

Crystal Data: Triclinic, pseudocubic. *Point Group:* $\bar{1}$. Crystals typically equant to short prismatic, complex, with many forms, to 2 cm; in sheaflike or saddle-shaped aggregates; as crusts.

Physical Properties: *Cleavage:* On {001}, perfect. *Fracture:* Uneven. Hardness = 3.5–4 D(meas.) = 4.19 D(calc.) = 4.21

Optical Properties: Transparent to translucent. *Color:* Colorless, pale yellow, may be brown, red, or green; colorless in transmitted light. *Streak:* White. *Luster:* Vitreous, pearly on cleavages.

Optical Class: Biaxial (–). *Orientation:* X ($7^\circ, 58^\circ$); Y ($159^\circ, 25^\circ$); Z ($-86^\circ, 80^\circ$) [using (ϕ, ρ)]. *Dispersion:* Strong. $\alpha = 1.659\text{--}1.660$ $\beta = 1.683\text{--}1.705$ $\gamma = 1.702\text{--}1.713$ $2V(\text{meas.}) = 50^\circ$

Cell Data: *Space Group:* $P\bar{1}$. $a = 5.499$ $b = 5.654$ $c = 6.465$ $\alpha = 102^\circ 51'$ $\beta = 102^\circ 46'$ $\gamma = 86^\circ 50'$ $Z = 2$

X-ray Powder Pattern: Kabwe, Zambia. (ICDD 36-410). 6.17 (100), 2.058 (30), 2.782 (25), 3.697 (20), 2.882 (19), 2.980 (12), 2.971 (12)

Chemistry:	(1)	(2)	(3)
SO_3		0.01	
P_2O_5	29.2	30.3	29.24
SiO_2		0.06	
FeO		0.02	
MnO		0.01	
ZnO	66.6	66.9	67.05
MgO		0.03	
CaO		0.04	
H_2O	3.8	[2.6]	3.71
Total	99.6	[100.0]	100.00

(1) Kabwe, Zambia; corresponds to $\text{Zn}_{1.98}(\text{PO}_4)_{0.99}(\text{OH})_{1.02}$. (2) Reaphook Hill, Australia; by electron microprobe, average of ten analyses; corresponds to $\text{Zn}_{1.96}(\text{PO}_4)_{0.96}(\text{OH})_{0.70}$. (3) $\text{Zn}_2(\text{PO}_4)(\text{OH})$.

Occurrence: An uncommon secondary mineral in the oxidized zone of zinc-bearing deposits.

Association: Hopeite, hemimorphite, smithsonite, parahopeite, hydrozincite, scholzite, cerussite, pyromorphite, descloizite, vanadinite, “limonite”.

Distribution: From Kabwe (Broken Hill), Zambia. In the Lueca vanadium mines, Angola. From the Kef Semmah mine, near Sétif, Algeria. In Australia, on Reaphook Hill, near Blinman, Flinders Ranges, South Australia; at Broken Hill, New South Wales. In the Hudson Bay mine, Salmo, British Columbia, Canada. At an undefined locality in Guangdong Province, China.

Name: Honoring Percy Coventry Tarbutt, Director of the Broken Hill Exploration Company, who early provided material for characterization.

Type Material: n.d.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 869–871. (2) Cocco, G., L. Fanfani, and P.F. Zanazzi (1966) The crystal structure of tarbuttite. *Zeits. Krist.*, 123, 321–329. (3) Hill, R.J. and A.R. Milnes (1974) Phosphate minerals from Reaphook Hill, Flinders Ranges, South Australia. *Mineral. Mag.*, 39, 684–695.