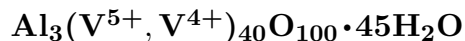


## Bariandite



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**Crystal Data:** Monoclinic, pseudo-orthorhombic. *Point Group:*  $m$  or  $2/m$ . Crystals elongated  $\parallel$  [010], forming fibers, platy on {001}, to 3 mm; in sheeted aggregates of parallel fibers, such layers sometimes stacked.

**Physical Properties:** *Cleavage:* {001}, perfect. *Hardness* = n.d.  $D(\text{meas.}) = \sim 2.7$   
 $D(\text{calc.}) = 2.50$

**Optical Properties:** Nearly opaque. *Color:* Black to dark green; in reflected light shows green internal reflections.

*Optical Class:* Biaxial. *Pleochroism:* Greenish brown  $\parallel$  [010], bottle-green  $\perp$  [010] in transmitted light; strong in brownish gray under reflected light.  $n = > 1.85$   $2V(\text{meas.}) = \text{n.d.}$

**Cell Data:** *Space Group:*  $Cc$  or  $C2/c$ .  $a = 11.70(3)$   $b = 3.63(1)$   $c = 20.06(5)$   
 $\beta = 101^\circ 30(20)'$   $Z = 2$

**X-ray Powder Pattern:** Mounana mine, Gabon.

14.20 (FFF), 3.480 (F), 3.430 (F), 5.72 (mF), 2.852 (mF), 1.939 (mF), 1.827 (mF)

### Chemistry:

	(1)
V <sub>2</sub> O <sub>5</sub>	63.26
V <sub>2</sub> O <sub>4</sub>	14.19
Al <sub>2</sub> O <sub>3</sub>	3.75
Fe <sub>2</sub> O <sub>3</sub>	0.17
H <sub>2</sub> O	18.11
Total	[99.48]

(1) Mounana mine, Gabon; original total given as 100.08%; corresponds to  $\text{Al}_{0.68}[(\text{V}^{5+}, \text{V}^{4+})_{7.90} \text{Fe}_{0.02}^{3+}]_{\Sigma=7.92} \text{O}_{20} \cdot 9.14\text{H}_2\text{O}$ .

**Occurrence:** In the oxidation zone of a uranium mineral deposit (Mounana mine, Gabon); in the oxidation zone of a vanadium deposit (Minasragra, Peru).

**Association:** Duttonite, lenoblite (Mounana mine, Gabon); roscoelite, gypsum (Minasragra, Peru).

**Distribution:** From the Mounana uranium mine, Franceville, Gabon. At Minasragra, 46 km from Cerro de Pasco, Peru.

**Name:** To honor Dr. Pierre Bariand (1933– ), Curator of Mineralogy, University of Paris, Paris, France.

**Type Material:** National School of Mines, Paris, France; The Natural History Museum, London, England, 1970,151.

**References:** (1) Cesbron, F. and H. Vachey (1971) La bariandite, nouvel oxyde hydraté de vanadium (IV) et (V). *Bull. Soc. fr. Minéral.*, 94, 49–54 (in French with English abs.). (2) (1972) *Amer. Mineral.*, 57, 1555 (abs. ref. 1). (3) Evans, H.T., Jr. and J.M. Hughes (1990) Crystal chemistry of the natural vanadium bronzes. *Amer. Mineral.*, 75, 508–521, esp. 515, 517.