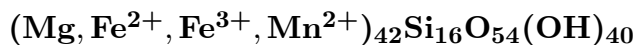


# Balangeroite



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**Crystal Data:** Monoclinic. *Point Group:*  $2/m$ . Fibrous, both loose and compact; asbestiform, elongated along [001], to several cm.

**Physical Properties:** *Cleavage:* One or more on  $\{hk0\}$  are very good. *Tenacity:* Brittle. Hardness = n.d.  $D(\text{meas.}) = 2.96\text{--}3.10$   $D(\text{calc.}) = 3.098$

**Optical Properties:** Transparent only in thin section. *Color:* Brown. *Luster:* Vitreous, greasy.

*Optical Class:* Biaxial (-). *Pleochroism:* Distinct; dark brown  $\parallel$  [001]; yellow-brown  $\perp$  [001].  $\alpha = 1.680(5) \perp$  [001].  $\beta = \text{n.d.}$   $\gamma = \sim 1.680 \parallel$  [001].  $2V(\text{meas.}) = \text{n.d.}$

**Cell Data:** *Space Group:*  $P2/n$ .  $a = 19.40$   $b = 9.65$   $c = 19.40$   $\beta = 91.1^\circ$   $Z = [2]$

**X-ray Powder Pattern:** Balangero mine, Italy.

2.714 (100), 6.77 (80), 2.674 (75), 3.378 (45), 9.59 (40), 3.278 (40), 2.516 (40)

## Chemistry:

	(1)
SiO <sub>2</sub>	28.37
TiO <sub>2</sub>	0.03
Al <sub>2</sub> O <sub>3</sub>	0.27
Fe <sub>2</sub> O <sub>3</sub>	8.89
Cr <sub>2</sub> O <sub>3</sub>	0.03
FeO	16.95
MnO	3.59
MgO	31.81
CaO	0.13
H <sub>2</sub> O	[9.93]
Total	[100.00]

(1) Balangero mine, Italy; by electron microprobe, average of 16 analyses;  $\text{Fe}^{2+}:\text{Fe}^{3+} = 2.12$  was deduced from wet chemical analysis, H<sub>2</sub>O by difference; corresponds to  $(\text{Mg}_{26.74}\text{Fe}_{7.99}^{2+}\text{Fe}_{3.77}^{3+}\text{Mn}_{1.71}^{2+}\text{Al}_{0.18}\text{Ca}_{0.08}\text{Cr}_{0.01}\text{Ti}_{0.01})_{\Sigma=40.49}\text{Si}_{16}\text{O}_{55.81}(\text{OH})_{37.35}$ .

**Occurrence:** In schistose serpentinite in proximity to a large ultramafic massif.

**Association:** Chrysotile, magnetite, Fe–Ni alloy, olivine, chlorite, titanian clinohumite, diopside, antigorite, calcite, aragonite, “opal”, “chalcedony”, clay minerals.

**Distribution:** In the Balangero (San Vittore) mine and at Ponte del Diavolo, Lanzo Valley, and from Santa Maria della Neve, Fiano, Piedmont, Italy.

**Name:** For the Balangero mine, Piedmont, Italy.

**Type Material:** Mineralogy Institute, Turin University, Turin, Italy, 14873.

**References:** (1) Compagnoni, R., G. Ferraris, and L. Fiori (1983) Balangeroite, a new fibrous silicate related to gageite from Balangero, Italy. *Amer. Mineral.*, 68, 214–219. (2) Ferraris, G., M. Mellini, and S. Merlino (1987) Electron-diffraction and electron-microscopy study of balangeroite and gageite: crystal structures, polytypism, and fiber texture. *Amer. Mineral.*, 72, 382–391. (3) Belluso, E. and G. Ferraris (1991) New data on balangeroite and carlosturanite from alpine serpentinites. *Eur. J. Mineral.*, 3, 559–566.