

Tavorite**LiFe³⁺(PO₄)(OH)**

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Crystal Data: Triclinic. *Point Group:* $\bar{1}$. Crystals, {100}, {010}, {001}, to 5 mm; commonly very fine-grained, massive, in veinlets, disseminated, and thin films.

Physical Properties: Hardness = n.d. D(meas.) = 3.32 D(calc.) = 3.33

Optical Properties: Semitransparent. *Color:* Greenish yellow, grass-green, bright apple-green. *Streak:* Pale green. *Luster:* Vitreous.

Optical Class: Biaxial (+). *Pleochroism:* X = Y = yellow-green; Z = colorless. *Orientation:* X \wedge a \simeq 15°; Y \wedge b \simeq 0°; Z \wedge c \simeq 38°. *Dispersion:* r > v, strong. $\alpha = 1.795(5)$ $\beta = 1.81(1)$ $\gamma = 1.86(1)$ 2V(meas.) = 50(2)° 2V(calc.) = 59°

Cell Data: *Space Group:* $P\bar{1}$. a = 5.340(2) b = 7.283(2) c = 5.110(2) $\alpha = 109.29(2)^\circ$ $\beta = 97.86(3)^\circ$ $\gamma = 106.32(3)^\circ$ Z = 2

X-ray Powder Pattern: Sapucaia mine, Brazil.

3.045 (10), 3.285(9), 4.99 (5), 2.474 (4), 4.68 (3), 1.662 (3b), 3.95 (2)

Chemistry:	(1)	(2)	(1)	(2)
P ₂ O ₅	39.78	40.61	Li ₂ O	7.64
Fe ₂ O ₃	42.57	45.69	H ₂ O ⁺	5.76
FeO	2.39		H ₂ O ⁻	0.40
MnO	1.47			
			Total	100.01
				100.00

(1) Sapucaia mine, Brazil; corresponds to (Li_{0.90}Fe_{0.06}²⁺Mn_{0.04}²⁺)_{Σ=1.00}Fe_{0.94}³⁺(PO₄)_{0.99}(OH)_{1.13}.

(2) LiFe(PO₄)(OH).

Mineral Group: Amblygonite group.

Occurrence: A secondary oxidation product of earlier phosphates in complex zoned granite pegmatites.

Association: Barbosalite, heterosite, ferrisicklerite, triphylite, huréaulite, rockbridgeite, jahnsite, vivianite.

Distribution: In Brazil, in the Sapucaia pegmatite mine, about 50 km east-southeast of Governador Valadares, and the Énio pegmatite mine, northeast of Galiléia, Minas Gerais; from near Pedra Lavrada, Paraíba. In the USA, in the Palermo #1 and Fletcher mines, near North Groton, Grafton Co., New Hampshire; in South Dakota, from the Custer Mountain, Hot Shot, Elkhorn, Bull Moose, Hesnard, Linwood, and White Elephant mines; good crystals from the Tip Top mine, 8.5 km southwest of Custer, Custer Co. At Hagendorf, Bavaria, Germany. In the Buranga pegmatite, Gatumba district, Rwanda. In Namibia, from the Tsaobismund pegmatite, 60 km south of Karibib, and at the Sandamap pegmatite, west of Usakos. From Jebilet, Morocco. In the Mangualde pegmatite, near Mesquitela, Portugal. Undoubtedly to be recognized at additional localities.

Name: To honor Dr. Elysiario Tavora (1911–), Professor of Mineralogy, University of Brazil, Rio de Janeiro, Brazil.

Type Material: National Museum, Rio de Janeiro, Brazil; The Natural History Museum, London, England, 1965,209; Harvard University, Cambridge, Massachusetts, 107298 and 107299; National Museum of Natural History, Washington, D.C., USA, 106842.

References: (1) Lindberg, M.L. and W.T. Pecora (1955) Tavorite, and barbosalite, two new phosphate minerals from Minas Gerais, Brazil. *Amer. Mineral.*, 40, 952–966. (2) Roberts, A.C., P.J. Dunn, J.D. Grice, D.E. Newbury, and W.L. Roberts (1988) The X-ray crystallography of tavorite from the Tip Top pegmatite, Custer, South Dakota. *Powder Diffraction*, 3(2), 93–95. (3) Genkina, E.A., Y.K. Kabalov, B.A. Maksimov, and O.K. Mel'nikov (1984) The crystal structure of synthetic tavorite LiFe[PO₄](OH,F). *Kristallografiya (Sov. Phys. Crystal.)*, 29, 50–55 (in Russian).

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