Phosphovanadylite-Ba $Ba[V^{4+}_4P_2O_8(OH)_8]\cdot 12H_2O$

Crystal Data: Cubic. *Point Group:* $\bar{4}$ 3*m.* Pseudocubes, to 50 μm, in aggregates and crusts.

Physical Properties: Hardness = n.d. D(meas.) = 2.16(3) D(calc.) = [2.13]

Optical Properties: Transparent. *Color:* Pale greenish blue; greenish black on oxidation after long exposure to air. *Streak*: Very pale greenish blue. *Luster*: Vitreous.
Optical Class: Isotropic. n = 1.566(4)

Cell Data: *Space Group: I*$\bar{4}$ 3*m.* a = 15.470(4) Z = 6

X-ray Powder Pattern: Enoch Valley mine, Idaho, USA.
3.164 (100), 2.582 (37), 2.445 (36), 7.73 (34), 10.8 (29), 2.738 (29), 2.827 (28)

Chemistry:	(1)
P_2O_5	22.7
V_2O_4	45.6
Al_2O_3	3.7
ZnO	0.4
CdO	0.1
CaO	1.8
BaO	9.2
Na_2O	0.2
K_2O	0.9
F	0.03
H_2O	n.d.
Total	97.13

(1) Enoch Valley mine, Idaho, USA; average of 6 electron microprobe partial analyses, H_2O and $(OH)^{1-}$ from structure analysis; corresponds to $(Ba_{0.38}Ca_{0.20}K_{0.06}Na_{0.02})_{\Sigma=0.66}(V_{3.44}Al_{0.46})_{\Sigma=3.90}$ $P_2[O_{10.34}(OH)_{5.66}]_{\Sigma=16.00}\cdot 12H_2O$.

Occurrence: A rare mineral coating organic-rich phosphatic mudstone.

Association: Sincosite.

Distribution: From the Enoch Valley phosphate mine, Soda Springs, Caribou Co., Idaho, USA.

Name: For *phospho*rus and *vanadyl* vanadium in the composition and the suffix for barium, the dominant extra-framework cation.

Type Material: n.d.

References: (1) Medrano, M.D., H.T. Evans, Jr., H.-R. Wenk, and D.Z. Piper (1998) Phosphovanadylite: a new vanadium phosphate mineral with a zeolite-type structure. Amer. Mineral., 83, 889-895. (2) Kampf, A.R., B.P. Nash, and T.A. Loomis (2013) Phosphovanadylite-Ca, $Ca[V^{4+}_4P_2O_8(OH)_8]\cdot 12H_2O$, the Ca analogue of phosphovanadylite-Ba. Amer. Mineral., 98, 439-443.