Lenoblite $V_2^{4+}O_4 \cdot 2H_2O$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Microcrystalline, in crusts, thin veinlets, and massive.

Physical Properties: Hardness = n.d. D(meas.) = n.d. D(calc.) = [3.14]

Optical Properties: Semitransparent. *Color:* Azure, darkens to greenish on exposure to air. *Optical Class:* Biaxial. *Orientation:* $X = a$; $Z = b$. $\alpha = 1.749$ $\beta =$ n.d. $\gamma = 1.848$ 2V(meas.) = 0°–10°

Cell Data: *Space Group:* $P2_12_12_1$. $a = 2.995$ $b = 4.820$ $c = 14.800$ Z = [2]

X-ray Powder Pattern: Mounana mine, Gabon.
4.59 (FFF), 3.722 (FF), 2.528 (F), 7.46 (mF), 4.95 (f), 2.802 (f), 1.820 (f)

Chemistry:

	(1)	(2)	(3)
V_2O_5	10.27		
V_2O_4	69.45	76.44	82.16
Al_2O_3	1.16		
Fe_2O_3	0.35		
H_2O	17.93	19.20	17.84
insol.	0.50	3.20	
Total	99.66	98.84	100.00

(1) Mounana mine, Gabon; after correction for oxidation of vanadium and deduction of insoluble quartz, corresponds to $V^{4+}_{2.00}O_{4.12} \cdot 2.09H_2O$. (2) Kyzylkum Desert, Uzbekistan; after deduction of insoluble, corresponds to $V_{1.93}O_4 \cdot 2.22H_2O$. (3) $V_2O_4 \cdot 2H_2O$.

Occurrence: In a zone of reduction below the oxidized zone of a uranium deposit (Mounana mine, Gabon).

Association: Duttonite (Mounana mine, Gabon).

Distribution: From the Mounana uranium mine, Franceville, Gabon. From Kokpatas, in the Kyzylkum Desert, Uzbekistan.

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Type Material: National School of Mines, Paris, France; The Natural History Museum, London, England, 1970,150; National Museum of Natural History, Washington, D.C., USA, 145134.

References: (1) Cesbron, F. and H. Vachey (1970) La lenoblite, nouvel oxyde hydraté de vanadium (IV). Bull. Soc. fr. Minéral., 93, 235–241 (in French with English abs.). (2) (1971) Amer. Mineral., 56, 635–636 (abs. ref. 1).