

Amakinite



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Crystal Data: Hexagonal. *Point Group:* $\bar{3} 2/m, 3m$, or 32 . Rhombohedra $\{10\bar{1}1\}$ modified by $\{10\bar{1}2\}$, $\{10\bar{1}4\}$, $\{11\bar{2}3\}$, $\{20\bar{2}5\}$, $\{0001\}$, to 2 cm; typically in irregular grains.

Physical Properties: *Cleavage:* Poor, observed in some grains. *Fracture:* Irregular. Hardness = 3.5–4 $D(\text{meas.}) = 2.925\text{--}2.98$ $D(\text{calc.}) = [2.74]$ Weakly magnetic.

Optical Properties: Semitransparent. *Color:* Pale green to yellow-green; rapidly turns brown when exposed to air, due to formation of $\text{Fe}(\text{OH})_3$.

Optical Class: Uniaxial (+). $\omega = 1.707(2)$ $\epsilon = 1.722(2)$

Cell Data: *Space Group:* $R\bar{3}m, R3m$, or $R32$. $a = 6.917(3)$ $c = 14.52(1)$ $Z = 12$

X-ray Powder Pattern: Lucky Eastern pipe, Russia.

2.30 (10), 1.728 (9), 2.80 (8), 1.530 (8), 5.49 (7), 1.551 (7), 1.386 (7)

Chemistry:

	(1)	(2)
SiO ₂	0.43	
TiO ₂	0.00	
Al ₂ O ₃	0.32	2.50
Fe ₂ O ₃	31.58	
Cr ₂ O ₃	0.00	
FeO	30.40	55.84
MnO	3.63	2.94
MgO	10.10	11.60
CaO	trace	
H ₂ O ⁺	23.04	26.13
H ₂ O ⁻	0.09	0.49
CO ₂	0.32	
Total	99.91	99.50

(1) Lucky Eastern pipe, Russia; corresponds to $(\text{Fe}_{0.73}\text{Mg}_{0.22}\text{Mn}_{0.05})_{\Sigma=1.00}(\text{OH})_2$. (2) Do.

Mineral Group: Brucite group.

Occurrence: Noted in drill core, in thin veins and pockets in kimberlite.

Association: Serpentine, carbonate.

Distribution: In the Udachnaya-Vostochnaya kimberlite pipe, Daldyn-Alakit region, western Sakha, Russia.

Name: For the Amakin Expedition, which prospected the Sakhan diamond deposits.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 69547.

References: (1) Kozlov, I.T. and P.P. Levshov (1962) Amakinite, a new mineral of the brucite-pyrochroite group. *Zap. Vses. Mineral. Obshch.*, 91, 72–77 (in Russian). (2) (1962) *Amer. Mineral.*, 47, 1218 (abs. ref. 1). (3) Sviridov, V.F. and T.A. Yakovlevskaya (1973) New data on amakinite from the kimberlitic pipe “Udachnaya”. *Izv. Akad. Nauk SSSR, Ser. Geol.*, 10, 144–147 (in Russian). (4) Lutz, H.D., H. Möller, and M. Schmidt (1994) Lattice vibration spectra. Part LXXXII. Brucite-type hydroxides $\text{M}(\text{OH})_2$ (M=Ca, Mn, Co, Fe, Cd) – IR and Raman spectra, neutron diffraction of $\text{Fe}(\text{OH})_2$. *J. Molecular Structure*, 328, 121–132.