

**Crystal Data:** Orthorhombic. *Point Group:*  $2/m\ 2/m\ 2/m$ . Uncommon in crystals, then pseudo-octahedral {111}, may be lathlike; modified by numerous smaller forms, to 1.5 mm. Usually fine-grained massive, in nodules, stalactites, crusts, and veinlets.

**Physical Properties:** *Cleavage:* On {010}, good; on {001}, poor. *Fracture:* Uneven to splintery, conchoidal when glassy. Hardness = 4.5 D(meas.) = 2.57–2.61 D(calc.) = 2.59

**Optical Properties:** Transparent to translucent. *Color:* Pale green, emerald-green, bluish green, colorless, may be pale shades of brown or yellow, rarely red; typically pale green to colorless in transmitted light. *Streak:* White. *Luster:* Vitreous to waxy.

*Optical Class:* Biaxial (-). *Orientation:*  $X = a$ ;  $Y = c$ ;  $Z = b$ . *Dispersion:*  $r < v$ , perceptible.  $\alpha = 1.550\text{--}1.563$   $\beta = 1.565\text{--}1.588$   $\gamma = 1.570\text{--}1.594$  2V(meas.) = Moderate.

**Cell Data:** *Space Group:*  $Pcab$ .  $a = 9.822(3)$   $b = 9.630(3)$   $c = 8.561(3)$   $Z = 8$

**X-ray Powder Pattern:** Palazuelo de las Arribas, Spain.

3.041 (100), 5.356 (72), 4.26 (65), 2.914 (43), 2.873 (39), 4.810 (30), 3.904 (28)

Chemistry:	(1)	(2)	(1)	(2)
P <sub>2</sub> O <sub>5</sub>	44.73	44.92	Fe <sub>2</sub> O <sub>3</sub>	0.06
V <sub>2</sub> O <sub>5</sub>	0.32		Cr <sub>2</sub> O <sub>3</sub>	0.18
Al <sub>2</sub> O <sub>3</sub>	32.40	32.27	H <sub>2</sub> O	22.68
			Total	100.37
				100.00

(1) Lucin, Utah, USA. (2) AlPO<sub>4</sub>·2H<sub>2</sub>O.

**Polymorphism & Series:** Dimorphous with metavariscite, forms a series with strengite.

**Mineral Group:** Variscite group.

**Occurrence:** Typically deposited from phosphate-bearing waters in contact with aluminous rocks. On islands and in caves, the phosphate provided by decomposition of guano.

**Association:** Crandallite, carbonate-fluorapatite, wardite, millisite, gordonite, montgomeryite, overite, kolbeckite, goyazite (Little Green Monster mine, Utah, USA).

**Distribution:** Many localities. In Germany, in Saxony, from Messbach, near Oelsnitz; at Langenstregis, east of Frankenberg, and at Lichtenberg, near Ronneburg, Thuringia. In the Drachenhöhle, Austria. From Železnik, Třenice, and Zaječow, Czech Republic. At Palazuelo de las Arribas, Zamora, Spain. In the Gunheath and Hensbarrow china clay pits, St. Austell, and at the Treore mine, St. Teath, Cornwall, England. An ore at the Sarysai deposit, Alma-Ata, Kazakhstan. In the USA, in Utah, large nodules from the Little Green Monster mine, Clay Canyon, about nine km west of Fairfield, Utah Co., on Utahlite Hill, about eight km northwest of Lucin, Box Elder Co., from Amatrice Hill, Stansbury Mountains, Tooele Co., and elsewhere; from the Henry de Linde mine #3, and Dug Hill, near Avant, Garland Co., Arkansas; at the Cole mine, Bisbee, Cochise Co., Arizona; crystallized in the Goldstrike and Genesis mines, Lynn district, and the Gold Quarry mine, Maggie Creek district, Eureka Co., Nevada; From the Sapucaia pegmatite mine, about 50 km east-southeast of Governador Valadares, Minas Gerais, Brazil. In the West Driefontein Cave, Transvaal, South Africa. From Snake Hill, Voi, Kenya. At the Iron Monarch quarry, Iron Knob, South Australia, and in the Ninghanboun Hills, Western Australia. In the Kyusen-do Cave, Japan.

**Name:** From *Variscia*, an old name for Vogtland, the district in Germany which was the original source for the mineral.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 756–761. (2) Salvador, P.S. and J. Fayos (1972) Some aspects of the structural relationship between "Messbach-type" and "Lucin-type" variscites. *Amer. Mineral.*, 57, 36–44. (3) Kniep, R., D. Mootz, and A. Vegas (1977) Variscite. *Acta Cryst.*, 33, 263–265.

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