

Crystal Data: Monoclinic. *Point Group:* $2/m$. As prismatic to acicular crystals to 0.7 mm elongated along [100]. Crystals show dominant {031} terminated by {120} or dominant {021} terminated by {100}; in subparallel intergrowths or radiating sprays.

Physical Properties: *Cleavage:* Parallel to {010}. *Tenacity:* Brittle. *Fracture:* Uneven to conchoidal. Hardness = 3 D(meas.) = 3.29(2)-3.31(2) D(calc.) = 3.36 Dissolves slowly in cold HCl.

Optical Properties: Transparent. *Color:* Blue to pale blue. *Streak:* White to pale blue.

Luster: Vitreous.

Optical Class: Biaxial (-). $\alpha = 1.663(1)$ $\beta = 1.691(1)$ $\gamma = 1.693(1)$ $2V(\text{meas.}) = 31(1)^\circ$ $2V(\text{calc.}) = 42^\circ$ *Orientation:* $X \sim c$, $Z = b$, $Y \wedge a = 10-17^\circ$ (in obtuse β). *Dispersion:* Strong to weak, $r > v$. *Pleochroism:* $Z =$ greenish blue, $X =$ pale greenish blue, $Y =$ near colorless.

Absorption: $Z \gg X > Y$.

Cell Data: *Space Group:* $P2_1/c$. $a = 5.482(4)$ $b = 16.84(1)$ $c = 6.911(5)$ $\beta = 99.98(7)^\circ$ $Z = 2$

X-ray Powder Pattern: El Guanaco mine, northern Chile.

8.420 (100), 4.210 (64), 4.322 (21), 3.016 (12), 2.907 (10), 3.577 (9), 2.106 (8)

Chemistry:	(1)	(2)	(3)
CuO	29.67	27.87	31.19
MgO	17.12	15.55	15.80
CoO		1.16	
As ₂ O ₅	35.67	32.86	36.05
H ₂ O	18	n.d.	16.96
Total	100.46	77.43	100.00

(1) El Guanaco mine, northern Chile; average electron microprobe analysis of chemically zoned crystals, H₂O from thermal analysis; corresponds to $\text{Cu}_{2.32}\text{Mg}_{2.64}(\text{OH})_{4.13}(\text{H}_2\text{O})_{4.15}(\text{AsO}_4)_{1.93}$.

(2) Taghouni (Tarouni), Bou Azzer district, Morocco: average electron microprobe analysis, H₂O not determined. (3) $\text{Cu}_2\text{Mg}_2(\text{Mg}_{0.5}\text{Cu}_{0.5})(\text{OH})_4(\text{H}_2\text{O})_4(\text{AsO}_4)_2$.

Occurrence: A secondary phase in a high sulfidation-type, Au-rich epithermal deposit hosted by felsic rocks (El Guanaco mine), weathered in an arid and Mg-rich environment.

Association: Arhbarite, conichalcite, olivenite, chrysocolla, brochantite, quartz, enargite (Chile); quartz, dolomite, chalcopyrite, chromite, cuprite, malachite, agardite-(Ce) (Morocco).

Distribution: From the El Guanaco mine, ~93 km east of Taltal and 230 km southeast of Antofagasta, 2nd Region, northern Chile and at Taghouni (Tarouni), Bou Azzer district, Morocco.

Name: For the occurrence at El *Guanaco* mine, Chile.

Type Material: Mineralogical Collection, Bergakademie Freiberg, Germany (79704) and the Mineral Sciences Department, Natural History Museum of Los Angeles County, Los Angeles, California, USA (55435, 55436 and 55437).

References: (1) Witzke, T., U. Kolitsch, W. Krause, A. Wiechowski, O. Medenbach, A.R. Kampf, I.M. Steele, and G. Favreau (2006) Guanacoite, $\text{Cu}_2\text{Mg}_2(\text{Mg}_{0.5}\text{Cu}_{0.5})(\text{OH})_4(\text{H}_2\text{O})_4(\text{AsO}_4)_2$, a new arsenate mineral species from the El Guanaco Mine, near Taltal, Chile: Description and crystal structure. *Eur. J. Mineral.*, 18, 813-821. (2) Kyono, A. (2008) Compositional variability and crystal structural features of guanacoite. *Amer. Mineral.*, 93, 501-507.