

Rankachite**CaFeV₄W₈O₃₆•12H₂O**

Crystal Data: Monoclinic. *Point Group:* 2 or 2/m. As crusts of needlelike to lathlike crystals, elongated along [001], flattened on {100} or {010}, to 2 mm; in rosettes and subparallel to radial aggregates.

Physical Properties: *Cleavage:* One direction, good, parallel to the plane of flattening.

Fracture: Uneven. Hardness = ~2.5 D(meas.) = > 4.03 D(calc.) = 4.34 (Fe-poor)-4.46

Optical Properties: Opaque to translucent. *Color:* Dark brown to brownish yellow. *Streak:* Brown. *Luster:* Subadamantine to resinous, may be dull.

Optical Class: Biaxial (-). $\alpha = 1.770(5)$ $\beta = 1.925(5)$ $\gamma = 1.970(5)$ $2V(\text{meas.}) = 58^\circ$

Pleochroism: Strong; $X = Y =$ yellowish brown; $Z =$ reddish brown to opaque.

Dispersion: $r \ll v$, strong. *Orientation:* $X \perp$ plane of flattening; $Z = c$.

Cell Data: *Space Group:* $P2_1$ or $P2_1/m$. $a = 10.62$ $b = 8.16$ $c = 5.50$ $\beta = 98^\circ$ $Z = 1$

X-ray Powder Pattern: Clara mine, Germany.

10.64 (10), 5.44 (7), 4.57 (6), 4.08 (6), 3.51 (6), 3.26 (6), 3.04 (6)

Chemistry:	(1)	(2)	(3)
WO ₃	70.2	72.66	72.38
V ₂ O ₅	13.9	12.95	14.19
FeO	3.2	0.48	2.80
CaO	2.7	4.24	2.19
<u>H₂O</u>	8.8	[9.67]	8.44
Total	98.8	100.00	100.00

(1- 2) Clara mine, Germany; by electron microprobe, corresponding respectively to Ca_{1.26}Fe_{1.12}V_{3.92}W_{7.78}H_{25.04}O₄₈ and Ca_{1.90}Fe_{0.16}V_{3.56}W_{7.86}H_{26.90}O₄₈. (3) CaFeV₄W₈O₃₆•12H₂O.

Occurrence: An alteration product of scheelite and iron sulfides in the oxidation zone of a hydrothermal base-metal deposit.

Association: Scheelite, pyrite, marcasite, fluorite, barite, ferritungstite, quartz.

Distribution: From the mill dump of the Clara mine, near Oberwolfach, Black Forest, Germany.

Name: For the *Rankach* Valley, Germany, in which the Clara mine is located.

Type Material: National Museum of Natural History, Washington, D.C., USA, 160380.

References: (1) Walenta, K. and P.J. Dunn (1984) Rankachit, ein neues Mineral aus der Grube Clara im mittleren Schwarzwald. Neues Jahrb. Mineral., Monatsh., 289-295 (in German with English abs.). (2) (1985) Amer. Mineral., 70, 876 (abs. ref. 1). (3) Walenta, K. and T. Theye (2005) Iron-poor rankachite from the Clara mine. Der Erzgräber, 19, 58-62 (in German with English abstract). (4) Kolitsch, U. and G. Götzinger (2000) Einige Neufunde aus der Grube Clara im mittleren Schwarzwald: Eulytin, Namibit, Volborthit, Gearksutit, Spertiniit, Monazit-(La), Protasit, Sainfeldit, Cyanotrichit und Vauquelinit. Der Erzgräber, 14, 33-47 (in German). (5) (2006) Amer. Mineral., 91(7), 876 (abs. refs. 3 and 4 and comment).