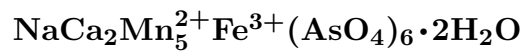


Grischunite



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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. As lathlike crystals, flattened on {100}, elongated along [010], with {100}, {010}, {101}, small {111}, to 1 mm; anhedral granular.

Physical Properties: *Cleavage:* On {010}, perfect. Hardness = ~ 5 VHN = 450–550 (50 g load). $D(\text{meas.}) = 3.8(2)$ $D(\text{calc.}) = [4.144]$

Optical Properties: Semitransparent. *Color:* Dark red-brown. *Streak:* Yellow-brown to orange. *Luster:* Vitreous.

Optical Class: Biaxial (+). *Pleochroism:* X = yellow-green; Y = yellow-brown; Z = dark red-brown. *Orientation:* X = b; Y = a; Z = c. *Dispersion:* $r \ll v$. *Absorption:* $Z \simeq Y \gg X$. $\alpha = 1.784(3)$ $\beta = 1.785(3)$ $\gamma = 1.790(3)$ $2V(\text{meas.}) = 40^\circ\text{--}50^\circ$ $2V(\text{calc.}) = 48^\circ$

Cell Data: *Space Group:* $Pcab$. $a = 12.855(2)$ $b = 13.487(2)$ $c = 12.047(1)$ $Z = 4$

X-ray Powder Pattern: Falotta mine, Switzerland.

2.839 (100), 3.150 (90), 3.015 (80), 3.617 (70), 2.943 (60), 6.037 (30), 4.244 (30)

Chemistry:

	(1)	(2)
As ₂ O ₅	54.55	52.91
TiO ₂	0.08	
Fe ₂ O ₃	5.00	6.13
MnO	27.51	27.21
CaO	9.05	8.61
Na ₂ O	1.74	2.38
H ₂ O	[2.07]	2.76
Total	[100.00]	100.00

(1) Falotta mine, Switzerland; by electron microprobe, average of three analyses, total Fe as Fe₂O₃, total Mn as MnO, H₂O by difference; corresponds to $(\text{Na}_{0.72}\text{Ca}_{0.07})_{\Sigma=0.79}\text{Ca}_{2.00}\text{Mn}_{5.04}^{2+}\text{Fe}_{0.81}^{3+}(\text{AsO}_4)_{6.12} \cdot 2\text{H}_2\text{O}$. (2) $\text{NaCa}_2\text{Mn}_5\text{Fe}(\text{AsO}_4)_6 \cdot 2\text{H}_2\text{O}$.

Occurrence: An alteration product of sarkinite in a manganese deposit.

Association: Sarkinite, brandtite, manganoan berzeliite, tilasite, rhodochrosite, braunite.

Distribution: In the Falotta mine, Oberhalbstein, Graubünden, Switzerland.

Name: From the former Romansch name *Grischun* for Graubünden Canton.

Type Material: Natural History Museum, Basel, Switzerland, MB19.295.

References: (1) Graeser, S., H. Schwander, and B. Suhner (1984) Grischunite ($\text{CaMn}_2[\text{AsO}_4]_2$), eine neue Mineralart aus den Schweizer Alpen. *Schweiz. Mineral. Petrog. Mitt.*, 64, 1–10 (in German with English abs.). (2) (1986) *Amer. Mineral.*, 71, 227–228 (abs. ref. 1). (3) Bianchi, R., T. Pilati, and G. Mannucci (1987) Crystal structure of grischunite. *Amer. Mineral.*, 72, 1225–1229.