

Crystal Data: Hexagonal. *Point Group:* 6/m. As interrupted earthy films to 2.5 cm. Rarely as well-terminated prismatic hexagonal crystals to 0.15 mm, displaying {10*0} and {10*1}; in sprays or open-work chaotic groups to 0.03 mm. As moss-like, friable aggregates of acicular crystals.

Physical Properties: *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = ~3 VHN = 122-142, 132 average (20 g load). D(meas.) = n.d. D(calc.) = 4.205

Optical Properties: Transparent to translucent. *Color:* Reddish brown to dark brownish red, brown to light brown in moss-like aggregates; dark gray in reflected light with distinct red-brown internal reflections. *Streak:* Brown. *Luster:* Adamantine to semi-metallic (crystals); silky (aggregates). *Optical Class:* n.d. *Anisotropism:* Weak, brownish to greenish tints. Weakly bireflectant. R₁-R₂: (400) 7.1-8.2, (420) 7.7-8.8, (440) 7.9-9.1, (460) 7.8-9.0, (470) 7.8-9.0, (480) 7.7-8.9, (500) 7.6-8.8, (520) 7.5-8.8, (540) 7.4-8.7, (546) 7.3-8.7, (560) 7.3-8.6, (580) 7.2-8.6, (589) 7.2-8.6, (600) 7.2-8.5, (620) 7.1-8.5, (640) 7.1-8.4, (650) 7.1-8.4, (660) 7.0-8.3, (680) 7.0-8.2, (700) 6.9-8.2

Cell Data: Space Group: $P6_3/m$. $a = 9.423(1)$ $c = 7.669(1)$ $Z = 2$

X-ray Powder Pattern: Sentyabr'skoe deposit, Iirney ore district, Western Chukotka, Russia. 8.18 (100), 4.088 (61), 2.796 (52), 2.864 (24), 2.977 (16), 3.087 (15), 3.847 (14)

Chemistry:	(1)	(2)
CuO	0.58	
MgO	4.20	2.72
ZnO	11.42	10.99
MnO	[1.25]	
Mn ₂ O ₃	[7.14]	10.66
Fe ₂ O ₃	0.06	
TeO ₂	65.06	64.68
H ₂ O	[11.01]	10.95
Total	100.72	100.00

(1) Sentyabr'skoe deposit, Iirney ore district, Western Chukotka, Russia; average of 9 electron microprobe analyses, MnO and Mn₂O₃ apportioned for charge balance from total Mn as Mn₂O₃ = 8.54, H₂O calculated from stoichiometry; corresponds to Mg_{0.77}Mn²⁺_{0.13}Cu_{0.05}Zn_{1.03}Mn³⁺_{0.67}Fe³⁺_{0.01}Te⁴⁺₃O₉·4.5H₂O. (2) Mg_{0.5}[ZnMn³⁺(TeO₃)₃]·4.5H₂O.

Occurrence: In the oxidation zone of sulfide-telluride-bearing quartz veins in cracks and cavities.

Association: Gypsum, malachite, azurite, cerussite, anglesite, brochantite, linarite, posnjakite, chlorargyrite, acanthite, gold, goethite, coronadite, paratellurite, raisesite, xocomecatlite.

Distribution: From the Sentyabr'skoe gold-silver deposit, Iirney ore district, 110 km east southeast of Bilibino, Western Chukotka, North-Eastern Region, Russia.

Name: For the locality that produced the first specimen, the Iirney ore district, near the village of Iirney, the Iirney Lakes and Iirneyveem River, Russia.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (95277).

References: (1) Pekov, I.V., O.I. Siidra, E.A. Vlasov, V.O. Yapaskurt, Yu.S. Polekhovskiy, and A.V. Apletalin (2018) Iirneyite, Mg_{0.5}[ZnMn³⁺(TeO₃)₃]·4.5H₂O, a new mineral from Chukotka, Russia. *Can. Mineral.*, 56 (6), 913-921. (2) (2020) *Amer. Mineral.*, 105, 1112 (abs. ref. 1).