

Wilhelmkleinite

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Crystal Data: Monoclinic. *Point Group:* $2/m$. Spearhead-shaped crystals, to 5 mm, exhibiting $\{100\}$, $\{430\}$, $\{31\bar{1}\}$, in aggregates. *Twinning:* Interpenetration twins on $\{101\}$.

Physical Properties: *Cleavage:* On $\{23\bar{2}\}$. Hardness = 4.5 D(meas.) = n.d. D(calc.) = 4.364

Optical Properties: Translucent. *Color:* Blackish green. *Streak:* Green. *Luster:* Dull, adamantine on fractures.

Optical Class: Biaxial. *Pleochroism:* Strong; olive-green to emerald-green to reddish brown. $n = \sim 1.94$ $\alpha = \text{n.d.}$ $\beta = \text{n.d.}$ $\gamma = \text{n.d.}$ $2V(\text{meas.}) = \text{n.d.}$

Cell Data: *Space Group:* $P2_1/n$. $a = 6.631(1)$ $b = 7.611(1)$ $c = 7.377(1)$ $\beta = 91.80(1)^\circ$ $Z = 2$

X-ray Powder Pattern: Tsumeb, Namibia.

3.385 (100), 3.315 (78), 2.939 (47), 1.621 (34), 1.652 (32), 2.381 (29), 2.839 (28)

Chemistry:

	(1)	(2)
As ₂ O ₅	46.69	47.01
Fe ₂ O ₃	33.60	32.66
ZnO	13.81	16.65
H ₂ O	[5.90]	3.68
Total	[100.00]	100.00

(1) Tsumeb, Namibia; by electron microprobe, average of five analyses, total Fe as Fe₂O₃, H₂O by difference; corresponding to Zn_{0.84}Fe_{2.07}(AsO₄)₂(OH_{1.6})₂. (2) ZnFe₂(AsO₄)₂(OH)₂.

Occurrence: Very rare from a deep oxidation zone in a dolostone-hosted hydrothermal polymetallic ore deposit.

Association: Scorodite, gerdtremlite, adamite.

Distribution: From Tsumeb, Namibia.

Name: To honor Wilhelm Klein (1889–1939), Manager of the Otavi Mining and Railroad Company mines in Namibia (1916–1939), an early collector of Tsumeb minerals.

Type Material: Mineralogical Museum, University of Hamburg, Hamburg, Germany.

References: (1) Schlüter, J., K.-H. Klaska, K. Friese, G. Adiwidjaja, and G. Gebhard (1998) Wilhelmkleinite, ZnFe₂³⁺(AsO₄)₂(OH)₂, a new mineral from Tsumeb, Namibia. Neues Jahrb. Mineral., Monatsh., 558–564. (2) (1999) Amer. Mineral., 84, 1197 (abs. ref. 1).