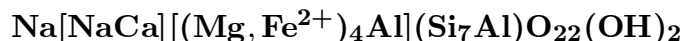


**Magnesian-katophorite**

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**Crystal Data:** Monoclinic. *Point Group:*  $2/m$ . Prismatic, granular, also as fibrous aggregates. *Twinning:*  $\parallel \{100\}$ .

**Physical Properties:** *Cleavage:* Perfect on  $\{110\}$ , intersecting at  $\sim 56^\circ$  and  $\sim 124^\circ$ ; parting on  $\{010\}$ . *Tenacity:* Brittle. Hardness = 5–6 D(meas.) = 3.2–3.5 D(calc.) = [3.18]

**Optical Properties:** Transparent to translucent. *Color:* Black, dark green-black, red-brown; yellow to red-brown in thin section. *Luster:* Vitreous.

*Optical Class:* Biaxial (-). *Pleochroism:* Strong in yellow and red-brown. *Orientation:*  $Y = b$ . *Dispersion:*  $r < v$ . *Absorption:*  $Y > Z \simeq X$ .  $\alpha = 1.639\text{--}1.681$   $\beta = 1.658\text{--}1.688$   $\gamma = 1.600\text{--}1.690$   $2V(\text{meas.}) = \sim 0^\circ\text{--}50^\circ$

**Cell Data:** *Space Group:*  $C2/m$ .  $a = 10.019(2)$   $b = 18.036(7)$   $c = 5.286(3)$   
 $\beta = 104.98(3)^\circ$   $Z = 2$

**X-ray Powder Pattern:** n.d.

Chemistry:	(1)	(2)	(1)	(2)
SiO <sub>2</sub>	48.51	46.73	MgO	14.79
TiO <sub>2</sub>	1.32	0.94	CaO	5.60
Al <sub>2</sub> O <sub>3</sub>	6.60	3.16	Na <sub>2</sub> O	6.01
Fe <sub>2</sub> O <sub>3</sub>	4.09		K <sub>2</sub> O	2.20
FeO	9.48	18.96	H <sub>2</sub> O <sup>+</sup>	1.47
MnO	0.19	1.35	Total	100.26
				94.70

(1) Shields River basin, Montana, USA; corresponds to  $(\text{Na}_{1.71}\text{Ca}_{0.88}\text{K}_{0.41})_{\Sigma=3.00}(\text{Mg}_{3.24}\text{Fe}_{1.16}^{2+}\text{Fe}_{0.45}^{3+}\text{Al}_{0.26}\text{Ti}_{0.14}\text{Mn}_{0.02})_{\Sigma=5.27}(\text{Si}_{7.12}\text{Al}_{0.88})_{\Sigma=8.00}\text{O}_{22}(\text{OH})_{1.44}$ . (2) Rallier-du-Baty Peninsula, Kerguelen Island; by electron microprobe.

**Polymorphism & Series:** Forms a series with katophorite.

**Mineral Group:** Amphibole (sodic-calcic) group:  $\text{Mg}/(\text{Mg} + \text{Fe}^{2+}) \geq 0.5$ ;  $\text{Fe}^{3+} < 1.0$ ;  
 $(\text{Na} + \text{K})_{\text{A}} \geq 0.5$ ; 0.67 Na<sub>B</sub> 1.33;  $(\text{Ca} + \text{Na})_{\text{B}} \geq 1.34$ ; 6.5 Si 7.49;  $\text{Al}^{\text{vi}} < 1.0$ .

**Occurrence:** In alkalic igneous rocks, including plutonic ring complexes and dikes, and carbonatites.

**Association:** Arfvedsonite, aegirine, nepheline, magnetite, calcite.

**Distribution:** On the Rallier-du-Baty Peninsula, Kerguelen Island, in the south Indian Ocean. From the Shields River basin, Park Co., Montana, USA. At Imeria, Madagascar. In the Khibiny massif, Kola Peninsula, Russia.

**Name:** For *magnesium* in its composition and its relation to *katophorite*.

**Type Material:** n.d.

**References:** (1) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 2, chain silicates, 359–363. (2) Giret, A., B. Bonin, and J.-M. Leger (1980) Amphibole compositional trends in oversaturated and undersaturated alkaline plutonic ring complexes. *Can. Mineral.*, 18, 481–495. (3) Phillips, W.R. and D.T. Griffen (1981) *Optical mineralogy*, 241–242.