

Kinichilite

$\text{Mg}_{0.5}(\text{Mn}^{2+}, \text{Zn})\text{Fe}^{3+}(\text{Te}^{4+}\text{O}_3)_3 \cdot 4.5\text{H}_2\text{O}$

©2001-2005 Mineral Data Publishing, version 1

Crystal Data: Hexagonal. *Point Group:* 6/*m*. As imperfect hexagonal prisms, to 2 mm, with curved {0001}.

Physical Properties: *Tenacity:* "Fragile". *Hardness =* "Soft". *D(meas.) =* n.d.
D(calc.) = 4.11

Optical Properties: Translucent. *Color:* Dark brown. *Streak:* Brown.

Luster: Subadamantine.

Optical Class: Uniaxial (+). *Pleochroism:* Weak; pale brown to yellowish brown. $\omega = > 1.8$
 $\epsilon = > 1.8$

Cell Data: *Space Group:* $P6_3/m$. $a = 9.451(7)$ $c = 7.687(9)$ $Z = 2$

X-ray Powder Pattern: Kawazu mine, Japan.

4.079 (100), 8.15 (90), 2.790 (85), 2.861 (50), 3.824 (35), 2.966 (30), 1.735 (20)

Chemistry:

	(1)	(2)
TeO ₂	58.4	65.05
SeO ₂	0.14	
Fe ₂ O ₃	9.7	10.85
MnO	5.5	4.82
ZnO	5.9	5.53
MgO	2.77	2.74
Na ₂ O	0.02	
H ₂ O	n.d.	11.01
Total		100.00

(1) Kawazu mine, Japan; by electron microprobe, total Fe as Fe₂O₃, Fe³⁺ confirmed by Mössbauer spectroscopy; corresponds to $\text{Mg}_{0.55}(\text{Mn}_{0.62}^{2+}\text{Zn}_{0.54})_{\Sigma=1.16}\text{Fe}_{0.97}^{3+}(\text{TeO}_3)_{2.92} \cdot 4.5\text{H}_2\text{O}$.

(2) $\text{Mg}_{0.5}(\text{Mn}, \text{Zn})\text{Fe}(\text{TeO}_3)_3 \cdot 4.5\text{H}_2\text{O}$ with Mn:Zn = 1:1.

Occurrence: A very rare mineral in low-temperature hydrothermal Au–Ag–Te quartz veins.

Association: Quartz.

Distribution: From the Kawazu mine, three km north of Shimoda, Izu Peninsula, Shizuoka Prefecture, Japan.

Name: Honors Dr. Kin-ichi Sakurai (1912–), prominent collector and amateur mineralogist, for his descriptions of tellurium minerals from the Kawazu mine, Japan.

Type Material: National Science Museum, Tokyo, Japan, M-23380; National Museum of Natural History, Washington, D.C., USA, 164269.

References: (1) Hori, H., E. Koyama, and K. Nagashima (1981) Kinichilite, a new mineral from the Kawazu mine, Shimoda city, Japan. *Mineral. J. (Japan)*, 10, 333–337. (2) (1982) *Amer. Mineral.*, 67, 623 (abs. ref. 1). (3) Miletich, R. (1995) Crystal chemistry of the microporous tellurite minerals zemannite and kinichilite, $\text{Mg}_{0.5}[\text{Me}^{2+}\text{Fe}^{3+}(\text{TeO}_3)_3] \cdot 4.5\text{H}_2\text{O}$, (Me²⁺ = Zn, Mn). *Eur. J. Mineral.*, 7, 509–523.