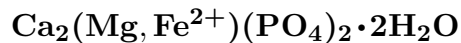


**Collinsite**

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**Crystal Data:** Triclinic. *Point Group:*  $\bar{1}$ . As bladed to prismatic crystals, to 2 cm; fibrous, as globular crystal aggregates; in concentrically layered botryoidal masses.

**Physical Properties:** *Cleavage:* Fair on {001} and {010}. *Tenacity:* Brittle. Hardness = 3.5–5 D(meas.) = 2.93–2.95 D(calc.) = 2.955

**Optical Properties:** Translucent. *Color:* Brown, chocolate-black, light brown, yellowish white, white, colorless, pale blue if zincian; in thin section, colorless. *Streak:* White.

*Luster:* Subvitreous, silky if fibrous.

*Optical Class:* Biaxial (+).  $\alpha = 1.632(3)$   $\beta = 1.642(3)$   $\gamma = 1.657(3)$   $2V(\text{meas.}) = \sim 80^\circ$

**Cell Data:** *Space Group:*  $P\bar{1}$ .  $a = 5.734(1)$   $b = 6.780(1)$   $c = 5.441(1)$   $\alpha = 97.29^\circ$   $\beta = 108.56^\circ$   $\gamma = 107.28^\circ$   $Z = 1$

**X-ray Powder Pattern:** Milgun Station, Australia.

3.04 (10), 2.682 (9), 2.713 (8), 2.735 (6), 3.24 (5), 3.14 (5), 3.02 (5)

**Chemistry:**

	(1)	(2)
P <sub>2</sub> O <sub>5</sub>	41.13	41.2
SiO <sub>2</sub>		1.31
FeO	7.31	0.07
MgO	9.31	11.3
CaO	32.03	35.2
Na <sub>2</sub> O		0.01
K <sub>2</sub> O		0.02
F		0.02
H <sub>2</sub> O <sup>+</sup>	9.69	10.7
H <sub>2</sub> O <sup>-</sup>		0.15
insol.	0.37	
–O = F <sub>2</sub>		0.01
Total	99.84	99.97

(1) François Lake, Canada; corresponds to Ca<sub>1.92</sub>(Mg<sub>0.78</sub>Fe<sub>0.34</sub>)<sub>Σ=1.12</sub>(PO<sub>4</sub>)<sub>1.95</sub>•1.81H<sub>2</sub>O.

(2) Milgun Station, Australia; SiO<sub>2</sub> as quartz impurity.

**Mineral Group:** Fairfieldite group.

**Occurrence:** A secondary weathering product typically incrusting other minerals.

**Association:** Carbonatian fluorapatite, bitumen (Lake François, Canada); parahopeite, scholzite, cryptomelane, Fe–Mn oxides (Reaphook Hill, Australia); bobierrite, kovdorskite, dolomite (Kovdor massif, Russia).

**Distribution:** From François Lake, south of Babine Lake, Coast district, British Columbia, and as large crystals from the Big Fish River–Rapid Creek area, Yukon Territory, Canada. In the USA, at the Tip Top mine, 8.5 km southwest of Custer, Custer Co., South Dakota; in the Foote mine, near Kings Mountain, Cleveland Co., North Carolina. On Milgun Station, Western Australia, and a zincian variety from Reaphook Hill, near Blinman, Flinders Ranges, South Australia. In the Kovdor massif, Kola Peninsula, Russia.

**Name:** Honoring William Henry Collins (1878–1937), formerly Director of the Geological Survey of Canada.

**Type Material:** n.d.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 722–723. (2) Bridge, P.J. and M.W. Pryce (1974) Magnesian collinsite from Milgun Station, Western Australia. *Mineral. Mag.*, 39, 577–579. (3) Hill, R.J. and A.R. Milnes (1974) Phosphate minerals from Reaphook Hill, Flinders Ranges, South Australia. *Mineral. Mag.*, 39, 684–695.

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