Turtmannite $Mn_{25}O_5(VO_4)_3(SiO_4)_3(OH)_{20}$

Crystal Data: Hexagonal. *Point Group*: $\bar{3}$ 2/*m*. As flakes to 200 μm.

Physical Properties: *Cleavage*: Perfect on {0001}. *Tenacity*: Very brittle. *Fracture*: n.d. Hardness = n.d. D(meas.) = 3.6-4.0 D(calc.) = 3.80(4) Nonfluorescent.

Optical Properties: Transparent. *Color:* Bright yellow. *Streak*: Colorless. *Luster*: Vitreous. *Optical Class*: Uniaxial (-). ω = 1.787(3) ε = n.d. *n*(calc) = 1.80(2)

Cell Data: *Space Group*: $R\bar{3}$ *c*. *a* = 8.259(2) *c* = 204.3(3) Z = 12 (variant 2)

X-ray Powder Pattern: Turtmann Valley, Valais, Switzerland.
1.561 (100), 2.69 (80), 2.38 (80), 2.43 (60), 2.99 (40), 2.83 (40), 2.93 (20)

Chemistry:

	(1)
V_2O_5	8.09
As_2O_5	7.47
SiO_2	8.61
CaO	0.08
MgO	5.27
MnO	57.29
BaO	0.05
CoO	0.13
NiO	0.21
ZnO	0.06
Al_2O_3	0.69
H_2O	[8.06]
Total	96.05

(1) Turtmann Valley, Valais, Switzerland; average electron microprobe analysis, H_2O calculated for 20.5 H pfu.

Occurrence: In metamorphosed (upper greenschist facies) jacobsite-rich Fe-Mn ores in paleokarst.

Association: Jacobsite, kutnohorite, baryte, tephroite, spessartite.

Distribution: In the Turtmann Valley, Valais, Switzerland.

Name: For the *Turtmann* Valley that hosts the type locality.

Type Material: "Musée Cantonal de Géologie," Lausanne, Switzerland (MGL53593, MGL58732).

References: (1) Brugger, J., T. Armbruster, N. Meisser, C. Hejny, and B. Grobety (2001) Description and crystal structure of turtmannite, a new mineral with a 68 Å period related to mcgovernite. Amer. Mineral., 86, 1494-1505.