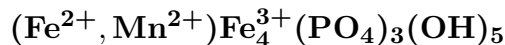


Rockbridgeite



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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Euhedral crystals rare; typically fibrous, elongated along [001], compact radiating, to 3 cm, in crusts, botryoidal and drusy masses.

Physical Properties: *Cleavage:* {100}, excellent; {010}, good; {001}, fair. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 3.5–4.5 D(meas.) = 3.45 D(calc.) = 3.60

Optical Properties: Semitransparent. *Color:* Dark green, olive-green, greenish black, black, commonly color-banded; may be bronze-brown, reddish brown when oxidized. *Luster:* Vitreous to dull.

Optical Class: Biaxial (+). *Pleochroism:* X = pale brown to pale yellow-brown; Y = bluish green; Z = dark bluish green. *Dispersion:* $r < v$, rarely $r > v$, strong. *Absorption:* $Z > Y > X$. $\alpha = 1.873\text{--}1.875$ $\beta = 1.880$ $\gamma = 1.895\text{--}1.897$ $2V(\text{meas.}) = \text{Moderate}$.

Cell Data: *Space Group:* $Bbmm$. $a = 13.783(12)$ $b = 16.805(9)$ $c = 5.172(4)$ $Z = 4$

X-ray Powder Pattern: Irish Creek, Rockbridge Co., Virginia, USA. 3.196 (10), 4.842 (5), 3.573 (5), 2.409 (5), 1.5890 (5), 6.87 (4), 4.630 (4)

Chemistry:

	(1)	(2)
P ₂ O ₅	31.76	32.82
Al ₂ O ₃	0.21	
Fe ₂ O ₃	50.84	49.23
FeO	6.14	5.54
MnO	0.40	5.47
MgO	0.76	
CaO	1.12	
H ₂ O	8.53	6.94
insol.	0.12	
Total	99.88	100.00

(1) Rockbridge Co., Virginia, USA. (2) $(\text{Fe}^{2+}, \text{Mn}^{2+})\text{Fe}_4^{3+}(\text{PO}_4)_3(\text{OH})_5$ with $\text{Fe}^{2+}:\text{Mn}^{2+} = 1:1$.

Polymorphism & Series: Forms a series with frondelite.

Occurrence: In “limonite” iron ore deposits; an alteration product of primary phosphates in complex granite pegmatites.

Association: Triphylite, huréaulite, barbosalite, roscherite, “limonite”.

Distribution: Widespread; may be locally abundant. In the USA, in Virginia, on South Mountain, southeast of Midvale, Rockbridge Co.; at the Palermo #1 and Fletcher mines, North Groton, Grafton Co., New Hampshire; in the Tip Top, Bull Moose, and other mines, near Custer, Custer Co., and at the Big Chief, Etta, and other mines, near Keystone, Pennington Co., South Dakota. From the Énio pegmatite mine, northeast of Galiléia, and near São Jose da Safira, Agua Boa, Minas Gerais, Brazil. From the El Criollo pegmatite, Cerro Blanco, Tanti district, 45 km west of Córdoba, Córdoba Province, Argentina. At Sabugal, Mangualde, Bendada, and Moreira, Portugal. From the La Vilate quarry, near Chanteloube, Haute-Vienne, France. In Germany, at Hagendorf, and on the Kreuzberg, Pleystein, Bavaria; and from Ullersreuth, Saxony. In the Moculta phosphate quarry, northeast of Angaston, South Australia. From the Sandamap pegmatite, west of Usakos, Namibia. In the Pearl mine, Miami, Zimbabwe. At Tazenakht, Morocco.

Name: For the occurrence in Rockbridge Co., Virginia, USA, taken as the type locality.

Type Material: Harvard University, Cambridge, Massachusetts, USA, 80600.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 867–869. (2) Moore, P.B. (1970) Crystal chemistry of the basic iron phosphates. *Amer. Mineral.*, 55, 135–169.

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