

Mengeite**Ba(Mg, Mn²⁺)Mn³⁺₄(PO₄)₄(OH)₄·4H₂O**

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As masses to 0.8 mm.

Physical Properties: *Cleavage:* Excellent on (001). *Tenacity:* Brittle. *Fracture:* Uneven. Hardness = ~3 D(meas.) = 3.40 D(calc.) = 3.35 Nonfluorescent.

Optical Properties: Translucent. *Color:* Dark orange-red. *Streak:* Pale salmon-pink. *Luster:* Vitreous.

Optical Class: Biaxial (-). $\alpha = 1.757(4)$ $\beta = 1.776(4)$ $\gamma = 1.781(4)$ $2V(\text{calc.}) = 53.8^\circ$
Pleochroism: $X = \text{pale gray}$, $Y = \text{pale yellow}$, $Z = \text{orange}$. *Absorption:* $Z \gg Y > X$.

Cell Data: *Space Group:* $P\bar{1}$. $a = 5.4262(11)$ $b = 5.4274(11)$ $c = 16.387(3)$ $\alpha = 87.61(3)^\circ$
 $\beta = 98.97(3)^\circ$ $\gamma = 110.56(3)^\circ$ $Z = 1$

X-Ray Diffraction Pattern: Spring Creek copper mine, South Australia, Australia.
 16.126 (100), 4.418 (44), 2.796 (25), 3.246 (14), 5.106 (12), 3.145 (12), 2.680 (12)

Chemistry:	(1)
BaO	18.32
Mn ₂ O ₃	[33.45]
MnO	[2.02]
MgO	2.54
CuO	0.87
Al ₂ O ₃	0.11
CaO	0.04
Na ₂ O	0.05
P ₂ O ₅	31.57
As ₂ O ₃	0.27
H ₂ O	[11.60]
Total	100.84

(1) Spring Creek copper mine, South Australia, Australia; average electron microprobe and FTIR spectroscopic analyses, Mn₂O₃, MnO, and H₂O calculated from structure; corresponds to Ba_{1.09}(Mg_{0.58}Mn²⁺_{0.26}Cu_{0.10}Al_{0.02}Na_{0.01}Ca_{0.01}□_{0.09})_{Σ=1.07}Mn³⁺_{3.88}(PO₄)_{4.07}(OH)_{3.52}·4.13H₂O.

Occurrence: In a heavily brecciated hydrothermal vein.

Association: Quartz.

Distribution: From the Spring Creek copper mine, 10 km south of Wilmington, northeastern flank of Mt. Remarkable, South Flinders Range, South Australia, Australia.

Name: Honors Johann Menge (1788-1852), German geologist and linguist whose 1841 booklet, The Mineral Kingdom of South Australia, highlighted the mineral wealth of South Australia and aided the discovery of major copper deposits at Burra and Kapunda.

Type Material: South Australian Museum, Adelaide, South Australia, Australia (G34744).

References: (1) Elliott, P. (2022) Mengeite Ba(Mg,Mn²⁺)Mn³⁺₄(PO₄)₄(OH)₄·4H₂O, a new mineral from the Spring Creek mine, South Australia, Australia. Can. Mineral., 60(5), 815-824.