

Wicksite**NaCa₂(Fe²⁺, Mn²⁺)₄MgFe³⁺(PO₄)₆•2H₂O**

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Crystal Data: Orthorhombic. *Point Group:* 2/m 2/m 2/m. Crystals are platy on {010}, striated || [100], to 1 cm; granular, massive.

Physical Properties: *Cleavage:* Good on {010}. Hardness = 4.5–5 D(meas.) = 3.54(2) D(calc.) = 3.58

Optical Properties: Opaque, transparent in thin fragments. *Color:* Dark blue to dark green, nearly black. *Streak:* Green. *Luster:* Submetallic.

Optical Class: Biaxial (+). *Pleochroism:* Strong; X = blue; Y = greenish blue; Z = pale yellowish brown. *Orientation:* X = a; Y = b; Z = c. *Dispersion:* r < v, strong. *Absorption:* X = Y > Z. α = 1.713(3) β = 1.718(3) γ = 1.728(3) 2V(meas.) = 66(2)° 2V(calc.) = 72°

Cell Data: *Space Group:* Pcab. a = 12.524(1) b = 12.907(2) c = 11.646(2) Z = 4

X-ray Powder Pattern: Big Fish River, Canada.

2.753 (100), 3.015 (80), 2.910 (80), 2.118 (60), 2.571 (40), 2.868 (30), 2.837 (30)

Chemistry:

	(1)
P ₂ O ₅	41.64
Al ₂ O ₃	0.51
Fe ₂ O ₃	7.98
FeO	22.66
MnO	4.72
MgO	3.77
CaO	11.05
Na ₂ O	3.08
H ₂ O	3.70
Total	99.11

(1) Big Fish River, Canada; by electron microprobe, FeO 22.66% by titration, excess Fe as Fe₂O₃, H₂O by DTA-TGA; corresponding to Na_{1.00}Ca_{1.96}(Fe_{3.16}²⁺Mn_{0.66}²⁺)_{Σ=3.82}Mg_{0.94}(Fe_{1.00}³⁺Al_{0.10})_{Σ=1.10}(P_{0.98}O₄)₆•2.06H₂O.

Occurrence: In nodules in shale beds in an iron formation.

Association: Wolfeite, satterlyite, mariçite, ludlamite, vivianite, pyrite, quartz.

Distribution: At Big Bend, on the Big Fish River, Big Fish River–Blow River area, Yukon Territory, Canada.

Name: To honor Dr. Frederick John Wicks (1937—), Curator of Mineralogy, Royal Ontario Museum, Toronto, Canada.

Type Material: Canadian Geological Survey, Ottawa, 61309; Royal Ontario Museum, Toronto, Canada, M37364; National Museum of Natural History, Washington, D.C., USA, 145607, 145968.

References: (1) Sturman, B.D., D.R. Peacor, and P.J. Dunn (1981) Wicksite, a new mineral from northeastern Yukon Territory. *Can. Mineral.*, 19, 377–380. (2) (1982) *Amer. Mineral.*, 67, 1077–1078 (abs. ref. 1). (3) Cooper, M.A. and F.C. Hawthorne (1997) The crystal structure of wicksite. *Can. Mineral.*, 35, 777–784.