

**Crystal Data:** Triclinic. *Point Group:*  $\bar{1}$ . Crystals rare, to 1 mm, showing {100}, {010}, {001}, {011}, strongly zoned with talmessite; as polycrystalline coatings.

**Physical Properties:** *Cleavage:* {010}, {001}, and {011}, probable, equally good. Hardness = ~5 D(meas.) = 3.81(5) D(calc.) = 3.82

**Optical Properties:** Semitransparent. *Color:* White to colorless. *Streak:* White. *Luster:* Vitreous.

*Optical Class:* Biaxial (–) or (+). *Orientation:* X (28°, 32°); Y (185°, 60°); Z (–79°, 80°) using (φ, ρ). α = 1.713(2) β = 1.730(2) γ = 1.748(2) 2V(meas.) = 88(2)° 2V(calc.) = 89°

**Cell Data:** *Space Group:*  $P\bar{1}$ . a = 5.899(1) b = 6.978(1) c = 5.755(1) α = 97.41(3)° β = 109.08(3)° γ = 108.09(3)° Z = 1

**X-ray Powder Pattern:** Tsumeb, Namibia.

2.781 (100), 3.080 (80), 2.750 (70), 1.721 (60), 3.350 (50), 3.208 (50), 5.05 (40)

Chemistry:	(1)	(2)
As <sub>2</sub> O <sub>5</sub>	50.2	50.03
FeO	0.2	
MnO	0.2	
ZnO	15.3	17.72
MgO	1.2	
CaO	24.2	24.41
H <sub>2</sub> O	7.8	7.84
Total	99.1	100.00

(1) Tsumeb, Namibia; by electron microprobe, H<sub>2</sub>O by DTA-TGA; corresponds to Ca<sub>1.98</sub>(Zn<sub>0.86</sub>Mg<sub>0.14</sub>Fe<sub>0.01</sub>Mn<sub>0.01</sub>)<sub>Σ=1.02</sub>(AsO<sub>4</sub>)<sub>2</sub>·2H<sub>2</sub>O. (2) Ca<sub>2</sub>Zn(AsO<sub>4</sub>)<sub>2</sub>·2H<sub>2</sub>O.

**Polymorphism & Series:** Dimorphous with zincroselite; forms a series with talmessite.

**Mineral Group:** Fairfieldite group.

**Occurrence:** A very rare mineral from a deep oxidized zone in a dolostone-hosted, hydrothermal, polymetallic ore deposit.

**Association:** Talnessite, prosperite, adamite, conichalcite, austinite, barite, quartz, chalcocite.

**Distribution:** From Tsumeb, Namibia.

**Name:** In honor of Dr. Robert Irwin Gait (1938– ), South African-Canadian Curator of Mineralogy, Royal Ontario Museum, Toronto, Canada.

**Type Material:** Royal Ontario Museum, Toronto, Canada, M35388; National Museum of Natural History, Washington, D.C., USA, 144799.

**References:** (1) Sturman, B.D. and P.J. Dunn (1980) Gaitite, H<sub>2</sub>Ca<sub>2</sub>Zn(AsO<sub>4</sub>)<sub>2</sub>(OH)<sub>2</sub>, a new mineral from Tsumeb, Namibia (South West Africa). *Can. Mineral.*, 18, 197-200. (2) (1981) *Amer. Mineral.*, 66, 1274 (abs. ref. 1). (3) Keller, P., H. Hess, and H. Riffel (1981) Die Kristallstruktur von zwei neuen Calcium-Zink-Arsenat-Mineralen von Tsumeb/Namibia. *Zeits. Krist.*, 156, 70-71 (in German). (4) Keller, P., F. Lissner, and T. Schleid (2004) The crystal structures of zincroselite and gaitite: Two natural polymorphs of Ca<sub>2</sub>Zn[AsO<sub>4</sub>]<sub>2</sub>·2H<sub>2</sub>O from Tsumeb, Namibia. *Eur. J. Mineral.*, 16, 353-359.