

Vauxite

$\text{Fe}^{2+}\text{Al}_2(\text{PO}_4)_2(\text{OH})_2 \cdot 6\text{H}_2\text{O}$

©2001-2005 Mineral Data Publishing, version 1

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As crystals, tabular on {010}, elongated along [001] or [101], showing {010}, {1 $\bar{1}$ 0}, {1 $\bar{1}$ 1}, {101}, {1 $\bar{1}$ 1}, {1 $\bar{0}$ 1}, {1 $\bar{4}$ 0}; radial to subparallel aggregates, to 6 mm, nodular. *Twinning:* On {010}, twin and composition plane.

Physical Properties: *Tenacity:* Brittle. Hardness = 3.5 D(meas.) = 2.39–2.40 D(calc.) = 2.40

Optical Properties: Transparent. *Color:* Sky-blue to Venetian blue, greenish on exposure; pale blue in transmitted light. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Biaxial (+). *Pleochroism:* Strong; $X = Z$ = colorless; Y = blue. *Orientation:* $Z \simeq \perp \{010\}$. *Dispersion:* $r > v$, marked. $\alpha = 1.551(3)$ $\beta = 1.555(3)$ $\gamma = 1.562(3)$ $2V(\text{meas.}) = 32^\circ$

Cell Data: *Space Group:* $P\bar{1}$. $a = 9.142(3)$ $b = 11.599(3)$ $c = 6.158(2)$ $\alpha = 98.29(2)^\circ$ $\beta = 91.93(3)^\circ$ $\gamma = 108.27(3)^\circ$ $Z = 2$

X-ray Powder Pattern: Llallagua, Bolivia.

10.85 (100), 5.457 (20), 5.908 (12), 2.881 (12), 2.596 (12), 6.069 (10), 3.045 (10)

Chemistry:

	(1)	(2)
P_2O_5	30.52	32.12
Al_2O_3	21.42	23.08
Fe_2O_3	0.60	
FeO	15.54	16.26
MgO	0.28	
CaO	0.77	
H_2O^+	22.92	
H_2O^-	8.49	
H_2O		28.54
Total	100.54	100.00

(1) Llallagua, Bolivia. (2) $\text{FeAl}_2(\text{PO}_4)_2(\text{OH})_2 \cdot 6\text{H}_2\text{O}$.

Occurrence: A secondary mineral derived from alteration of apatite.

Association: Wavellite, paravauxite (Llallagua, Bolivia); marcasite, wavellite (Huanuni, Bolivia).

Distribution: In Bolivia, from the Siglo XX mine, Llallagua, Potosí, and at Huanuni, Oruro.

Name: Honoring George Vaux, Jr. (1863–1927), American lawyer and mineral collector, Bryn Mawr, Pennsylvania, USA.

Type Material: National Museum of Natural History, Washington, D.C., USA, 97561, 103542.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 974–975. (2) Baur, W.H. and B. Rama Rao (1968) The crystal structure and the chemical composition of vauxite. Amer. Mineral., 53, 1025–1028. (3) Blanchard, F.N. and S.A. Abernathy (1980) X-ray powder diffraction data for phosphate minerals: vauxite, metavauxite, vivianite, Mn-heterosite, scorzalite, and lazulite. Florida Scientist, 43, 257–265.