Roscherite

\[
\text{Ca}(\text{Mn}^{2+}, \text{Fe}^{2+})_2\text{Be}_3(\text{PO}_4)_3(\text{OH})_3 \cdot 2\text{H}_2\text{O}
\]

\[
\text{Ca}(\text{Mn}^{2+}, \text{Fe}^{2+})_3\text{Be}_2(\text{PO}_4)_3(\text{OH})_3 \cdot 2\text{H}_2\text{O}
\]

**Crystal Data:** Monoclinic or triclinic. Point Group: 2/m or 2/m. 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

\[D(\text{meas.}) = 2.90–2.97 \quad D(\text{calc.}) = 2.77–2.94\]

**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: \(X = b; Y \wedge c = -15^\circ \) to \(24^\circ\). Dispersion: \(r > v\), very strong, crossed. \(\alpha = 1.624–1.628 \quad \beta = 1.639–1.644 \quad \gamma = 1.643–1.650 \quad 2V(\text{meas.}) = \text{Large.}\)

**Cell Data:** Space Group: \(C2/c\) with \(a = 15.88–15.95\) \(b = 11.90–11.95\) \(c = 6.62–6.66\)

\(\beta = 94^\circ 42'–94^5 50'\) \(Z = 4,\) or Space Group: \(\tilde{C}\) with \(a = 15.921(5)\) \(b = 11.965(4)\) \(c = 6.741(1)\)

\(\alpha = 91^\circ 04'(5) \quad \beta = 94^\circ 21'(5) \quad \gamma = 89^\circ 59.5(5.0)'\) \(Z = 4\)

**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:**

\[
\begin{array}{ccc}
P_{2}O_{5} & 38.01 & 37.60 & 34.12 \\
Fe_{2}O_{3} & 13.36 & & \\
FeO & 10.13 & 6.26 & 30.40 \\
MnO & 14.67 & 10.04 & 0.50 \\
\text{BeO} & [13.74] & 12.58 & 10.05 \\
\text{CaO} & 11.48 & 7.60 & 10.76 \\
\text{H}_{2}O & 12.17 & 11.56 & 11.80 \\
\text{insol.} & 0.80 & 0.70 & \\
\end{array}
\]

\(\text{Total } [100.00] = 99.80 \quad 98.33\)

(1) Greifensteine, Germany; BeO originally determined as Al_{2}O_{3}. (2) Sapucaia mine, Brazil.

(3) Gunnislake Clitters mine, England; BeO may include some Al_{2}O_{3}; corresponds to Ca_{1.20}\((\text{Fe}_{2.64}\text{Mn}_{0.04})\Sigma_{-2.68}\text{Be}_{2.51}(\text{PO}_4)_3(\text{OH})_3 \cdot 2.58\text{H}_2\text{O}.

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

**Association:** Morinite, lacroixite, 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 ´Enio pegmatite mine, Gunnislake, Cornwall. In the USA, at the Davis mine, North Groton, Grafton Co., New Hampshire; from the Gunflint 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.


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