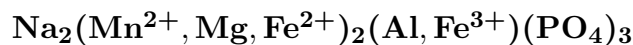


Qingheite



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Crystal Data: Monoclinic. *Point Group:* $2/m$. Short prismatic to tabular anhedral grains, to 4 mm.

Physical Properties: *Cleavage:* On {010}, imperfect. *Fracture:* Conchoidal.

Tenacity: Brittle. Hardness = 5.3–5.6 D(meas.) = 3.718 D(calc.) = 3.61

Optical Properties: Semitransparent. *Color:* Jade-green to light yellowish green.

Luster: Vitreous.

Optical Class: Biaxial (+). *Pleochroism:* Strong; X = light yellowish green; Y = jade-green;

Z = dark bluish green. *Dispersion:* $r \gg v$, strong. $\alpha = 1.678$ $\beta = 1.684$ $\gamma = 1.691$

$2V(\text{meas.}) = 80^\circ$

Cell Data: *Space Group:* $P2_1/n$. $a = 11.856(3)$ $b = 12.411(3)$ $c = 6.421(1)$

$\beta = 114.45(2)^\circ$ $Z = [4]$

X-ray Powder Pattern: Qinghe Co., China. (ICDD 41-1418).

2.685 (10), 3.472 (9), 2.512 (9), 6.21 (8), 2.860 (7), 1.739 (7), 3.082 (6)

Chemistry:

	(1)		(1)
P ₂ O ₅	45.63	ZnO	0.23
TiO ₂	0.05	MgO	9.75
Al ₂ O ₃	4.53	CaO	0.93
Fe ₂ O ₃	[2.24]	Li ₂ O	0.02
Cr ₂ O ₃	0.04	Na ₂ O	8.73
FeO	[3.94]	K ₂ O	0.04
MnO	23.60	Total	[99.73]

(1) Qinghe Co., China; by electron microprobe, original total given as 99.72%, total Mn as MnO; with Fe partitioned to fill M2, corresponds to $\text{Na}_{1.31}(\text{Mn}_{1.50}\text{Mg}_{1.13}\text{Fe}_{0.27}^{2+}\text{Ca}_{0.08}\text{Zn}_{0.02})_{\Sigma=3.00}(\text{Al}_{0.42}\text{Fe}_{0.11}^{3+})_{\Sigma=0.53}(\text{PO}_4)_3$.

Occurrence: In a muscovite-rich pegmatite.

Association: Muscovite, quartz, microcline, braunite, pyrolusite.

Distribution: From an undisclosed locality in Qinghe Co., Xinjiang Uygur Autonomous Region, China.

Name: For Qinghe Co., China.

Type Material: n.d.

References: (1) Ma Zhesheng, Shi Nicheng, and Peng Zhizhong (1983) Crystal structure of a new phosphatic mineral – qingheite. *Scientia Sinica, Series B*, 26, 876–884 (in English).

(2) (1984) *Amer. Mineral.*, 69, 567–568 (abs. ref. 1). (3) (1987) *Mineral. Abs.*, 38, 349 (abs. ref. 1).