

Crystal Data: Monoclinic. *Point Group:* 2/m. Platy triangular crystals, tabular on {100}, to 0.2 mm, and in subparallel aggregates.

Physical Properties: *Cleavage:* Perfect on {100}. *Tenacity:* Brittle. Hardness = Very soft. D(meas.) = 3.22(4) D(calc.) = 3.22

Optical Properties: Transparent. *Color:* Red. *Streak:* Brownish red. *Luster:* Vitreous. *Optical Class:* Biaxial (-). *Pleochroism:* Weak; X = yellowish brown; Y = Z = reddish brown. *Orientation:* Y = b; Z ∧ c = 4(2)°. *Absorption:* Z = Y > X. α = 1.79(1) β = 1.81(1) γ = 1.83(1) 2V(meas.) = 84(2)° 2V(calc.) = 85°

Cell Data: *Space Group:* P2₁/c. a = 8.825(3) b = 13.258(4) c = 11.087(3) β = 101.19(4)° Z = 4

X-ray Powder Pattern: Tip Top mine, South Dakota, USA. 8.69 (100), 2.772 (70), 5.66 (60), 2.884 (60), 2.611 (60), 2.163 (60), 5.44 (50)

Chemistry:	(1)	(2)
P ₂ O ₅	35.2	34.57
Fe ₂ O ₃	0.1	
Mn ₂ O ₃	38.0	38.45
CaO	18.3	18.21
H ₂ O	[8.4]	8.77
Total	[100.0]	100.00

(1) Tip Top mine, South Dakota, USA; by electron microprobe, total Fe as Fe₂O₃, total Mn as Mn₂O₃, H₂O by difference; corresponds to Ca_{2.01}(Mn_{2.97}Fe_{0.01})_{Σ=2.98}O_{1.88}(PO₄)_{3.06}•2.88H₂O.

(2) Ca₂Mn₃O₂(PO₄)₃•3H₂O.

Polymorphism & Series: Dimorphous with robertsite.

Occurrence: A rare secondary mineral in a complex zoned granite pegmatite.

Association: Whitlockite, carbonate-apatite, quartz.

Distribution: In the Tip Top mine, 8.5 km southwest of Custer, Custer Co., South Dakota, USA.

Name: From the Greek *para*, for *near*, and its relation to *robertsite*.

Type Material: Royal Ontario Museum, Toronto, Canada, M43771; National Museum of Natural History, Washington, D.C., USA, 149606.

References: (1) Roberts, A.C., B.D. Sturman, P.J. Dunn, and W.L. Roberts (1988) Pararobertsite, Ca₂Mn₃³⁺(PO₄)₃O₂•3H₂O, a new mineral species from the Tip Top pegmatite, Custer County, South Dakota, and its relationship to robertsite. *Can. Mineral.*, 27, 451–455. (2) (1990) *Amer. Mineral.*, 75, 1211 (abs. ref. 1).