

Ferro-edenite**NaCa₂(Fe²⁺, Mg)₅(Si₇Al)O₂₂(OH)₂**

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Crystal Data: Monoclinic. *Point Group:* 2/*m*. Commonly as well-formed prismatic crystals; fibrous; as reaction rims on pyroxenes. *Twinning:* [Simple or multiple twinning || {100}.]

Physical Properties: *Cleavage:* [Good on {110}, intersecting at ~56° and ~124°; partings on {100}, {001}.] *Tenacity:* [Brittle.] *Hardness* = [5–6] *D*(meas.) = ~3.4 *D*(calc.) = n.d.

Optical Properties: Semitransparent. *Color:* Dark green, black. *Luster:* [Vitreous.] *Optical Class:* Biaxial (–). *Pleochroism:* Distinct; X = yellow; Y = green; Z = dark green. *Orientation:* Y = *b*; Z ∧ *c* ≈ 15°. *Dispersion:* Weak. α = 1.65–1.70 β = 1.66–1.71 γ = 1.67–1.73 2*V*(meas.) = 20°–90°

Cell Data: *Space Group:* [C2/*m*.] *a* = n.d. *b* = n.d. *c* = n.d. β = n.d. *Z* = n.d.

X-ray Powder Pattern: n.d.

Chemistry:

	(1)	(2)
SiO ₂	45.74	43.25
TiO ₂	1.29	0.27
Al ₂ O ₃	4.98	6.07
Fe ₂ O ₃		1.19
FeO	27.86	31.64
MnO	1.14	1.05
MgO	5.96	1.49
CaO	10.02	10.65
Na ₂ O	1.99	1.34
K ₂ O	0.54	0.87
Total	99.52	97.82

(1) La Tabatière, Canada; by electron microprobe, Fe²⁺:Fe³⁺ from stoichiometry and charge balance; corresponds to (Na_{0.55}K_{0.11})_{Σ=0.66}(Ca_{1.66}Mn_{0.15}Fe_{0.14}²⁺Na_{0.05})_{Σ=2.00}(Fe_{3.47}Mg_{1.38}Ti_{0.15})_{Σ=5.00}(Si_{7.09}Al_{0.91})_{Σ=8.00}O₂₂(OH)₂. (2) Tibchi ring complex, Nigeria; by electron microprobe, Fe²⁺:Fe³⁺ calculated from charge balance; corresponds to (Na_{0.42}K_{0.18})_{Σ=0.60}(Ca_{1.85}Fe_{0.15}²⁺)_{Σ=2.00}(Fe_{4.15}²⁺Mg_{0.36}Al_{0.18}Fe_{0.14}³⁺Mn_{0.14}Ti_{0.03})_{Σ=5.00}(Si_{7.01}Al_{0.99})_{Σ=8.00}O₂₂(OH)₂.

Polymorphism & Series: Forms a series with edenite.

Mineral Group: Amphibole (calcic) group: Mg/(Mg + Fe²⁺) < 0.5; (Na + K)_A ≥ 0.5; Na_B < 0.67; (Ca + Na)_B ≥ 1.34; 6.75 Si 7.25.

Occurrence: An early or deuteric phase replacing pyroxene in syenitic ring complexes; from medium-grade metamorphic amphibolites and gneisses; from plutonic igneous rocks.

Association: Pyroxene, ferro-actinolite, monazite, magnetite, fluorite (Tibchi ring complex, Nigeria).

Distribution: From the Baie-des-Moutons complex, La Tabatière, Quebec, Canada. At the Tibchi ring complex, Nigeria. Undoubtedly occurs at other localities but qualifying analyses appear lacking.

Name: For its high *ferrous* iron content and relation to *edenite*.

Type Material: n.d.

References: (1) 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. (2) Ike, E.C., P. Bowden, and R.F. Martin (1985) Amphibole in the porphyries of the Tibchi anorogenic ring-complex, Nigeria: product of deuteric adjustments. *Can. Mineral.*, 23, 447–456. (3) Phillips, W.R. and D.T. Griffen (1981) Optical mineralogy, 221.

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