Isokite CaMg(PO₄)F

Crystal Data: Monoclinic. Point Group: 2/m. Crystals are flattened on {010}, elongated along [100], and obliquely terminated by {101}, {100}, {101}, {102}; generally, as spherulites of bladed to fibrous crystals, to 3 mm.

Physical Properties: Cleavage: Very good on {010}. Tenacity: Brittle. Hardness = 4.5-5 D(meas.) = 3.15-3.27 D(calc.) = 3.29 Fluoresces blue under LW UV.

Optical Class: Biaxial (+). α = 1.590(2) β = 1.595(2) γ = 1.615(2) 2V(meas.) = 51.5(2)° Orientation: Z = b; X ∧ c = 32°. Dispersion: r > v.

Cell Data: Space Group: C2/c. a = 6.5109(3) b = 8.7301(5) c = 6.9046(5) β = 112.246(2)° Z = 4

X-ray Powder Pattern: Nkombwa Hill, Zambia; nearly identical to panasqueiraite. 3.185 (vvs), 3.023 (vvs), 2.630 (vvs), 2.301 (s), 1.720 (s), 2.784 (m), 2.586 (m)

Chemistry: (1) (2)
P₂O₅ 38.68 39.79 SrO 1.66
RE₂O₃ 0.16 BaO 0.22
FeO 0.42 F 9.86 10.65
MnO 0.13 H₂O⁺ 0.48
CaO 21.93 22.60 - O = F₂ 4.15 4.48
MgO 30.61 31.44 Total [100.00] 100.00

(1) Nkombwa Hill, Zambia; from an original total of 100.07%, after deduction of 2.14% ankeritic dolomite and 0.99% strontian apatite, then corresponds to (Ca₀.₉₈Sr₀.₀₃)Σ = 1.0₁(Mg₀.₉₈Fe₀.₀₁)Σ = 0.₉₉(P₀.₉₈O₃.₉₈)Σ = F₀.₉₃(H₂O)₀.₁₀Σ = 1.₀₃. (2) CaMg(PO₄)F.

Mineral Group: Titanite group.

Occurrence: A late-stage metasomatic mineral in ankeritic carbonatite (Nkombwa Hill); replacing wagnerite in a pegmatite dike in sillimanite grade gneiss (Benson mines); an alteration product of triplite in granite pegmatite (Mangualde and Ribeira, Portugal; Horní Slavkov, Czech Republic).

Association: Dolomite, strontian fluorapatite, monazite, daqingshanite-(Ce), strontianite, quartz, phlogopite, pyrochlore (Nkombwa Hill, Zambia).


Name: For Isoka, Zambia, the town near which the first specimens were collected.
