

Tsumcorite**Pb(Zn, Fe³⁺)₂(AsO₄)₂(OH, H₂O)₂**

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Crystal Data: Monoclinic. *Point Group:* 2/*m*. Crystals are prismatic, elongated along [010], wedge-shaped, showing {201}, {401}, {001}, {111}, to 5 mm, in radiating sheaves and spherulites, may be feathery, aggregated into crusts, earthy, powdery. *Twinning:* Common, on a unknown law.

Physical Properties: *Cleavage:* On {001}, good. Hardness = 4.5 D(meas.) = 5.2 D(calc.) = 5.39

Optical Properties: Semitransparent. *Color:* Bright yellow, orange, yellowish brown, red, red-brown. *Streak:* Yellow. *Luster:* Vitreous.

Optical Class: Biaxial. *Pleochroism:* Weak; *X* = *Z* = pale yellow; *Y* = yellow. *Orientation:* *Y* = *b*; *X* ∧ *c* = 8°–15°. *Dispersion:* *r* > *v*, weak. *α* = 1.87–1.91 *β* = 1.89–1.93 *γ* = 1.92–1.96 2*V*(meas.) = 67°–83.5°

Cell Data: *Space Group:* *C*2/*m*. *a* = 9.117–9.163 *b* = 6.321–6.347 *c* = 7.577–7.611 *β* = 115.07°–115.45° *Z* = 2

X-ray Powder Pattern: Tsumeb, Namibia.

3.244 (100), 4.663 (90), 2.863 (90), 2.742 (70), 3.021 (60), 2.573 (50), 2.540 (40)

| Chemistry: | (1) | (2) | | (1) | (2) | | (1) | (2) |
|--------------------------------|-------|-------|-----|-------|-------|------------------|-------|---------|
| As ₂ O ₅ | 34.80 | 36.20 | CuO | 1.50 | 0.15 | CaO | 0.98 | < 0.1 |
| Fe ₂ O ₃ | | 10.62 | ZnO | 14.69 | 14.97 | H ₂ O | 4.40 | [4.44] |
| FeO | 10.99 | | PbO | 31.66 | 33.39 | Total | 99.13 | [99.77] |
| Ge | 0.09 | | MgO | 0.02 | | | | |

(1) Tsumeb, Namibia; H₂O confirmed by IR. (2) Do.; by electron microprobe, average of 19 analyses, total Fe as Fe₂O₃, confirmed by IR and Mössbauer spectroscopy, H₂O from theory; corresponds to Pb_{0.95}(Zn_{1.17}Fe_{0.85})_{Σ=2.02}(AsO₄)_{2.01}[(OH)_{0.70}(H₂O)_{1.17}]_{Σ=1.87}.

Mineral Group: Tsumcorite group.

Occurrence: A rare secondary mineral in the oxidized zone of some arsenic-bearing hydrothermal Pb–Zn deposits.

Association: Willemite, smithsonite, mimetite, scorodite, anglesite, arseniosiderite, beaverite, beudantite, carminite, ludlockite, o'danielite, zincroselite, stranskiite, leiteite (Tsumeb, Namibia); adamite, mimetite, smithsonite, goethite, quartz (Puttapa mine, Australia).

Distribution: From Tsumeb, Namibia. At Thasos, Greece. In Germany, from the Michael mine, Weiler, near Lahr, and the Clara mine, near Oberwolfach, Black Forest; and at the Rappold mine and a dump on the Roter Berg, Schneeberg, Saxony. In Mexico, from Mina Ojuela, Mapimí, Durango; at Las Animas, near Benjamin Hill, Sonora. In the USA, from the Richmond-Sitting Bull mine, Galena, Lawrence Co., South Dakota; in the Centennial Eureka mine, Tintic district, Juab Co., Utah. In Australia, at the Puttapa zinc mine, near Beltana, South Australia; from Broken Hill, New South Wales; at the Anticline prospect, 11 km west-southwest of Ashburton Downs homestead, Capricorn Range, Western Australia.

Name: In recognition of the TSUMeb CORporation's support of mineralogical investigations of the Tsumeb, Namibia orebody.

Type Material: n.d.

References: (1) Geier, B.H., K. Kautz, and G. Müller (1971) Tsumcorit(e) [PbZnFe(AsO₄)₂] • H₂O, ein neues Mineral aus den Oxidationszonen der Tsumeb-Mine, Südwestafrika. Neues Jahrb. Mineral., Monatsh., 304–309 (in German with English abs.). (2) (1972) Amer. Mineral., 57, 1558 (abs. ref. 1). (3) Tillmanns, E. and W. Gebert (1973) The crystal structure of tsumcorite, a new mineral from the Tsumeb mine, S.W. Africa. Acta Cryst., 29, 2789–2794. (4) Krause, W., K. Belendorff, H.-J. Bernhardt, C. McCammon, H. Effenberger, and W. Mikenda (1998) Crystal chemistry of the tsumcorite-group minerals. New data on ferrilotharmeyerite, tsumcorite, thometzekite, mounanaite, helmutwinklerite, and a redefinition of gartrellite. Eur. J. Mineral., 10, 179–206.

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