Cobaltaustinite

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.

D(meas.) = n.d. D(calc.) = 4.24

Optical Class: Biaxial (+). α = 1.777(3) (α'). β = n.d. γ = 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:

\[
\begin{align*}
\text{SO}_3 & \quad 0.3 \\
\text{P}_2\text{O}_5 & \quad 0.3 \\
\text{As}_2\text{O}_5 & \quad 46.1 \\
\text{CoO} & \quad 25.8 \\
\text{CuO} & \quad 2.5 \\
\text{CaO} & \quad 22.5 \\
\text{H}_2\text{O} & \quad 3.6 \\
\hline
\text{Total} & \quad 101.1
\end{align*}
\]

(1) Dome Rock mine, Australia; by electron microprobe, H₂O by CHN analyzer; corresponds to Ca₁₀₂(Co₀.₈₇Cu₀.₀₈)Σ=₀.₉₅(As₁₀¹P₀.₀₁S₀.₀₁)Σ=₁.₀₃O₄.₀₅(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.