Windmountainite $\square Fe^{3+}_2Mg_2Si_8O_{20}(OH)_2 \cdot 8H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As radiating aggregates of acicular to bladed crystals elongated along [001] and flattened on {010}.

Physical Properties: *Cleavage*: Two good predicted on {110}. *Tenacity*: Brittle. *Fracture*: Splintery. Hardness = 2 D(meas.) = n.d. D(calc.) = 2.51 Nonfluorescent.

Optical Properties: Translucent. *Color*: Orange-brown to yellowish-brown, tips of aggregates tend to be dark reddish brown. *Streak*: Orange-brown. *Luster*: Dull, silky in aggregates. *Optical Class*: Biaxial. *n*(calc.) = 1.593 *Pleochroism*: Strong, orange-brown parallel to the length and colorless to light orange parallel to the width of crystals.

Cell Data: *Space Group*: *C*2/*m*. a = 13.759(3) b = 17.911(4) c =5.274(1) β =106.44(3)° Z = 2

X-Ray Diffraction Pattern: Wind Mountain, Otero Co., New Mexico, USA.
10.592 (100), 3.319 (53), 2.652 (30), 4.173 (28), 2.530 (27), 4.484 (19), 5.453 (16)

Chemistry:

	(1)	(2)
Na_2O	0.08	
MgO	3.47	9.13
Al_2O_3	1.15	
SiO_2	49.76	54.43
Cl	0.07	
K_2O	0.40	
CaO	0.68	
TiO_2	0.30	
MnO	5.64	
Fe_2O_3	20.17	18.08
H_2O	[16.59]	18.36
-O = Cl	0.02	.
Total	98.29	100.00

(1) Wind Mountain, Otero Co., New Mexico, USA; average electron microprobe, FTIR and Mössbauer spectroscopic analyses, H_2O calculated from structure; corresponds to $(\square_{0.78}Ca_{0.12}K_{0.08}Na_{0.02})_{\Sigma=1.00}(Fe^{3+}_{1.93}Al_{0.04}Ti_{0.02})_{\Sigma=1.99}(Mg_{0.81}Mn^{2+}_{0.75}Fe^{3+}_{0.44})_{\Sigma=2.00}\square_2(Si_{7.81}Al_{0.17}Ti_{0.01}Fe^{3+}_{0.01})_{\Sigma=8.00}O_{20}[(OH)_{1.98}Cl_{0.02}]_{\Sigma=2.00}[(H_2O)_{3.38}(OH)_{0.62}]_{\Sigma=4.00}\cdot 4H_2O$.
(2) $\square Fe^{3+}_2Mg_2\square_2Si_8O_{20}(OH)_2(H_2O)_4\cdot 4H_2O$.

Mineral Group: Palygorskite group.

Occurrence: In vesicles within a phonolite dike in a zoned, alkaline laccolith. Formed from late-stage fluids that were alkaline, oxidized, and rich in Fe^{3+} and H_2O.

Association: Albite, aegirine, fluorapophyllite-(K), natrolite, neotocite, montmorillonite.

Distribution From Wind Mountain, Otero Co., New Mexico, USA.

Name: For *Wind Mountain* where the studied material was collected.

Type Material: Canadian Museum of Nature, Ottawa, Ontario, Canada (CMNMC 87260).

References: (1) Leung, D.D. and A.M. McDonald (2020) Windmountainite, $\square Fe^{3+}_2Mg_2\square_2Si_8O_{20}(OH)_2(H_2O)_4\cdot 4H_2O$, a new modulated layered Fe^{3+}-Mg-silicate-hydrate from Wind Mountain, New Mexico: Characterization and origin, with comments on the classification of palygorskite-group minerals. Can. Mineral., 58, 477-509.