

Perroudite



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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Fibrous tufted aggregates of crystals, to 0.07 mm, prismatic on [001], flattened on {100}, which may have hollow terminations. *Twinning:* Observed as contact twins on {0h1} [sic].

Physical Properties: *Cleavage:* Perfect on {100}. *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = Soft. VHN = n.d. D(meas.) = n.d. D(calc.) = 6.60–6.92

Optical Properties: Transparent. *Color:* Bright red. *Streak:* Reddish orange. *Luster:* Vitreous to adamantine.

Optical Class: Biaxial (+). *Pleochroism:* Very intense; X = dark brownish red; Y = yellow; Z = brownish yellow. *Orientation:* X = c; Y = b; Z = a. *Dispersion:* $r > v$, very strong. $\alpha = 2.3$
 $\beta = 2.4$ $\gamma = \text{n.d.}$ $2V(\text{meas.}) = \sim 70^\circ$
 R_1 – R_2 : n.d.

Cell Data: *Space Group:* $P2_12_12_1$. $a = 17.43(2)$ $b = 12.24(2)$ $c = 4.35(1)$ $Z = 2$

X-ray Powder Pattern: Cap Garonne mine, France.
3.012 (100), 2.965 (80), 3.945 (60), 2.638 (35), 3.694 (30), 2.740 (30), 2.446 (30)

X-ray Powder Pattern: Coppin Pool, Australia.
2.982 (100), 2.724 (40), 3.948 (30), 2.629 (20), 2.442 (20), 2.141 (20), 2.071 (20)

Chemistry:

	(1)	(2)	(3)
Hg	53.08	51.95	57.68
Ag	22.86	23.54	19.43
S	6.67	9.07	8.79
I	10.32	10.80	6.45
Cl	2.89	2.83	3.56
Br	3.67	0.96	2.11
Total	99.49	99.15	98.02

(1) Cap Garonne mine, France; by electron microprobe, average of five analyses on two crystals; corresponds to $\text{Hg}_{5.04}\text{Ag}_{4.03}\text{S}_{3.96}(\text{Cl}_{1.55}\text{I}_{1.55}\text{Br}_{0.87})_{\Sigma=3.97}$. (2) Broken Hill, Australia; by electron microprobe, average of seven analyses; corresponding to $\text{Hg}_{5.00}\text{Ag}_{4.20}\text{S}_{5.45}(\text{I}_{1.60}\text{Cl}_{1.55}\text{Br}_{0.25})_{\Sigma=3.40}$. (3) Coppin Pool, Australia; by electron microprobe, average of 32 analyses on two specimens; corresponds to $\text{Hg}_{5.18}\text{Ag}_{4.75}\text{S}_{6.00}(\text{Cl}_{2.40}\text{I}_{1.81}\text{Br}_{0.98})_{\Sigma=5.19}$.

Occurrence: An alteration of tennantite in sandstones and conglomerates (Cap Garonne mine, France); in a quartz vein carrying oxidized galena (Coppin Pool, Australia).

Association: Mercurian and argentian tennantite, secondary copper minerals (Cap Garonne mine, France); iodargyrite, gold, kaolinite (Broken Hill, Australia); anglesite, cerussite, phosgenite, covellite, pyromorphite, cinnabar (Coppin Pool, Australia).

Distribution: From the Cap Garonne mine, near le Pradet, Var, France [TL]. At the Schöne Aussicht mine, near Dernbach, North Rhine-Westphalia, Germany. In Australia, from Broken Hill, New South Wales; at Coppin Pool, Pilbara district, and from the Anticline prospect, 11 km west-southwest of Ashburton Downs homestead, Capricorn Range, Western Australia.

Name: For Professor Pierre Perroud (1943–), Voltaire College, Geneva, Switzerland, for his work on Cap Garonne mine minerals.

Type Material: Natural History Museum, Geneva, Switzerland; Government Chemical Laboratories, Perth; Museum Victoria, Melbourne, Australia.

References: (1) Sarp, H., W.D. Birch, P.F. Hlava, A. Pring, D.K.B. Sewell, and E.H. Nickel (1987) Perroudite, a new sulfide-halide of Hg and Ag from Cap-Garonne, Var, France, and from Broken Hill, New South Wales, and Coppin Pool, Western Australia. *Amer. Mineral.*, 72, 1251–1256. (2) Mumme, W.G. and E.H. Nickel (1987) Crystal structure and crystal chemistry of perroudite: a mineral from Coppin Pool, Western Australia. *Amer. Mineral.*, 72, 1257–1262.

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