

Vashegyite

 $\text{Al}_{11}(\text{PO}_4)_9(\text{OH})_6 \cdot 38\text{H}_2\text{O}$

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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$ or $mm2$. Crystals are lozenge-shaped, flattened on {001}, to 1 mm. May be in hemispherical aggregates; commonly porous to compact, massive.

Physical Properties: *Cleavage:* Perfect on {001}. *Hardness* = 2–3 *D*(meas.) = 1.93–1.99 *D*(calc.) = 1.935

Optical Properties: Translucent to opaque. *Color:* White, pale green, pale yellow, pale brown; colorless in transmitted light. *Luster:* Dull to waxy.

Optical Class: Biaxial (–). *Orientation:* $X = c; Y = b; Z = a$. $\alpha = 1.470\text{--}1.479$
 $\beta = 1.477\text{--}1.488$ $\gamma = 1.482\text{--}1.490$ $2V$ (meas.) = $67^\circ\text{--}74^\circ$

Cell Data: *Space Group:* $Pnam$ or $Pna2_1$. $a = 10.754\text{--}10.764$ $b = 14.954\text{--}14.971$
 $c = 20.526\text{--}22.675$ $Z = 2$

X-ray Powder Pattern: Železník, Slovakia.

9.80 (vs), 9.20 (vs), 7.24 (vs), 2.90 (vs), 2.51 (ms), 2.127 (ms), 6.80 (m)

Chemistry:

	(1)	(2)	(3)	(4)
P_2O_5	31.32	32.43	31.83	32.96
CO_2	0.12			
Al_2O_3	28.33	29.01	27.09	28.93
Fe_2O_3	1.19	0.04	0.12	
Na_2O	0.05			
K_2O	0.16			
H_2O	38.97	37.72	40.01	38.11
insol.	0.24		0.50	
Total	100.38	99.20	99.55	100.00

(1) Železník, Slovakia. (2) Do.; H_2O by TGA; corresponds to $(\text{Al}_{11.09}\text{Fe}_{0.01}^{3+})_{\Sigma=11.10}(\text{PO}_4)_{8.90}(\text{OH})_{6.58} \cdot 37.51\text{H}_2\text{O}$. (3) Chvaletice, Czech Republic; corresponds to $(\text{Al}_{10.83}\text{Fe}_{0.03}^{3+})_{\Sigma=10.86}(\text{PO}_4)_{9.14}(\text{OH})_{5.16} \cdot 42.68\text{H}_2\text{O}$. (4) $\text{Al}_{11}(\text{PO}_4)_9(\text{OH})_6 \cdot 38\text{H}_2\text{O}$.

Occurrence: Filling cavities in boxwork “limonite” from an iron mine (Železník, Slovakia).

Association: Variscite, wavellite, evansite.

Distribution: From Zelezník (Vashegy), Slovakia. At Chvaletice, Czech Republic. From Haut-le-Wastia, Belgium. In the Feengrotten (Cave), near Saalfeld, Thuringia, Germany. In the USA, on the Van-Nav-Sand claim group, Fish Creek Range, 48 km south of Eureka, Eureka Co., and at the Train prospect, Manhattan district, Nye Co., Nevada.

Name: For its occurrence at Vashegy, Hungary (now Železník, Slovakia).

Type Material: Type specimen in Budapest destroyed in 1956; The Natural History Museum, London, England, 1910,101.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana’s system of mineralogy, (7th edition), v. II, 999. (2) Johan, Z., E. Slansky, and P. Povondra (1983) Vashegyite, a sheet aluminum phosphate: new data. *Can. Mineral.*, 21, 489–498. (3) McConnell, D. (1974) Are vashegyite and kingite hydrous aluminium phyllophosphates with kaolinite-type structures? *Mineral. Mag.*, 39, 802–806.