

Cabalzarite



MONOCLINIC

Locality: The abandoned manganese mine near Falotta, Graubünden, Switzerland.

Occurrence: In manganese ore consisting of braunite, rhodonite, spessartine, tinzenite, parsettenite, sursassite and strontian piemontite in radiolarites. Associated minerals are: quartz, sursassite, “adularia”, kutnohorite, tilasite, grischunite, arseniosiderite, tripuhyite, ranciéite–takanelite and arsenogoyazite.

General appearance: Isolated crystals (up to 1 mm), polycrystalline aggregates (up to 2 mm), fibrous to tabular crystals (up to 3 mm) forming radiating aggregates (up to 5 mm in diameter) and aggregates of parallel needles (up to 2 mm thick).

Physical, chemical and crystallographic properties: *Luster:* vitreous. *Diaphaneity:* transparent. *Color:* light brownish to brownish pink, orange-brown. *Streak:* white. *Luminescence:* nonfluorescent. *Hardness:* VHN₅₀ 429 kg/mm², Mohs ~5. *Tenacity:* not given. *Cleavage:* none observed. *Fracture:* irregular. *Density:* 3.89 g/cm³ (meas.), 3.73 g/cm³ (calc.) (for the analytical data given here). **Crystallography:** Monoclinic, *C2/m*, *a* 8.925, *b* 6.143, *c* 7.352 Å, β 115.25°, *V* 364.6 Å³, *Z* = 2, *a:b:c* = 1.4529:1:1.1968. Morphology: only {001} was recognized. Twinning: none mentioned. **X-ray powder-diffraction data:** 4.895(59)(110), 4.544(35)($\bar{1}$ 11), 3.373(54)(02), 3.159(100)($\bar{1}$ 12), 2.942(67)(201), 2.684(55)(311), 2.519(81)(221). **Optical data:** Because of inhomogeneity, data were difficult to measure; *n* || to fiber elongation 1.76, *n* z to fiber elongation 1.70; mean *n* calculated from the Gladstone–Dale relationship 1.77; nonpleochroic. **Chemical analytical data:** Mean of four sets of electron-microprobe data: MgO 7.54, CaO 13.64, SrO 0.49, Al₂O₃ 9.84, Mn₂O₃ 0.55, Fe₂O₃ 4.38, SiO₂ 0.05, As₂O₅ 55.57, H₂O 7.11, Total 99.17 wt.%. Empirical formula: (Ca_{1.00}Sr_{0.02})Σ1.02(Al_{0.80}Mg_{0.77}Fe_{0.23}Mn_{0.03})Σ1.83(AsO₄)₂[(H₂O)_{1.24}(OH)_{0.76}]_{Σ2.00}. **Relationship to other species:** A member of the tsumcorite group, with Mg and Al at the *M2* site.

Name: After Walter Cabalzar (b. 1919), an amateur mineralogist of Chur, Switzerland, who contributed to the mineralogy of the canton Graubünden.

Comments: IMA No. 1997–012. Note that the crystal structure has been solved.

BRUGGER, J., MEISSER, N., SCHENK, K., BERLEPSCH, P., BONIN, M., ARMBRUSTER, T., NYFELER, D. & SCHMIDT, S. (2000): Description and crystal structure of cabalzarite Ca(Mg,Al,Fe)₂(AsO₄)₂(H₂O,OH)₂, a new mineral of the tsumcorite group. *American Mineralogist* **85**, 1307–1314.