

Camaronesite

Crystal Data: Hexagonal. *Point Group:* 32. As tabular crystals flattened on {0001} and exhibiting {0001}, {10 $\bar{1}$ 4}, {01 $\bar{1}$ 5}, and {01 $\bar{1}$ 8}, in dense aggregates to several mm.

Physical Properties: *Cleavage:* Perfect on {0001}. *Fracture:* Irregular, conchoidal and stepped. *Tenacity:* Brittle. *Hardness* = 2.5 *D*(meas.) = 2.43(1) *D*(calc.) = 2.383

Optical Properties: Transparent. *Color:* Lavender, pink. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Uniaxial (+). ω = 1.612 ϵ = 1.621 *Pleochroism:* *O* = pale lavender, *E* = colorless. *Absorption:* *O* > *E*.

Cell Data: *Space Group:* *R*32. *a* = 9.0833(5) *c* = 42.944(3) *Z* = 9

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

7.415 (100), 3.298 (93), 4.545 (72), 7.74 (45), 3.862 (32), 4.426 (26), 3.179 (25)

Chemistry:	(1)	(2)	(3)
Fe ₂ O ₃	31.84	32.60	31.45
P ₂ O ₅	29.22	28.98	27.95
SO ₃	15.74	16.35	15.77
H ₂ O	23.94	22.07	24.83
Total	100.74	100.00	100.00

(1) Camarones Valley, Arica Province, Chile; average of 10 electron microprobe analyses, H₂O by EMP and structural analysis, OH, SO₄, PO₄ and H₂O confirmed by Raman spectroscopy; corresponding to Fe_{1.94}(PO₃OH)₂(S_{0.96}O₄)(H₂O)₄·1.46 H₂O.

(2) Fe_{1.94}(PO₃OH)₂(S_{0.96}O₄)(H₂O)₄·1.00 H₂O. (3) Fe_{1.94}(PO₃OH)₂(S_{0.96}O₄)(H₂O)₄·2.00 H₂O.

Occurrence: A secondary mineral in boulders from a weathered copper sulfide deposit exposed in an arid region.

Association: Anhydrite, botryogen, chalcantite, copiapite, halotrichite, hexahydrite, römerite, rozenite, szomolnokite.

Distribution: On the valley floor 9 km NE of the village of Cuya, Camarones Valley, Arica Province, Chile.

Name: For the valley from which the first samples were collected.

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA (64023-64027).

References: (1) Kampf, A.R., S.J. Mills, B.P. Nash, R.M. Housley, G.R. Rossman, and M. Dini (2013) Camaronesite [Fe³⁺(H₂O)₂(PO₃OH)]₂(SO₄)·1-2H₂O, a new phosphate-sulfate from the Camarones Valley, Chile, structurally related to taranakite. *Mineral. Mag.*, 77(4), 453-465. (2) (2015) *Amer. Mineral.*, 100, 2005 (abs. ref. 1).