environment
Al1	6*g*	.2.	0.33333	0	0		anticuboctahedron $Al_{10}W_2$
W2	2*d*	3.2	$^1/_3$	$^2/_3$	$^3/_4$		cuboctahedron Al_{12}
Al3	2*c*	3.2	$^1/_3$	$^2/_3$	$^1/_4$		cuboctahedron Al_9W_3
Al4	2*b*	3.2	0	0	$^1/_4$		cuboctahedron Al_9W_3

Transformation from published data ($P6_3$): origin shift 0 0 $^3/_4$
Experimental: powder, film, X-rays, R = 0.060

Remarks: Identical to the phase called W_2Al_9 in [4]. The description in space group (173) $P6_3$ in [1] does not take into consideration all symmetry elements of the proposed structure (see [2]). The same is true for h-$MoAl_5$ in [3] (isotypism stated).

References: [1] Adam J., Rich J.B. (1955), Acta Crystallogr. 8, 349-350. [2] Cenzual K., Gelato L.M., Penzo M., Parthé E. (1991), Acta Crystallogr. B 47, 433-439. [3] Schuster J.C., Ipser H. (1991), Metall. Trans. A 22, 1729-1736. [4] Clark W.D. (1940), J. Inst. Met. 66, 271-286.