Katophorite $\mathbf{Na[NaCa][(Fe^{2+},Mg)_4Al](Si_7Al)O_{22}(OH)_2}$

Crystal Data: Monoclinic. *Point Group:* $2/m$. Prismatic, granular, also as fibrous aggregates or dendrites and skeletal crystals. Commonly rimming other minerals. *Twinning:* ∥ {100}.

Physical Properties: *Cleavage:* Perfect on {110}, intersecting at ∼56° and ∼124°; parting on {010}. *Tenacity:* Brittle. Hardness = 5–6 D(meas.) = 3.2–3.5 D(calc.) = [3.31]

Optical Properties: Transparent to translucent. *Color:* Black, dark green-black, bluish black; reddish yellow, bluish green in thin section. *Luster:* Vitreous.
Optical Class: Biaxial (–). *Pleochroism:* Strong; reddish yellow, reddish brown, and dark green to black. *Orientation:* $Z = b$. *Dispersion:* $r > v$. *Absorption:* $Z > Y > X$. α = 1.639–1.681 β = 1.658–1.688 γ = 1.600–1.690 2V(meas.) = ∼0°–50°

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

X-ray Powder Pattern: n.d.

Chemistry:

	(1)	(2)		(1)	(2)
SiO_2	48.04	45.98	MnO	1.11	1.12
TiO_2	2.09	1.92	MgO	6.42	5.21
Al_2O_3	3.86	2.79	CaO	8.08	5.76
Cr_2O_3	0.09		Na_2O	4.18	4.85
FeO	25.58	28.97	K_2O	1.34	1.23
			Total	100.79	97.83

(1) Baie-des-Moutons complex, Canada; by electron microprobe, corresponds to $(Na_{0.54}K_{0.26})_{\Sigma=0.80}(Ca_{1.31}Na_{0.69})_{\Sigma=2.00}(Fe^{2+}_{3.25}Mg_{1.45}Ti_{0.23}Mn_{0.15})_{\Sigma=5.08}(Si_{7.29}Al_{0.69}Ti_{0.01}Cr_{0.01})_{\Sigma=8.00}O_{22}(OH)_2$. (2) Rallier-du-Baty Peninsula, Kerguelen Island; by electron microprobe, corresponds to $(Na_{0.80}K_{0.25})_{\Sigma=1.05}(Ca_{0.98}Na_{0.70}Fe^{2+}_{0.32})_{\Sigma=2.00}(Fe^{2+}_{3.54}Mg_{1.24}Mn_{0.15}Ti_{0.07})_{\Sigma=5.00}(Si_{7.32}Al_{0.52}Ti_{0.16})_{\Sigma=8.00}O_{22}(OH)_2$.

Polymorphism & Series: Forms a series with magnesiokatophorite.

Mineral Group: Amphibole (sodic-calcic) group: $Mg/(Mg + Fe^{2+}) < 0.5$; $(Na + K)_A \geq 0.5$; 0.67 Na_B 1.33; $(Ca + Na)_B \geq 1.34$; 6.5 Si 7.49.

Occurrence: In alkalic volcanic and plutonic igneous rocks; in blueschist facies jadeitites.

Association: Arfvedsonite, aegirine, nepheline, pyroxenes, eckermannite, chromite.

Distribution: May occur in the Oslo (Christiania) district, Norway, from where it was originally described. On the Rallier-du-Baty Peninsula, Kerguelen Island, in the south Indian Ocean. In the Baie-des-Moutons complex, La Tabatière, Quebec, Canada. At Tawmaw, Kachin State, northern Myanmar (Burma).

Name: From the Greek for *a carrying down*, in allusion to its volcanic origin.

Type Material: n.d.

References: (1) Dana, E.S. (1899) Dana's system of mineralogy, (6th edition), app. I, 14 [catophorite]. (2) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 2, chain silicates, 359–363. (3) 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. (4) Lalonde, A.E. and R.F. Martin (1983) The Baie-des-Moutons syenitic complex, La Tabatière, Québec, II. The ferromagnesian minerals. Can. Mineral., 21, 81–91. (5) Hawthorne, F.C. (1983) The crystal chemistry of the amphiboles. Can. Mineral., 21, 173–480, esp. 363. (6) Mével, C. and J.-R. Kiénast (1986) Jadeite-kosmochlor solid solution and chromian sodic amphiboles in jadeitites and associated rocks from Tawmaw (Burma), Bull. Minéral., 109, 617–633. (7) Phillips, W.R. and D.T. Griffen (1981) Optical mineralogy, 241–242.