

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

**Physical Properties:** *Fracture:* Irregular. Hardness = 4-5 D(meas.) = 2.83 D(calc.) = 2.932

**Optical Properties:** Transparent. *Color:* Pale pinkish orange to pale brownish orange.

*Streak:* White. *Luster:* Vitreous to pearly.

*Optical Class:* Biaxial.  $\alpha = 1.62 \perp$  fiber length.  $\beta = \text{n.d.}$   $\gamma = 1.64 \parallel$  fiber length.  $2V(\text{meas.}) = \text{n.d.}$

*Orientation:* Parallel extinction, length slow.

**Cell Data:** *Space Group:*  $P\bar{1}$ .  $a = 5.263(1)$   $b = 9.251(2)$   $c = 9.480(2)$   $\alpha = 109.49(3)^\circ$   
 $\beta = 98.57(3)^\circ$   $\gamma = 90.09(3)^\circ$   $Z = 2$

**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 <sub>2</sub> O <sub>5</sub>	35.85	37.04	CaO	0.66
SiO <sub>2</sub>	0.23		Na <sub>2</sub> O	6.36 8.09
ZrO <sub>2</sub>	32.43	32.16	K <sub>2</sub> O	0.44
HfO <sub>2</sub>	1.24		Cs <sub>2</sub> O	0.03
Al <sub>2</sub> O <sub>3</sub>	12.03	13.31	F	0.34
FeO	0.36		H <sub>2</sub> O	9.0 9.40
MnO	0.21		- O = F <sub>2</sub>	0.14
			Total	99.04 100.00

(1) Wycheproof, Australia; by electron microprobe, average of five analyses, H<sub>2</sub>O by CHN analyzer; corresponding to (Na<sub>0.81</sub>Ca<sub>0.05</sub>K<sub>0.04</sub>) $\Sigma=0.90$ (Al<sub>0.93</sub>Fe<sub>0.02</sub>Mn<sub>0.01</sub>) $\Sigma=0.96$ (Zr<sub>1.03</sub>Hf<sub>0.02</sub>) $\Sigma=1.05$ [(PO<sub>4</sub>)<sub>1.99</sub>(SiO<sub>4</sub>)<sub>0.01</sub>] $\Sigma=2.00$ [(OH)<sub>1.87</sub>F<sub>0.07</sub>] $\Sigma=1.94$ ·1.0H<sub>2</sub>O. (2) NaAlZr(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>2</sub>·H<sub>2</sub>O.

**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(4), 635-639. (2) (1995) *Amer. Mineral.*, 80, 847 (abs. ref. 1). (3) Kolitsch, U. (2003) The crystal structure of wycheproofite, NaAlZr(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>2</sub>·H<sub>2</sub>O. *Eur. J. Mineral.*, 15, 1029-1034. (4) (2004) *Amer. Mineral.*, 89, 1834 (abs. ref. 3).