

Welshite**Ca₂Mg₄Fe³⁺Sb⁵⁺Si₄Be₂O₂₀**

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Crystal Data: Triclinic, pseudomonoclinic. *Point Group:* $\bar{1}$. Crystals stout prismatic || [001], may be flattened on {010}, to 3 mm. *Twinning:* Polysynthetic on {010}.

Physical Properties: *Fracture:* Conchoidal. Hardness = 6 D(meas.) = 3.77
D(calc.) = [3.71]

Optical Properties: Transparent to translucent. *Color:* Deep reddish brown to reddish black; brownish orange in transmitted light. *Streak:* Pale brown. *Luster:* Subadamantine.
Optical Class: Biaxial. $\alpha = 1.81(1)$ $\beta = \text{n.d.}$ $\gamma = 1.83(1)$ $2V(\text{meas.}) = \sim 45^\circ$

Cell Data: *Space Group:* $P\bar{1}$. $a = 10.28$ $b = 10.69$ $c = 8.83$ $\alpha = 106.1^\circ$ $\beta = 96.3^\circ$
 $\gamma = 124.5^\circ$ $Z = 2$

X-ray Powder Pattern: Långban, Sweden.

2.530 (100), 7.32 (70), 2.910 (70), 1.489 (70), 1.460 (70), 4.73 (60), 2.670 (60)

Chemistry:

	(1)	(2)
SiO ₂	19.6	29.84
Al ₂ O ₃	2.1	
Fe ₂ O ₃	9.1	9.92
As ₂ O ₅	3.6	
Sb ₂ O ₅	24.8	20.08
MnO	1.0	
BeO	4.0	6.21
MgO	15.3	20.02
CaO	14.2	13.93
Total	93.7	100.00

(1) Långban, Sweden; by electron microprobe, average of 20 analyses on three crystals, total Fe as Fe₂O₃, BeO by wet chemical analysis; corresponds to Ca_{2.41}(Mg_{3.61}Mn_{0.13})_{Σ=3.74}(Fe_{1.08}Al_{0.39})_{Σ=1.47}Sb_{1.46}⁵⁺(Si_{3.10}As_{0.30})_{Σ=3.40}Be_{1.52}O_{20.47}. (2) Ca₂Mg₄FeSbSi₄Be₂O₂₀.

Mineral Group: Aenigmatite group.

Occurrence: In hematitic-dolomitic skarn.

Association: Berzeliite, manganoan phlogopite, richterite, hausmannite, roméite, adelite, swedenborgite.

Distribution: From Långban, Värmland, Sweden.

Name: For Wilfred R. Welsh, amateur mineralogist of Upper Saddle River, New Jersey, USA.

Type Material: National Museum of Natural History, Washington, D.C., USA, 137022.

References: (1) Moore, P.B. (1978) Welshite, Ca₂Mg₄Fe³⁺Sb⁵⁺O₂[Si₄Be₂O₁₈], a new member of the aenigmatite group. *Mineral. Mag.*, 42, 129–132. (2) (1979) *Amer. Mineral.*, 64, 244 (abs. ref. 1).