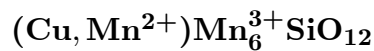


Abswurbachite



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Crystal Data: [Tetragonal] (by analogy to braunite). *Point Group:* [4/m 2/m 2/m.]
Anhedral grains, to 50 μm .

Physical Properties: Hardness = n.d. VHN = 870–950, average 920 (25 g load).
D(meas.) = n.d. D(calc.) = 4.96 (synthetic).

Optical Properties: Opaque. *Color:* Black; gray in reflected light. *Streak:* Brownish black.
Luster: Metallic. *Anisotropism:* Weak.

Cell Data: *Space Group:* [I4₁/acd.] *a* = 9.406(1) *c* = 18.546(3) *Z* = [8]

X-ray Powder Pattern: Synthetic (Cu_{0.98}Mn_{0.02}²⁺)_{Σ=1.00}Mn₆³⁺SiO₁₂.
2.702 (100), 1.6507 (30), 2.350 (15), 2.133 (15), 1.459 (14), 1.4016 (11), 1.6627 (10)

Chemistry:	(1)
SiO ₂	10.1
TiO ₂	0.23
Al ₂ O ₃	0.58
Fe ₂ O ₃	4.7
Mn ₂ O ₃	72.1
CuO	11.6
MgO	< 0.04
CaO	0.16
Total	99.47

(1) Evvia Island, Greece; by electron microprobe, corresponds to (Cu_{0.88}Mn_{0.10}²⁺Ca_{0.02})_{Σ=1.00}(Mn_{5.51}³⁺Fe_{0.36}³⁺Al_{0.07}Ti_{0.02}Cu_{0.02})_{Σ=5.98}Si_{1.03}O₁₂.

Polymorphism & Series: Forms a series with braunite.

Occurrence: In very low-grade, high-pressure metamorphic Mn, Al-rich quartzites.

Association: Quartz, shattuckite, tenorite, sursassite, piemontite, ardennite, rutile, hollandite, clinocllore.

Distribution: At Mili, Evvia Island, and Apikia, Andros Island, Cyclades Islands, Greece.

Name: To honor Dr. Irmgard Abs-Wurbach (1938–), German mineralogist.

Type Material: Institute for Mineralogy, Ruhr University, Bochum, Germany; National Museum of Natural History, Washington, D.C., USA.

References: (1) Reinecke, T., E. Tillmanns, and H.-J. Bernhardt (1991) Abswurbachite, Cu²⁺Mn₆³⁺[O₈/SiO₄], a new mineral of the braunite group: natural occurrence, synthesis, and crystal structure. *Neues Jahrb. Mineral., Abh.*, 163, 117–143. (2) (1992) *Amer. Mineral.*, 77, 670 (abs. ref. 1).