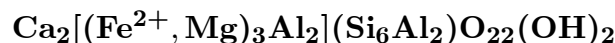


Ferrotschermakite

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Crystal Data: Monoclinic. *Point Group:* $2/m$. [Prismatic.] *Twinning:* [Simple or multiple twinning $\parallel \{100\}$.]

Physical Properties: *Cleavage:* [Perfect on $\{110\}$, with intersections at $\sim 56^\circ$ and $\sim 124^\circ$; partings on $\{100\}$, $\{001\}$.] *Tenacity:* [Brittle.] *Hardness* = [5–6] *D*(meas.) = 3.323–3.353 *D*(calc.) = [3.25]

Optical Properties: Transparent to translucent. *Color:* Green; green to tan in thin section. *Luster:* [Vitreous.]

Optical Class: Biaxial (–). *Pleochroism:* Distinct; X = light tan; Y = green; Z = blue-green. *Orientation:* $Y = b$; $Z \wedge c \simeq 7^\circ$ – 14° . *Absorption:* $Z = Y > X$. $\alpha = 1.660$ – 1.694 $\beta = 1.680$ – 1.732 $\gamma = 1.688$ – 1.736 $2V$ (meas.) = 45° – 75°

Cell Data: *Space Group:* $C2/m$. $a = 9.864$ $b = 18.130$ $c = 5.331$ $\beta = 104.95^\circ$ $Z = 2$

X-ray Powder Pattern: n.d.

Chemistry:	(1)	(2)		(1)	(2)
SiO ₂	40.51	40.43	Na ₂ O	1.05	0.89
TiO ₂	1.42	1.25	K ₂ O	1.00	1.01
Al ₂ O ₃	13.39	12.62	F	0.13	0.90
Fe ₂ O ₃	5.32	4.24	Cl	0.04	
FeO	17.16	22.15	H ₂ O ⁺	1.78	1.76
MnO	0.35	0.28	H ₂ O [–]	0.02	0.05
MgO	6.47	3.80	–O = (F, Cl) ₂	0.06	0.38
CaO	11.43	11.60	Total	100.01	100.60

(1) Emeryville, New York, USA; corresponds to $(\text{Ca}_{1.87}\text{Na}_{0.31}\text{K}_{0.20})_{\Sigma=2.38}(\text{Fe}_{2.20}^{2+}\text{Mg}_{1.48}\text{Fe}_{0.61}^{3+}\text{Al}_{0.60}\text{Ti}_{0.16}\text{Mn}_{0.04})_{\Sigma=5.09}(\text{Si}_{6.20}\text{Al}_{1.80})_{\Sigma=8.00}\text{O}_{22}[(\text{OH})_{1.81}\text{O}_{0.12}\text{F}_{0.06}\text{Cl}_{0.01}]_{\Sigma=2.00}$. (2) Lake's Grave, Australia; corresponds to $(\text{Ca}_{1.92}\text{Na}_{0.27}\text{K}_{0.20})_{\Sigma=2.39}(\text{Fe}_{2.86}^{2+}\text{Mg}_{0.87}\text{Fe}_{0.49}^{3+}\text{Al}_{0.53}\text{Ti}_{0.15}\text{Mn}_{0.04})_{\Sigma=4.94}(\text{Si}_{6.24}\text{Al}_{1.76})_{\Sigma=8.00}\text{O}_{21.75}[(\text{OH})_{1.81}\text{F}_{0.44}]_{\Sigma=2.25}$.

Polymorphism & Series: Forms a series with tschermakite.

Mineral Group: Amphibole (calcic) group: $\text{Mg}/(\text{Mg} + \text{Fe}^{2+}) < 0.5$; $(\text{Na} + \text{K})_{\text{A}} < 0.5$; $\text{Na}_{\text{B}} < 0.67$; $(\text{Ca} + \text{Na})_{\text{B}} \geq 1.34$; $\text{Si} < 6.25$; $\text{Ti} < 0.5$.

Occurrence: A product of medium- to high-pressure metamorphism of highly aluminous rocks, producing schists, gneisses, or amphibolites; from differentiated mafic plutonic igneous rocks.

Association: Almandine, chlorite, biotite, muscovite, quartz, anorthite, apatite (metamorphic).

Distribution: From Emeryville, St. Lawrence Co., New York, USA. At Lake's Grave, Broken Hill, New South Wales, Australia.

Name: For *ferrous* iron in its composition and relation to *tschermakite*.

Type Material: n.d.

References: (1) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 2, chain silicates, 263–314. (2) Leake, B.E. (1968) A catalog of analyzed calciferous and subcalciferous amphiboles together with their nomenclature and associated minerals. Geol. Soc. Amer. Special Paper 98, 210 p. [analyses 882 and 885]. (3) Phillips, W.R. and D.T. Griffen (1981) Optical mineralogy, 232–234.

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