

Kaersutite**NaCa₂[(Mg, Fe²⁺)₄Ti](Si₆Al₂)O₂₂(OH)₂**

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Crystal Data: Monoclinic. *Point Group:* 2/*m*. Commonly as well-formed phenocrysts with rhombic basal sections; prismatic, to 10 cm; as granular aggregates. *Twinning:* Simple or multiple twinning || {100}.

Physical Properties: *Cleavage:* Perfect on {110}, intersecting at 56° and 124°; partings on {100}, {001}. *Tenacity:* Brittle. Hardness = 5–6 D(meas.) = 3.2–3.28 D(calc.) = [3.11]

Optical Properties: Semitransparent. *Color:* Dark brown to black, typically zoned; yellow-brown, green-brown, or red-brown in thin section. *Luster:* Vitreous.

Optical Class: Biaxial (–). *Pleochroism:* Strong; X = yellow, yellow-brown; Y = red, red-brown; Z = deep brown, dark red-brown. *Orientation:* Y = b; Z ∧ c = 0°–19°.

Dispersion: r > v. *Absorption:* Z ≥ Y > X. α = 1.670–1.689 β = 1.690–1.741 γ = 1.700–1.772 2V(meas.) = 66°–82°

Cell Data: *Space Group:* C2/*m*. a = 9.8903(3) b = 18.0596(5) c = 5.3152(2)
β = 105.4(1)° Z = 2

X-ray Powder Pattern: Boulder Dam area, Arizona, USA. (ICDD 17-478).
2.693 (100), 3.11 (80), 8.38 (65), 3.36 (65), 2.548 (65), 2.589 (55), 1.439 (55)

Chemistry:	(1)	(2)		(1)	(2)
SiO ₂	39.50	39.88	MgO	12.90	14.10
TiO ₂	10.33	4.69	CaO	10.91	13.05
Al ₂ O ₃	11.12	14.25	Na ₂ O	3.82	1.86
Fe ₂ O ₃	0.06	9.58	K ₂ O	1.43	1.80
FeO	9.44	0.10	F		0.14
MnO	0.10	0.10	H ₂ O ⁺	0.59	0.53
			Total	100.20	100.08

(1) Qaersut, Greenland; corresponds to (Na_{1.11}K_{0.28})_{Σ=1.39}Ca_{1.76}(Mg_{2.89}Fe²⁺_{1.19}Ti_{1.17}Fe³⁺_{0.01}Mn_{0.01})_{Σ=5.27}(Si_{5.93}Al_{1.97})_{Σ=7.90}O₂₂(OH)_{0.59}. (2) Vleč Hora, Czech Republic; by microanalysis, corresponds to (Na_{0.53}K_{0.41})_{Σ=0.94}Ca_{2.06}(Mg_{3.10}Fe³⁺_{1.06}Ti_{0.52}Al_{0.34}Fe²⁺_{0.01}Mn_{0.01})_{Σ=5.04}(Si_{5.87}Al_{2.13})_{Σ=8.00}O₂₂[(OH)_{1.94}F_{0.06}]_{Σ=2.00}.

Polymorphism & Series: Forms a series with ferrokaersutite.

Mineral Group: Amphibole (calcic) group: Mg/(Mg + Fe²⁺) ≥ 0.50; Na_B < 0.67; (Ca + Na)_B ≥ 1.34; Si < 6.5; Ti ≥ 0.5.

Occurrence: Common as phenocrysts in alkalic volcanic rocks; in gabbroic and peridotitic nodules in alkalic basalts; in syenites, monzonites, carbonatite tuffs, and alkalic gabbros.

Association: Titanian augite, rhönite, olivine, ilmenite, spinel, plagioclase, titanian pargasite.

Distribution: In Greenland, from Østerfjeld, near Qaersut, at Nûgssuaq, and elsewhere in the Kangerdlugssuaq Fjord and Skaergaard areas. On Linosa, Pelagian Islands, south of Sicily, Italy. From Vleč Hora, Czech Republic. From near Boulder Dam, Mohave Co., and near San Carlos, Gila Co., Arizona, USA. At Mont Saint-Hilaire, Quebec, Canada. From Chikaishi, Oki Island, Shimane Prefecture, and at Mushozu and Numazu, Iki Island, Nagasaki Prefecture, Japan. At Kakanui, New Zealand. A number of other localities are known.

Name: For the occurrence near Qaersut (formerly Kaersut), Greenland.

Type Material: University of Copenhagen, Copenhagen, Denmark.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 386, 392. (2) Deer, W.A., R.A. Howie, and J. Zussman (1963) Rock-forming minerals, v. 2, chain silicates, 321–327. (3) Pechar, F., H. Fuess, and W. Joswig (1989) Refinement of the crystal structure of kaersutite (Vleč Hora, Bohemia) from neutron diffraction. Neues Jahrb. Mineral., Monatsh., 137–143.

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