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


Cell Data: Space Group: Pnam or Pna21.  

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:  
\begin{align*}
\text{PO}_2\text{O}_5 & \quad 31.32 & 32.43 & 31.83 & 32.96 \\
\text{CO}_2 & \quad 0.12 \\
\text{Al}_2\text{O}_3 & \quad 28.33 & 29.01 & 27.09 & 28.93 \\
\text{Fe}_2\text{O}_3 & \quad 1.19 & 0.04 & 0.12 \\
\text{Na}_2\text{O} & \quad 0.05 \\
\text{K}_2\text{O} & \quad 0.16 \\
\text{H}_2\text{O} & \quad 38.97 & 37.72 & 40.01 & 38.11 \\
\text{insol} & \quad 0.24 & 0.50 \\
\text{Total} & \quad 100.38 & 99.20 & 99.55 & 100.00
\end{align*}

(1) Železník, Slovakia. (2) Do.;  \(\text{H}_2\text{O}\) by TGA; corresponds to (Al\(_{11.09}\)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 (Al\(_{10.83}\)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) 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 Železník (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).


References:  