

Apjohnite



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Crystal Data: Monoclinic. *Point Group:* $2/m$. As fibrous to acicular crystals, to 3 cm; asbestiform, in crusts, massive.

Physical Properties: Hardness = 1.5 D(meas.) = 1.78–1.81 D(calc.) = 1.836 Soluble in H_2O .

Optical Properties: Transparent to translucent. *Color:* Colorless to white, also tinted pale red, green, or yellow. *Luster:* Silky in aggregates.
Optical Class: Biaxial (-). *Orientation:* $Y = b$; $Z \wedge c \simeq 30^\circ$. $\alpha = 1.478$ $\beta = 1.482$ $\gamma = 1.482$
 $2V(\text{meas.}) = \text{Small}$.

Cell Data: *Space Group:* $P2_1/c$. $a = 6.198(2)$ $b = 24.347(4)$ $c = 21.266(4)$
 $\beta = 100.28(3)^\circ$ $Z = 4$

X-ray Powder Pattern: Terlano, Italy.
3.515 (100), 4.82 (90), 3.792 (33), 4.33 (27b), 3.967 (23), 4.13 (22), 6.07 (20)

Chemistry:	(1)	(3)
SO_3	33.51	36.00
Al_2O_3	10.65	11.46
MnO	6.60	7.98
MgO	0.36	
H_2O	48.15	44.56
Total	99.27	100.00

(1) Maputo Bay, Mozambique. (2) Terlano, Italy; AA partial analysis not given, corresponding to $(\text{Mn}_{0.64}\text{Mg}_{0.28}\text{Zn}_{0.06}\text{Fe}_{0.02})_{\Sigma=1.00}\text{Al}_2(\text{SO}_4)_4 \cdot 22\text{H}_2\text{O}$. (3) $\text{MnAl}_2(\text{SO}_4)_4 \cdot 22\text{H}_2\text{O}$.

Mineral Group: Halotrichite group.

Occurrence: As efflorescences.

Association: Halotrichite, pickeringite, gunningite, copiapite, epsomite.

Distribution: From Maputo (Delagoa) Bay, near Maputo (Lourenço Marques), Mozambique. At Terlano, Bolzano, Trentino-Alto Adige, Italy. From Smolník (Szomolnok), 16 km northeast of Rožňava, Slovakia. At Jáchymov (Joachimsthal), Czech Republic. In the USA, in Alum Cave, Sevier Co., Tennessee; at Alum Point, Salt Lake Co., Utah; from Creede, Mineral Co., Colorado; in Nevada, at the Twentieth Century mine, Nye Co., and long fibers at the Urania mine, Cactus Peak district; in the Dolores Tunnel mine, Old Placers district, Santa Fe Co., New Mexico.

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References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 527–528. (2) Menchetti, S. and C. Sabelli (1976) The halotrichite group: the crystal structure of apjohnite. *Mineral. Mag.*, 40, 599–608.