$Rh_{12}As_7$	*hP*22	(176) $P6_3/m$ – h^3ba

$Rh_{12}As_7$ [1], polkanovite
Structural features: Infinite columns of base-linked $AsRh_6Rh_2$ bicapped trigonal prisms ($AsRh_8$ square antiprisms) share atoms to form a 3D-framework with WC-type columns (3 prisms in the triangular cross-section); additional As in channels of hexagonal cross-section parallel to [001] (partial disorder). Variant of Th_7S_{12} antitype.

Lambert Andron B. et al. (1985) [1]
As_7Rh_{12}
$a = 0.9315$, $c = 0.3659$ nm, $c/a = 0.393$, $V = 0.2750$ nm^3, $Z = 1$

site	Wyck.	sym.	*x*	*y*	*z*	occ.	atomic environment
Rh1	6*h*	*m*..	0.1356	0.5158	$^1/_4$		tricapped pentagonal prism As_5Rh_8
Rh2	6*h*	*m*..	0.2350	0.2436	$^1/_4$		
As3	6*h*	*m*..	0.4459	0.1604	$^1/_4$		square antiprism Rh_8
As4	2*b*	-3..	0	0	0	0.20	
As5	2*a*	-6..	0	0	$^1/_4$	0.30	

Transformation from published data: origin shift 0 0 $^1/_2$
Experimental: single crystal, diffractometer, X-rays, R = 0.048

Remarks: Identical to the phase called $Rh_{1.3\text{-}1.7}As$ in [3]. Short interatomic distances for partly occupied site(s). One single partly occupied site on the c-axis is reported in [2].

References: [1] Lambert Andron B., Dhahri E., Chaudouet P., Madar R. (1985), J. Less-Common Met. 108, 353-358. [2] Pivan J.Y., Guérin R., Sergent M. (1985), J. Less-Common Met. 107, 249-258. [3] Quesnel J.C., Heyding R.D. (1962), Can. J. Chem. 40, 814-818.