

Crystal Data: Triclinic, pseudomonoclinic by twinning. *Point Group:* 1 or $\bar{1}$. As anhedral to prismatic grains, to 0.1 mm; some grains exhibit hopper and skeletal habits.

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. $\alpha = 1.82(1)$ $\beta = 1.84(1)$ $\gamma = 1.86(1)$ $2V(\text{meas.}) = 90^\circ$

Pleochroism: In ultrathinned sections, very strong; *X* = red-orange brown; *Y* = yellowish brown;

Z = greenish brown. *Absorption:* Extreme.

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

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)	(1)	(2)
SiO ₂	11.16	14.37	MnO	0.19
TiO ₂	0.56		MgO	5.57
Al ₂ O ₃	24.85	24.39	CaO	13.63
Fe ₂ O ₃	41.65	38.19	Na ₂ O	0.02
Cr ₂ O ₃	0.05		<u>K₂O</u>	<u>0.02</u>
FeO	2.77		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}) $\Sigma=2.00$ (Mg_{1.19}Fe²⁺_{0.33}Fe³⁺_{0.29}Ca_{0.10}Ti_{0.06}Mn_{0.02}Cr_{0.01}) $\Sigma=2.00$ Fe³⁺_{4.00}Al_{4.00}(Si_{1.60}Al_{0.20}Fe³⁺_{0.20}) $\Sigma=2.00$ O₂₀. (2) Ca₂Mg₂Fe₄Al₄Si₂O₂₀.

Polymorphism & Series: Forms a series with khesinite.

Mineral Group: Sapphirine supergroup, rhönite 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(Mg₂Fe³⁺₄)(Al₄Si₂)O₂₀]; a new member of the aenigmatite group from a pyrometamorphic melt-rock. *Amer. Mineral.*, 73, 1440-1448. (2) Galuskina, I.O., E.V. Galuskin, A.S. Pakhomova, R. Widmer, T. Armbruster, B. Krüger, E.S. Grew, Y. Vapnik, P. Dzierżanowski, and M. Murashko (2017) Khesinite, Ca₄Mg₂Fe³⁺₁₀O₄[(Fe³⁺₁₀Si₂)O₃₆], a new rhönite-group (sapphirine supergroup) mineral from the Negev Desert, Israel - natural analogue of the SFCA phase. *Eur. J. Mineral.*, 29(1), 101-116. (3) (2017) *Amer. Mineral.*, 102, 1964 (abs. ref. 2).