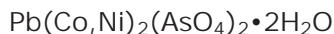


# Rappoldite



TRICLINIC

**Locality:** The dumps of the Rappold mine, near Schneeberg, Saxony, Germany.

**Occurrence:** On quartz with cobaltlotharmeyerite. Other minerals in the dump material are: cobaltaustinite, scorodite, barium-pharmacosiderite, olivenite, conichalcite, erythrite, arseniosiderite, mimetite, beudantite, silver, bismuth, acanthite, galena, pyrite and skutterudite.

**General appearance:** Idiomorphic crystals (up to 1 mm long H 0.3 mm in diameter); also as aggregates of tabular crystals.

**Physical, chemical and crystallographic properties:** *Luster:* given as vitreous, but the indices of refraction indicate adamantine. *Diaphaneity:* transparent. *Color:* red to red-brown. *Streak:* light yellow brown. *Luminescence:* nonfluorescent. *Hardness:* 4½. *Tenacity:* brittle. *Cleavage:* none observed. *Fracture:* conchoidal. *Density:* could not be measured, 5.30 g/cm<sup>3</sup> (calc.). **Crystallography:** Triclinic,  $P\bar{1}$ ,  $a$  11.190,  $b$  10.548,  $c$  7.593 Å,  $\alpha$  100.38°,  $\beta$  109.59°,  $\gamma$  98.96°,  $V$  807.6 Å<sup>3</sup>,  $Z = 4$ ,  $a:b:c = 1.0609:1:0.7199$ . Morphology: {210} and {001}, habit prismatic  $[\bar{1}20]$ . Twinning: none mentioned. **X-ray powder-diffraction data:** 4.670 (97) ( $\bar{2}11$ ), 3.256 (100) (022,  $\bar{2}12$ ), 3.072 (56) (211), 2.890 (40) ( $\bar{2}31$ ,  $\bar{2}31$ ), 2.760 (37) (401, 231), 2.568 (46) (022,  $\bar{4}02$ ,  $23\bar{2}$ , 400, 230), 1.731 (38) ( $0\bar{6}1$ ,  $44\bar{1}$ , 004,  $42\bar{4}$ ). **Optical data:** Biaxial (+),  $\alpha$  1.85 (calc.),  $\beta$  1.87,  $\gamma$  1.90,  $2V(\text{meas.})$  85°, dispersion  $r > v$ , distinct; nonpleochroic;  $Y \perp [120]$ ,  $X \perp c$ . **Chemical analytical data:** Mean of eleven sets of electron-microprobe data: PbO 35.27, CaO 0.12, CuO <0.05, ZnO 4.52, CoO 11.60, NiO 7.31, Al<sub>2</sub>O<sub>3</sub> <0.05, Fe<sub>2</sub>O<sub>3</sub> 0.28, Bi<sub>2</sub>O<sub>3</sub> 0.11, As<sub>2</sub>O<sub>5</sub> 35.82, SO<sub>3</sub> 0.11, H<sub>2</sub>O (5.62), Total (100.76) wt.%. Empirical formula:  $(\text{Pb}_{1.02}\text{Ca}_{0.01})_{\Sigma 1.03} (\text{Co}_{0.98}\text{Ni}_{0.62}\text{Zn}_{0.35}\text{Fe}_{0.02})_{\Sigma 1.97} [(\text{AsO}_4)_{1.98}(\text{SO}_4)_{0.01}]_{\Sigma 1.99} [(\text{OH})_{0.06}(\text{H}_2\text{O})_{1.96}]_{\Sigma 2.02}$ . **Relationship to other species:** It is a member of the tsumcorite group, specifically the Co-dominant analogue of helmutwinklerite.

**Name:** After the discovery locality.

**Comments:** IMA No. 1998–015. The crystal structure has been solved.

EFFENBERGER, H., KRAUSE, W., BERNHARDT, H.-J. & MARTIN, M. (2000): On the symmetry of tsumcorite group minerals based on the new species rappoldite and zincgartrellite. *Mineralogical Magazine* **64**, 1109-1126.