

Wilhelmvierlingite**CaMn²⁺Fe³⁺(PO₄)₂(OH)·2H₂O**

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Crystal Data: Orthorhombic. *Point Group:* 2/m 2/m 2/m. As prismatic to equant crystals, showing {100}, {010}, {110}, {001}, to 40 μm, typically in radial fibrous aggregates.

Physical Properties: *Cleavage:* On {010}, perfect. *Hardness* = 4 *D*(meas.) = 2.58
D(calc.) = 2.60

Optical Properties: Translucent. *Color:* Yellow to brownish yellow. *Streak:* Pale yellow.
Luster: Vitreous.

Optical Class: Biaxial (-) or (+). *Pleochroism:* X = Y = light yellow; Z = dark yellow.
Orientation: X = b; Y = a; Z = c. α = 1.637 β = 1.664 γ = 1.692 2*V*(meas.) = n.d.
2*V*(calc.) = 45°

Cell Data: *Space Group:* Pbca. a = 14.80(5) b = 18.70(5) c = 7.31(2) Z = 8

X-ray Powder Pattern: Hagendorf, Germany.
2.86 (10), 9.34 (7), 5.00 (6d), 1.98 (5), 4.67 (4), 2.58 (4), 1.96 (4d)

Chemistry:	(1)	(2)
P ₂ O ₅	35.5	36.04
Fe ₂ O ₃	19.0	20.27
MnO	17.6	18.01
ZnO	2.6	
CaO	11.9	14.24
H ₂ O	[13.4]	11.44
Total	[100.0]	100.00

(1) Hagendorf, Germany; by electron microprobe, originally given as PO₄ 47.5%, Fe 13.3%, Mn 13.6%, Zn 2.1%, Ca 8.5%, H₂O 15.0% by difference, total 100.0%, here converted to oxides, total Fe as Fe₂O₃, total Mn as MnO, (OH)¹⁻ determined present by IR; stated to correspond to (Ca_{0.85}Zn_{0.13})_{Σ=0.98}Mn_{0.99}²⁺Fe_{0.95}³⁺(PO₄)₂(OH)·2.33H₂O. (2) CaMn²⁺Fe³⁺(PO₄)₂(OH)·2H₂O.

Mineral Group: Overite group.

Occurrence: A rare secondary mineral in a complex zoned granite pegmatite.

Association: Rockbridgeite, zwieselite.

Distribution: From Hagendorf, Bavaria, Germany.

Name: To honor Wilhelm Vierling (1901–1995), Weiden, Germany, a longtime student of Hagendorf minerals.

Type Material: Institute for Mineralogy and Crystallography, Technical University, Berlin, Germany.

References: (1) Mücke, A. (1983) Wilhelmvierlingit, (Ca, Zn)MnFe³⁺[OH|(PO₄)₂]2H₂O, ein neues Mineral von Hagendorf/Oberpfalz. *Aufschluss*, 34, 267–274 (in German). (2) (1984) *Amer. Mineral.*, 69, 568 (abs. ref. 1).