

Selwynite

NaK(Be, Al)Zr₂(PO₄)₄•2H₂O

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Crystal Data: Tetragonal. *Point Group:* 4/m 2/m 2/m. Crystals are anhedral, indistinct, in radiating groups.

Physical Properties: *Fracture:* Semiconchoidal. Hardness = 4 D(meas.) = 2.94
D(calc.) = 3.08

Optical Properties: Transparent. *Color:* Deep purplish blue, may be pale lavender if weathered. *Streak:* Pale lavender. *Luster:* Vitreous.
Optical Class: Uniaxial (+). *Pleochroism:* Distinct; *O* = medium bluish lavender; *E* = very pale bluish lavender. $\omega = 1.624(2)$ $\epsilon = 1.636(2)$

Cell Data: *Space Group:* [I4₁/amd] (by analogy to gainesite). $a = 6.570(3)$ $c = 17.142(6)$
 $Z = 2$

X-ray Powder Pattern: Wycheproof, Australia.
6.161 (100), 3.286 (50), 3.039 (30), 4.291 (25), 2.895 (20), 2.609 (5), 2.431 (5)

Chemistry:	(1)		(1)	
	P ₂ O ₅	40.90	CaO	0.98
	SiO ₂	0.49	SrO	0.16
	ZrO ₂	33.76	BaO	0.16
	HfO ₂	1.17	Na ₂ O	4.77
	Al ₂ O ₃	1.04	K ₂ O	6.26
	Ce ₂ O ₃	0.03	Rb ₂ O	0.20
	FeO	0.49	Cs ₂ O	0.70
	MnO	0.99	F	0.37
	BeO	1.43	H ₂ O	5.4
	MgO	0.15	—O = F ₂	0.16
			Total	99.29

(1) Wycheproof, Australia; by electron microprobe, average of nine analyses, Rb and Be by ICP, H₂O determined by CHN analyzer; corresponds to Na_{1.00}(K_{0.92}Na_{0.06}Cs_{0.03}Rb_{0.02})_{Σ=1.03}(Be_{0.40}Al_{0.14}Ca_{0.12}Mn_{0.10}Fe_{0.05}Mg_{0.03}Sr_{0.01}Ba_{0.01})_{Σ=0.86}(Zr_{1.89}Hf_{0.04})_{Σ=1.93}[(P_{1.00}Si_{0.02})_{Σ=1.02}O_{3.95}]₄F_{0.13}•2.07H₂O.

Occurrence: Very rare, a cavity filling in veins, formed under reducing conditions during late-stage cooling in granite pegmatite.

Association: Wardite, eosphorite, montmorillonite, “limonite”.

Distribution: In a quarry 0.5 km east of Wycheproof, Victoria, Australia.

Name: To honor Alfred Richard Cecil Selwyn (1824–1902), founding Director of the Geological Survey of Victoria, Australia, and later, the Geological Survey of Canada.

Type Material: Museum Victoria, Melbourne, Australia, M42492, M42590.

References: (1) Birch, W.D., A. Pring, and E.E. Foord (1995) Selwynite, NaK(Be, Al)Zr₂(PO₄)₄•2H₂O, a new gainesite-like mineral from Wycheproof, Victoria, Australia. *Can. Mineral.*, 33, 55–58. (2) (1995) *Amer. Mineral.*, 80, 1075 (abs. ref. 1).