

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. Thick tabular crystals, showing {100}, {010}, and {001}, to 2 mm. *Twinning:* Contact twins, by reflection on {001}, universal.

Physical Properties: *Cleavage:* Parting on {001}. *Fracture:* Uneven to subconchoidal. *Tenacity:* Brittle. Hardness = ~3.5 D(meas.) = 2.64(2) D(calc.) = [2.66]

Optical Properties: Transparent. *Color:* Milky white to colorless. *Streak:* White. *Luster:* Vitreous.

Optical Class: Biaxial (+). *Orientation:* $X = c^*$; $Y \wedge b = 18^\circ$; $Z \wedge a = 9^\circ$. $\alpha = 1.556(2)$
 $\beta = 1.560(1)$ $\gamma = 1.580(1)$ $2V(\text{meas.}) = 62^\circ$ $2V(\text{calc.}) = 49^\circ$

Cell Data: *Space Group:* $P\bar{1}$. $a = 7.130(4)$ $b = 7.430(4)$ $c = 12.479(9)$ $\alpha = 94.31(5)^\circ$
 $\beta = 102.07(4)^\circ$ $\gamma = 82.65(4)^\circ$ $Z = 2$

X-ray Powder Pattern: Tip Top mine, South Dakota, USA.
 3.161 (10), 12.41 (7), 2.723 (6), 6.95 (5), 4.31 (4), 6.58 (3), 3.014 (3)

Chemistry:

	(1)	(2)
P ₂ O ₅	40.5	41.54
ZnO	14.8	15.88
BeO	7.9	4.88
CaO	20.9	21.88
H ₂ O	[15.9]	15.82
Total	[100.0]	100.00

(1) Tip Top mine, South Dakota, USA; by electron microprobe, Be by ion microprobe, thought to be in excess, H₂O by difference, presence of H confirmed by ion probe; corresponds to Ca_{1.96}Zn_{0.96}Be_{1.66}O_{0.58}(PO₄)₂(PO₃OH)·4.08H₂O. (2) Ca₂ZnBe(PO₄)₂(PO₃OH)·4H₂O as determined from crystal-structure analysis.

Occurrence: A very rare mineral with other secondary phosphates, in the outer to intermediate zone of a complex granite pegmatite.

Association: Apatite, mitridatite, roscherite, hydroxyl-herderite, goyazite–crandallite, parascholzite, manganese oxides, beryl, quartz.

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

Name: In honor of Howard Ehrle, Miles City, Montana, USA, who discovered the mineral.

Type Material: Canadian Museum of Nature, Ottawa, Canada, 49289; South Dakota School of Mines and Technology, Rapid City, South Dakota, 2958; National Museum of Natural History, Washington, D.C., USA, 160381.

References: (1) Robinson, G.W., J.D. Grice, and J. Van Velthuisen (1985) Ehrleite, a new calcium beryllium zinc phosphate hydrate from the Tip Top pegmatite, Custer, South Dakota. *Can. Mineral.*, 23, 507–510. (2) (1986) *Amer. Mineral.*, 71, 1544 (abs. ref. 1). (3) Hawthorne, F.C. and J.D. Grice (1987) The crystal structure of ehrleite, a tetrahedral sheet structure. *Can. Mineral.*, 25, 767–774.