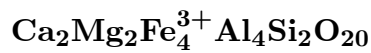


Dorrite



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Crystal Data: Triclinic, pseudomonoclinic by twinning. *Point Group:* $\bar{1}$ or 1. As anhedral to prismatic grains, to 0.1 mm; some grains exhibit hopper and skeletal crystal habit. *Twinning:* Twinned by two-fold rotation about the pseudomonoclinic [010] axis.

Physical Properties: *Cleavage:* Good on {010} and {001}. *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = ~5 D(meas.) = n.d. D(calc.) = 3.959

Optical Properties: Nearly opaque. *Color:* Dark red-brown to dark brown. *Streak:* Gray. *Luster:* Submetallic.

Optical Class: Biaxial. *Pleochroism:* In ultrathinned sections, very strong; X = red-orange-brown; Y = yellowish brown; Z = greenish brown. *Absorption:* Extreme. $\alpha = 1.82(1)$
 $\beta = 1.84(1)$ $\gamma = 1.86(1)$ $2V(\text{meas.}) = 90^\circ$

Cell Data: *Space Group:* $P\bar{1}$ or $P1$. $a = 10.505(3)$ $b = 10.897(3)$ $c = 9.019(1)$
 $\alpha = 106.26(2)^\circ$ $\beta = 95.16(2)^\circ$ $\gamma = 124.75(2)^\circ$ $Z = 2$

X-ray Powder Pattern: Durham ranch, Wyoming, USA.

2.971 (100), 2.558 (80), 2.515 (80), 2.125 (60), 1.511 (30), 1.482 (30), 8.1 (20)

Chemistry:

	(1)	(2)
SiO ₂	11.16	14.37
TiO ₂	0.56	
Al ₂ O ₃	24.85	24.39
Fe ₂ O ₃	41.65	38.19
Cr ₂ O ₃	0.05	
FeO	2.77	
MnO	0.19	
MgO	5.57	9.64
CaO	13.63	13.41
Na ₂ O	0.02	
K ₂ O	0.02	
Total	100.47	100.00

(1) Durham ranch, Wyoming, USA; by electron microprobe, Fe²⁺:Fe³⁺ calculated from stoichiometry; corresponding to (Ca_{1.99}Na_{0.01})_{Σ=2.00}(Mg_{1.19}Fe_{0.33}²⁺Fe_{0.29}³⁺Ca_{0.10}Ti_{0.06}Mn_{0.02}Cr_{0.01})_{Σ=2.00}Fe_{4.00}³⁺Al_{4.00}(Si_{1.60}Al_{0.20}Fe_{0.20}³⁺)_{Σ=2.00}O₂₀. (2) Ca₂Mg₂Fe₄Al₄Si₂O₂₀.

Mineral Group: Aenigmatite group.

Occurrence: A product of oxidizing, high-temperature, low-pressure metamorphism of alkalic rocks, in a pyrometamorphic zone in sediments.

Association: Esseneite, titanian andradite, magnetite-magnesioferrite-spinel, plagioclase, gehlenite-åkermanite, wollastonite, ulvöspinel, nepheline, apatite, ferroan sahamalite.

Distribution: From the Durham ranch, Powder River basin, 13 km northeast of Reno Junction and 25 km south of Gillette, Campbell Co., Wyoming, USA.

Name: To honor Dr. John A. Dorr, Jr., Professor of Geology, University of Michigan, Ann Arbor, Michigan, USA, in recognition of his regional geologic research in Wyoming.

Type Material: University of Michigan, Ann Arbor, Michigan; National Museum of Natural History, Washington, D.C., USA, 163357.

References: (1) Cosca, M.A., R.R. Rouse, and E.J. Essene (1988) Dorrite [Ca₂(Mg₂Fe₄³⁺)(Al₄Si₂)O₂₀], a new member of the aenigmatite group from a pyrometamorphic melt-rock. *Amer. Mineral.*, 73, 1440–1448.

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