

Wycheproofite

NaAlZr(PO₄)₂(OH)₂•H₂O

©2001-2005 Mineral Data Publishing, version 1

Crystal Data: Triclinic. *Point Group:* $\bar{1}$ or 1. Finely fibrous anhedral crystals, to several mm, in compact masses.

Physical Properties: *Fracture:* Irregular. Hardness = 4–5 D(meas.) = 2.83
D(calc.) = 2.81

Optical Properties: Transparent. *Color:* Pale pinkish orange to pale brownish orange.
Streak: White. *Luster:* Vitreous to pearly.
Optical Class: Biaxial. *Orientation:* Parallel extinction, length-slow. $\alpha = 1.62 \perp$ fiber length.
 $\beta = \text{n.d.}$ $\gamma = 1.64 \parallel$ fiber length. 2V(meas.) = n.d.

Cell Data: *Space Group:* $P\bar{1}$ or $P1$. $a = 10.926(5)$ $b = 10.986(5)$ $c = 12.479(9)$
 $\alpha = 71.37(4)^\circ$ $\beta = 77.39(4)^\circ$ $\gamma = 87.54(3)^\circ$ $Z = 6$

X-ray Powder Pattern: Wycheproof, Australia.
2.603 (100), 4.128 (80), 3.711 (65), 3.465 (60), 8.865 (40), 3.243 (35), 2.875 (30)

Chemistry:	(1)	(2)	(1)	(2)
P ₂ O ₅	35.85	37.04	CaO	0.66
SiO ₂	0.23		Na ₂ O	6.36
ZrO ₂	32.43	32.16	K ₂ O	0.44
HfO ₂	1.24		Cs ₂ O	0.03
Al ₂ O ₃	12.03	13.31	F	0.34
FeO	0.36		H ₂ O	9.0
MnO	0.21		–O = F ₂	0.14
			Total	99.04
				100.00

(1) Wycheproof, Australia; by electron microprobe, average of five analyses, H₂O by CHN analyzer; corresponding to (Na_{0.81}Ca_{0.05}K_{0.04})_{Σ=0.90}(Al_{0.93}Fe_{0.02}Mn_{0.01})_{Σ=0.96}(Zr_{1.03}Hf_{0.02})_{Σ=1.05}[(PO₄)_{1.99}(SiO₄)_{0.01}]_{Σ=2.00}[(OH)_{1.87}F_{0.07}]_{Σ=1.94}•1.0H₂O. (2) NaAlZr(PO₄)₂(OH)₂•H₂O.

Occurrence: Filling cavities in pegmatitic veins in a granite quarry.

Association: Kosnarite, eosphorite, cyrilovite, schorl.

Distribution: From Wycheproof, Victoria, Australia.

Name: For the occurrence at Wycheproof, Australia.

Type Material: South Australian Museum, Adelaide, G18612; Museum Victoria, Melbourne, Australia, M42853, M42846.

References: (1) Birch, W.D., A. Pring, D.J.M. Bevan, and Kharisun (1994) Wycheproofite: a new hydrated sodium aluminium zirconium phosphate from Wycheproof, Victoria, Australia, and a new occurrence of kosnarite. *Mineral. Mag.*, 58, 635–639. (2) (1995) *Amer. Mineral.*, 80, 847 (abs. ref. 1).