

Ce₃Rh₁₅Si_{9.5}***hP*58****(176) *P*6₃/*m* – h⁹ba****Ce₆Rh₃₀Si₁₉ [1]**

Structural features: Infinite columns of base-linked Si(Ce₂Rh₄)Rh₂ bicapped and Si(Ce₂Rh₄)Rh₃ tricapped trigonal prisms share atoms to form a 3D-framework with triple propeller-like columns; additional Si (partial disorder) in channels of hexagonal cross-section parallel to [001]. Filled-up derivative of UCo₅Si₃.

Tursina A.I. et al. (2004) [1]

Ce₃Rh₁₅Si_{9.50}*a* = 1.5698, *c* = 0.38571 nm, *c/a* = 0.246, *V* = 0.8232 nm³, *Z* = 2

site	Wyck.	sym.	<i>x</i>	<i>y</i>	<i>z</i>	occ.	atomic environment
Rh1	6 <i>h</i>	<i>m</i> ..	0.04375	0.27353	¹ / ₄		cuboctahedron Si ₄ Rh ₅ Ce ₃
Si2	6 <i>h</i>	<i>m</i> ..	0.06365	0.43524	¹ / ₄		tricapped trigonal prism Rh ₇ Ce ₂
Rh3	6 <i>h</i>	<i>m</i> ..	0.12067	0.15086	¹ / ₄		
Rh4	6 <i>h</i>	<i>m</i> ..	0.2238	0.57226	¹ / ₄		square pyramid Si ₅
Si5	6 <i>h</i>	<i>m</i> ..	0.25359	0.12196	¹ / ₄		monocapped trigonal prism Rh ₇
Ce6	6 <i>h</i>	<i>m</i> ..	0.29585	0.39654	¹ / ₄		23-vertex polyhedron Si ₉ Rh ₁₂ Ce ₂
Rh7	6 <i>h</i>	<i>m</i> ..	0.4162	0.26385	¹ / ₄		tetrahedron Si ₄
Rh8	6 <i>h</i>	<i>m</i> ..	0.53684	0.07531	¹ / ₄		tetrahedron Si ₄
Si9	6 <i>h</i>	<i>m</i> ..	0.55986	0.24161	¹ / ₄		square prism (cube) Rh ₆ Si ₂
Si10	2 <i>b</i>	-3..	0	0	0	0.2	
Si11	2 <i>a</i>	-6..	0	0	¹ / ₄	0.3	colinear Si ₂

Experimental: single crystal, diffractometer, X-rays, *R* = 0.033

Remarks: Short interatomic distances for partly occupied site(s). A different atom arrangement along the *c*-axis is reported for Sm₆Rh₃₀Si₁₉ (SmRh₅Si_{3.17}) in [2].

References: [1] Tursina A.I., Gribov A.V., Seropegin Y.D., Bodak O.I. (2004), *J. Alloys Compd.* 367, 142-145. [2] Stepien Damm J., Prots' Y., Salamakha P.S., Bodak O.I., Morozkin Y., Seropegin Y.D. (1998), *J. Alloys Compd.* 268, 177-179.