

Sieleckiite**Cu₃Al₄(PO₄)₂(OH)₁₂•2H₂O**

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Crystal Data: Triclinic. *Point Group:* $\bar{1}$ or 1. Crystals, to 100 μm , in smooth spherical aggregates, to 0.5 mm, with a finely fibrous radiating structure.

Physical Properties: *Fracture:* Subconchoidal. Hardness = ~ 3 D(meas.) = 3.02(2)
D(calc.) = 2.94

Optical Properties: Translucent. *Color:* Deep sky-blue to Royal blue. *Streak:* Pale blue.
Luster: Pearly.

Optical Class: Biaxial. *Pleochroism:* Weak; colorless to very pale blue. *Orientation:*
Length-slow. $\alpha = 1.63$ $\beta = \text{n.d.}$ $\gamma = 1.66$ $2V(\text{meas.}) = \text{n.d.}$

Cell Data: *Space Group:* $P\bar{1}$ or $P1$. $a = 9.41(8)$ $b = 7.56(5)$ $c = 5.95(6)$
 $\alpha = 90.25(12)^\circ$ $\beta = 91.27(12)^\circ$ $\gamma = 104.02(7)^\circ$ $Z = 1$

X-ray Powder Pattern: Mt. Oxide, Australia.

5.036 (100), 3.852 (100), 9.120 (50), 2.827 (50), 2.460 (50), 3.276 (30), 2.570 (20)

Chemistry:	(1)	(2)
P ₂ O ₅	19.42	19.48
CO ₂	1.6	
Al ₂ O ₃	26.57	27.99
CuO	32.39	32.75
H ₂ O	18.1	19.78
Total	98.1	100.00

(1) Mt. Oxide, Australia; by electron microprobe, H₂O by CHN analyzer; corresponds to Cu_{3.11}Al_{3.98}(PO₄)_{2.09}(OH)₁₂•1.7H₂O. (2) Cu₃Al₄(PO₄)₂(OH)₁₂•2H₂O.

Occurrence: A rare secondary mineral found in a fracture in a boulder from the oxidized zone of a copper deposit.

Association: Variscite, turquoise, libethenite, pseudomalachite.

Distribution: From the Mt. Oxide copper mine, 150 km north of Mt. Isa, Queensland, Australia.

Name: To honor Robert Sielecki (1958–), Australian geologist, who collected the first specimens.

Type Material: Museum Victoria, Melbourne, M38238, M38538; South Australian Museum, Adelaide, Australia, G14180.

References: (1) Birch, W.D. and A. Pring (1988) Sieleckiite, a new copper aluminium phosphate from Mt Oxide, Queensland, Australia. *Mineral. Mag.*, 52, 515–518. (2) (1989) *Amer. Mineral.*, 74, 1401 (abs. ref. 1).