

**Ca(Mn²⁺, Fe²⁺)₂Be₃(PO₄)₃(OH)₃·2H₂O to
Roscherite Ca(Mn²⁺, Fe²⁺)₃Be₂(PO₄)₃(OH)₃·2H₂O**

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Crystal Data: Monoclinic or triclinic. *Point Group:* 2/m or $\bar{1}$. Crystals, to 2 cm, are short prismatic [001] or flattened on {100} or {010}, with {010}, {110}, {111}, with several other forms; in spherical to botryoidal aggregates and crusts, internally fibrous; powdery massive.

Physical Properties: *Cleavage:* On {001}, good; on {010}, distinct. *Hardness* = 4.5
D(meas.) = 2.90–2.97 D(calc.) = 2.77–2.94

Optical Properties: Semitransparent. *Color:* Greenish gray, olive-green, sage-green, dark brown, reddish brown, orange; yellowish green to brown in transmitted light, may show abnormal interference colors.

Optical Class: Biaxial (-). *Pleochroism:* X = yellow to olive-green; Y = yellow-brown, greenish brown; Z = chestnut-brown. *Orientation:* X = b; Y \wedge c = -15° to 24°. *Dispersion:* r > v, very strong, crossed. α = 1.624–1.628 β = 1.639–1.644 γ = 1.643–1.650 2V(meas.) = Large.

Cell Data: *Space Group:* C2/c with a = 15.88–15.95 b = 11.90–11.95 c = 6.62–6.66
 β = 94°42'–94°50' Z = 4, or *Space Group:* C $\bar{1}$ with a = 15.921(5) b = 11.965(4)
c = 6.741(1) α = 91°04(5)' β = 94°21(5)' γ = 89°59.5(5.0)' Z = 4

X-ray Powder Pattern: Greifensteine, Germany; close to zanazziite.
5.95 (10), 9.51 (9), 3.17 (8), 2.788 (6), 4.84 (4), 2.644 (4), 3.08 (2b)

Chemistry:	(1)	(2)	(3)		(1)	(2)	(3)
P ₂ O ₅	38.01	37.60	34.12	BeO	[13.74]	12.58	10.05
Fe ₂ O ₃		13.36		CaO	11.48	7.60	10.76
FeO	10.13	6.26	30.40	H ₂ O	12.17	11.56	11.80
MnO	14.47	10.04	0.50	insol.		0.80	0.70
				Total	[100.00]	99.80	98.33

(1) Greifensteine, Germany; BeO originally determined as Al₂O₃. (2) Sapucaia mine, Brazil.
(3) Gunnislake Clitters mine, England; BeO may include some Al₂O₃; corresponds to Ca_{1.20}(Fe_{2.64}Mn_{0.04})_{Σ=2.68}Be_{2.51}(PO₄)₃(OH)₃·2.58H₂O.

Occurrence: In cavities in granite or complex zoned granite pegmatites.

Association: Morinite, iacroixite, eosphorite, apatite, tourmaline (Greifensteine, Germany); frondelite, faheyite, beryl, muscovite, quartz (Sapucaia mine, Brazil).

Distribution: On the Greifensteine, near Ehrenfriedersdorf, Saxony, Germany. In the Gunnislake Clitters mine, Calstock, Cornwall, England. In Brazil, from the Sapucaia pegmatite mine, about 50 km east-southeast of Governador Valadares, and in the Énio pegmatite mine, northeast of Galiléia, Minas Gerais. In the USA, at the Davis mine, North Groton, Grafton Co., New Hampshire; from the Dunton quarry, Newry and the Black Mountain quarry, Rumford, Oxford Co., and elsewhere in Maine; at the Tip Top mine, 8.5 km southwest of Custer, Custer Co., South Dakota; from the Foote mine, Kings Mountain, Cleveland Co., North Carolina.

Name: Honoring Walter Roscher, mineral collector, Ehrenfriedersdorf, Germany.

Type Material: Charles University, Prague, Czech Republic, 6472; The Natural History Museum, London, England, 1914,1381; National Museum of Natural History, Washington, D.C., USA, R6219.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 968–969. (2) Lindberg, M.L. (1958) The beryllium content of roscherite from the Sapucaia pegmatite mine, Minas Gerais, Brazil, and from other localities. *Amer. Mineral.*, 43, 824–838. (3) Fanfani, L., P.F. Zanazzi, and A.R. Zanzari (1977) The crystal structure of a triclinic roscherite. *Tschermaks Mineral. Petrog. Mitt.*, 24, 169–178. (4) Clark, A.M., E.E. Fejer, A.G. Couper, O. von Knorring, R.W. Turner, and R.W. Barstow (1983) Iron-rich roscherite from Gunnislake, Cornwall. *Mineral. Mag.*, 47, 81–83. (5) Leavens, P.B., J.S. White, and J.A. Nelen (1990) Zanazziite, a new mineral from Minas Gerais, Brazil. *Mineral. Record*, 21, 413–417.

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