

Crystal Data: Hexagonal. *Point Group:* $\bar{3}$ As pseudo-octahedral crystals exhibiting a $\{20\bar{2} 1\}$ rhombohedron and $\{0001\}$ to 0.3 mm; twinned crystals are prismatic elongated on $[212]$.

Twinning: Common by reflection on $\{10\bar{1} \bar{1}\}$.

Physical Properties: *Cleavage:* Perfect on $\{201\}$. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 3-3.5 D(meas.) = 3.50(2) D(calc.) = 3.551 Easily soluble in dilute HCl.

Optical Properties: Transparent. *Color:* Medium to dark green. *Streak:* Light green.

Luster: Vitreous.

Optical Class: Uniaxial (-). $\varepsilon = 1.785(5)$ $\omega > 1.8$ *Pleochroism:* Slight, O = bluish green, E = green. *Absorption:* $O > E$.

Cell Data: *Space Group:* $R\bar{3}$. $a = 13.689(1)$ $c = 14.025(1)$ $Z = 12$

X-ray Powder Pattern: Cuya, Camarones Valley, Arica Province, Chile.

2.762 (100), 5.469 (87), 2.265 (81), 2.904 (34), 1.710 (34), 4.686 (26), 1.819 (26)

Chemistry:	(1)
CuO	69.34
NiO	0.10
MnO	0.17
MgO	6.29
CoO	0.08
Cl	15.47
H ₂ O	[13.52]
$-\text{O} = \text{Cl}_2$	3.50
Total	101.47

(1) Cuya, Camarones Valley, Arica Province, Chile; average of 22 electron microprobe analyses, H₂O from stoichiometry; corresponding to $\text{Cu}_{3.00}(\text{Mg}_{0.62}\text{Cu}_{0.49}\text{Mn}_{0.01}\text{Ni}_{0.01})_{\Sigma=1.13}\text{Cl}_{1.74}(\text{OH})_6$.

Occurrence: A secondary mineral in near-surface, low-temperature, oxidation zones under increasingly arid conditions.

Association: Anhydrite, atacamite, chalcopryrite, copiapite, dolomite, epsomite, haydeite, hematite, magnesite, quartz.

Distribution: From a deposit 5 km NE of the village of Cuya, Camarones Valley, Arica Province, Chile.

Name: As the magnesium analogue of *paratacamite*.

Type Material: Natural History Museum of Los Angeles County, California, USA (64041-64043).

References: (1) Kampf, A.R., M.J. Sciberras, P. Leverett, P.A. Williams, T. Malcherek, J. Schlüter, M.D. Welch, M. Dini, and A.A. Molina Donoso (2013) Paratacamite-(Mg), $\text{Cu}_3(\text{Mg,Cu})\text{Cl}_2(\text{OH})_6$; a new substituted basic copper chloride mineral from Camarones, Chile. *Mineral. Mag.*, 77(8), 3113-3124. (2) (2015) *Amer. Mineral.*, 100, 2357 (abs. ref. 1).