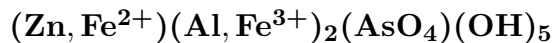


Gerdtremmelite



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Crystal Data: Triclinic. *Point Group:* $\bar{1}$ or 1. Crystals are tabular, to 0.5 mm, in spherulitic aggregates.

Physical Properties: Hardness = n.d. $D(\text{meas.}) = > 3.3$ $D(\text{calc.}) = 3.66$

Optical Properties: Transparent. *Color:* Brown, yellowish brown, dark brown.

Streak: White. *Luster:* Adamantine.

Optical Class: Biaxial; high birefringence. $n = 1.735(5)$ $2V(\text{meas.}) = \text{n.d.}$

Cell Data: *Space Group:* $P\bar{1}$ or $P1$. $a = 5.169(5)$ $b = 13.038(9)$ $c = 4.931(4)$
 $\alpha = 98.78(7)^\circ$ $\beta = 100.80(6)^\circ$ $\gamma = 78.73(6)^\circ$ $Z = 2$

X-ray Powder Pattern: Tsumeb, Namibia.

12.77 (100), 3.878 (50), 3.631 (50), 3.140 (50), 4.801 (40), 4.695 (40), 4.220 (40)

Chemistry:

	(1)	(2)	(3)
MoO ₃	1.08	1.08	
As ₂ O ₅	32.53	31.54	32.79
Al ₂ O ₃	23.76	26.74	24.73
Fe ₂ O ₃	11.38	10.01	6.83
FeO			3.07
CuO	0.01	0.04	
ZnO	19.51	19.58	19.73
H ₂ O	11.25	11.25	12.85
Total	99.52	100.24	100.00

(1) Tsumeb, Namibia; by electron microprobe, total Fe as Fe₂O₃, H₂O by TGA on a separate sample; corresponds to $(\text{Zn}_{0.83}\text{Fe}_{0.49}\text{Al}_{1.60})_{\Sigma=2.92}[(\text{As}_{0.97}\text{Mo}_{0.03})_{\Sigma=1.00}\text{O}_4](\text{OH})_{4.30}$. (2) Do.; corresponds to $(\text{Zn}_{0.85}\text{Fe}_{0.44}\text{Al}_{1.86})_{\Sigma=3.15}[(\text{As}_{0.97}\text{Mo}_{0.03})_{\Sigma=1.00}\text{O}_4](\text{OH})_{4.43}$. (3) $(\text{Zn}_{0.85}\text{Fe}_{0.15}^{2+})_{\Sigma=1.00}(\text{Al}_{1.70}\text{Fe}_{0.30}^{3+})_{\Sigma=2.00}(\text{AsO}_4)(\text{OH})_5$.

Occurrence: A very rare secondary mineral from the deep oxidized zone of a dolostone-hosted hydrothermal polymetallic ore deposit.

Association: Powellite, betpakdalite, scorodite, wilhelmkleinite, adamite, hematite, kaolinite, quartz.

Distribution: From Tsumeb, Namibia.

Name: To honor Dr. Gerd Tremmel (1940–), of Overath-Steinbrück, Germany, who submitted the mineral for identification.

Type Material: Mineralogical-Petrographical Institute, University of Heidelberg, Heidelberg, Germany; National Museum of Natural History, Washington, D.C., USA, 162488.

References: (1) Schmetzer, K. and O. Medenbach (1985) Gerdtremmelite, $(\text{Zn}, \text{Fe})(\text{Al}, \text{Fe})_2[(\text{AsO}_4)](\text{OH})_5$, a new mineral from Tsumeb, Namibia. *Neues Jahrb. Mineral., Monatsh.*, 1–6. (2) (1986) *Amer. Mineral.*, 71, 845 (abs. ref. 1).