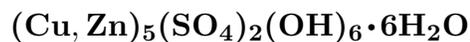


Ktenasite

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Crystal Data: Monoclinic. *Point Group:* $2/m$. Tabular crystals, to 1 mm, showing {011}, {100}, {013}, {201}, {401}.**Physical Properties:** Hardness = 2–2.5 D(meas.) = 2.94–2.97 D(calc.) = 2.97**Optical Properties:** Transparent. *Color:* Blue-green to emerald-green. *Luster:* Vitreous. *Optical Class:* Biaxial (-). *Pleochroism:* X = colorless; Y = bluish green; Z = pale green. *Orientation:* Z = b; X \simeq c. $\alpha = 1.574$ $\beta = 1.613$ – 1.615 $\gamma = 1.623$ – 1.628 2V(meas.) = 51° – 59° **Cell Data:** *Space Group:* $P2_1/c$. $a = 5.595$ – 5.598 $b = 6.121$ – 6.123 $c = 23.762$ – 23.771 $\beta = 95.81^\circ$ – 99.5° Z = 2**X-ray Powder Pattern:** Kamariza mine, Greece. 11.9 (10b), 2.74 (10), 5.87 (9), 4.85 (9), 3.53 (9), 1.704 (9), 2.95 (6)**Chemistry:**

	(1)	(2)
SO ₃	19.92	24.0
CuO	32.44	37.9
ZnO	[28.14]	16.6
H ₂ O	19.50	22.0
Total	[100.00]	100.5

(1) Kamariza mine, Greece; H₂O taken as loss on ignition, ZnO by difference. (2) Glomrudskollen mine, Norway; H₂O average of two analyses by elemental analyzer, H₂O and (OH)¹⁻ shown present by IR, (OH)¹⁻ calculated for charge balance; corresponds to (Cu_{3.40}Zn_{1.46})_{Σ=4.86}(SO₄)_{2.14}(OH)_{5.44}•6.00H₂O.**Occurrence:** An uncommon secondary mineral formed by oxidation of chalcopyrite and sphalerite in Cu–Zn hydrothermal mineral deposits and in mine dumps.**Association:** Glaucozerinite, serpierite, smithsonite, gypsum, namuwite, schulenbergitte.**Distribution:** In Greece, at Laurium, from the Kamariza mine, and in slag. In Italy, at the Trentini and Veneziana mine, near Torrelbelvicino, Veneto. In the Glomrudskollen zinc mine, and at Skutterud, Modum, Norway. In England, in the Drakewalls mine, Gunnislake, Cornwall. At the Rammelsberg mine, near Goslar, and in slag at the Juliushütte, Astfeld, Harz Mountains, Germany. In the Komsomolsk deposit, Noril'sk, Siberia, Russia. From the Argent Pb–Zn mines, about 100 km east of Johannesburg, Transvaal, South Africa. At Broken Hill, New South Wales, Australia. In the Tui mine, Te Aroha, New Zealand. In the USA, in Colorado, at the Commodore mine, Creede, Mineral Co., and in the Eagle mine, Gilman district, Eagle Co.; from the Lynchburg mine, nine km south of Magdalena, Socorro Co., New Mexico; in the 79 mine and on the Brick claims, Banner district, Gila Co., Arizona. Additional occurrences are known.**Name:** Honoring Professor Konstantin Anton Ktenas (1884–1935), Greek mineralogist.**Type Material:** University of Thessalonika, Thessalonika, Greece.**References:** (1) Kokkoros, P. (1950) Ktenasit, ein Zink-Kupfersulfat aus Lavrion (Griechenland). *Tschermaks Mineral. Petrog. Mitt.*, 1, 342–346 (in German). (2) (1951) *Amer. Mineral.*, 36, 381–382 (abs. ref. 1). (3) Raade, G., C.J. Elliott, and E.E. Fejer (1977) New data on ktenasite. *Mineral. Mag.*, 41, 65–70. (4) Mellini, M. and S. Merlino (1978) Ktenasite, another mineral with ${}^2_{\infty}[(\text{Cu, Zn})_2(\text{OH})_3\text{O}]^-$ octahedral sheets. *Zeits. Krist.*, 147, 129–140.