

Vauquelinite

$\text{Pb}_2\text{Cu}(\text{PO}_4)(\text{CrO}_4)(\text{OH})$

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Crystal Data: Monoclinic. *Point Group:* $2/m$. Crystals are wedge-shaped, flattened on [100], to 5 mm, as nodules, reniform crusts, granular, compact massive. *Twinning:* On {102}.

Physical Properties: *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 2.5–3
D(meas.) = 6.16 D(calc.) = 6.16

Optical Properties: Translucent to transparent in thin fragments. *Color:* Apple-green, siskin-green, olive-green, canary-yellow, ocher-brown, liver-brown, nearly black. *Streak:* Greenish to brownish. *Luster:* Adamantine to resinous.

Optical Class: Biaxial (–). *Pleochroism:* X = pale green; $Y = Z$ = pale brown. $\alpha = 2.11(2)$
 $\beta = 2.22(2)$ $\gamma = 2.22(2)$ $2V(\text{meas.}) = \sim 0^\circ$

Cell Data: *Space Group:* $P2_1/n$. $a = 13.754(5)$ $b = 5.806(6)$ $c = 9.563(3)$
 $\beta = 94^\circ 34(2)'$ $Z = 4$

X-ray Powder Pattern: Musonoi mine, Congo.

3.271 (100B), 2.986 (80), 4.74 (70), 2.932 (70), 2.768 (70), 2.694 (70), 2.303 (70)

Chemistry:

	(1)	(2)
CrO ₃	15.26	14.16
P ₂ O ₅	8.05	10.05
Fe ₂ O ₃	1.09	
CuO	12.43	11.27
PbO	61.26	63.24
H ₂ O	1.31	1.28
Total	99.40	100.00

(1) Beresovsk, Russia. (2) $\text{Pb}_2\text{Cu}(\text{PO}_4)(\text{CrO}_4)(\text{OH})$.

Occurrence: A rare mineral in the oxidized zones of some hydrothermal base-metal deposits.

Association: Crocoite, pyromorphite, mimetite, cerussite, beudantite, duftite (Beresovsk, Russia).

Distribution: At the Tsvetnoi mine, Mt. Uspenskaya, Beresov district, near Yekaterinburg (Sverdlovsk), Middle Ural Mountains, Russia. In Germany, from Öhrenstock, near Ilmenau, Thuringia; at Obercallenberg, near Glauchau, Saxony; and from Reichenbach, near Bensheim, and Raidelbach, Hesse. At the Exi mine, near Laurium, Greece. In the Mashamba West and Musonoi mines, near Kolwezi, and at Kipushi, 28 km southwest of Lubumbashi, Katanga Province, Congo (Shaba Province, Zaire). In the USA, in Arizona, at a number of localities south and west of Wickenburg, Maricopa Co., as the Moon Anchor mine, the Rat Tail claim, the Potter-Kramer property, Vulture district, the Tonopah-Belmont mine, Osborne district; in the Florence Lead-Silver mine, Tortilla Mountains, Pinal Co.; at the Vanadinite mine, Lost Basin district, Mohave Co.; in Nevada, from the Killie mine, Spruce Mountain district, Elko Co., in the Silver Coin mine, near Valmy, Iron Point district, Humboldt Co., and elsewhere; at the Pequa mine, Lancaster, Lancaster Co., Pennsylvania; from the Blue Bell mine, near Baker, San Bernardino Co., California. At the Argent Pb–Zn mines, about 100 km east of Johannesburg, Transvaal, South Africa. From Broken Hill, New South Wales, Australia. Additional reported localities require modern confirmation.

Name: Honoring Professor Louis Nicolas Vauquelin (1763–1829), French chemist, University of Paris, Paris, France, who discovered chromium.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 650–652. (2) Fanfani, L. and P.F. Zanazzi (1968) The crystal structure of vauquelinite and the relationship to fornacite. *Zeits. Krist.*, 126, 433–443. (3) Deliens, M. (1979) La chenevixite, la vauquelinite, la sterrettite et la boltwoodite, minéraux nouveaux pour les gisements du Shaba (Zaire) et du Rwanda. *Ann. Soc. Géol. Belg.*, 101, 111–119 (in French with English abs.). (4) Pekov, I.V. (1998) Minerals first discovered on the territory of the former Soviet Union, 226.

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