

Cobaltaustinite

Ca(Co, Cu)(AsO₄)(OH)

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Crystal Data: [Orthorhombic] (by analogy to the adelite group). *Point Group:* 2/m 2/m 2/m. Crystals, to 25 μm, in botryoidal microcrystalline aggregates and coatings.

Physical Properties: *Fracture:* Conchoidal. *Tenacity:* Brittle. *Hardness* = ~4.5
D(meas.) = n.d. D(calc.) = 4.24

Optical Properties: Semitransparent. *Color:* Dull green; yellowish green in transmitted light.
Streak: Pale green.

Optical Class: Biaxial (+). $\alpha = 1.777(3)$ (α'). $\beta = \text{n.d.}$ $\gamma = 1.802(3)$ (γ').

2V(meas.) = Large.

Cell Data: *Space Group:* P2₁2₁2₁. $a = 7.498(7)$ $b = 9.006(7)$ $c = 5.920(3)$ $Z = 4$

X-ray Powder Pattern: Dome Rock mine, Australia.
3.159 (10), 1.609 (10), 2.633 (8), 2.600 (8), 4.13 (7), 2.801 (5b), 2.532 (4)

Chemistry:	(1)
	SO ₃ 0.3
	P ₂ O ₅ 0.3
	As ₂ O ₅ 46.1
	CoO 25.8
	CuO 2.5
	CaO 22.5
	H ₂ O 3.6
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	Total 101.1

(1) Dome Rock mine, Australia; by electron microprobe, H₂O by CHN analyzer; corresponds to Ca_{1.02}(Co_{0.87}Cu_{0.08})_{Σ=0.95}(As_{1.01}P_{0.01}S_{0.01})_{Σ=1.03}O_{4.05}(OH)_{1.01}.

Polymorphism & Series: Forms a series with conichalcite.

Mineral Group: Adelite group.

Occurrence: A rare secondary mineral in the oxidized zone of a copper deposit, an alteration product of arsenides.

Association: Erythrite, roselite-beta, arthurite, conichalcite, chenevixite, scorodite, heterogenite.

Distribution: From the Dome Rock copper mine, about 40 km northwest of Mingary, South Australia.

Name: For its content of *cobalt* and similarity to *austinite*.

Type Material: Western Australian Museum, Perth, M.73.1991; Museum Victoria, Melbourne, Australia, M32479.

References: (1) Nickel, E.H. and W.D. Birch (1988) Cobaltaustinite - a new arsenate mineral from Dome Rock, South Australia. *Australian Mineral.*, 3, 53-57. (2) (1989) *Amer. Mineral.*, 74, 501 (abs. ref. 1).