Tinaksite $K_2Na(Ca,Mn^{2+})_2TiSi_7O_{19}(OH)$

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As well-formed long prismatic crystals, to 15 cm; commonly as bundles and rosettes of radiating crystals, or compact fibrous aggregates, to 10 cm.

Physical Properties: *Cleavage:* Perfect on {010}, imperfect on {110}; (010) ∧ (110) = 131.5°. Hardness = 6 VHN = 646–762 D(meas.) = 2.82–2.90 D(calc.) = 2.85

Optical Properties: Transparent to translucent. *Color:* White, colorless, light yellow, light pink. *Luster:* Vitreous on cleavages.
Optical Class: Biaxial (+). *Pleochroism:* $X = Y$ = colorless; Z = pale orange-brown.
Orientation: $X' \wedge \{010\} = 1°–4°$; $Y \wedge \{010\} = 16°–18°$. *Dispersion:* Strong. $\alpha = 1.593–1.599$ $\beta = 1.621–1.627$ $\gamma = 1.666–1.673$ 2V(meas.) = 68°–78°

Cell Data: *Space Group:* $P\bar{1}$. $a = 10.377(3)$ $b = 12.166(3)$ $c = 7.059(1)$ $\alpha = 90.91(1)°$ $\beta = 99.3(1)°$ $\gamma = 92.76(3)°$ Z = 2

X-ray Powder Pattern: Murun massif, Russia.
3.03 (100), 3.25 (80), 2.331 (55), 3.09 (50), 2.952 (50), 2.865 (50), 2.674 (45)

Chemistry:

	(1)
SiO_2	55.82
TiO_2	10.12
Al_2O_3	trace
Fe_2O_3	0.91
FeO	0.92
MnO	0.40
MgO	0.04
CaO	14.20
Na_2O	4.30
K_2O	12.55
H_2O^+	1.20
H_2O^-	0.08
Total	100.54

(1) Murun massif, Russia; corresponds to $K_{1.97}Na_{1.02}(Ca_{1.88}Fe^{2+}_{0.10}Fe^{3+}_{0.08}Mn_{0.04})_{\Sigma=2.10}$ $Ti_{0.94}Si_{6.88}O_{19.76}(OH)_{0.98}$.

Occurrence: An accessory mineral in potassic feldspar metasomatites at the contact with limestones (Murun massif, Russia).

Association: Potassic feldspar, aegirine, quartz, canasite, xonotlite (Murun massif, Russia); orthoclase, pyroxene, aegirine, astrophyllite, hisingerite (Khibiny massif, Russia).

Distribution: In Russia, in the Murun massif, southwest of Olekminsk, Yakutia, and on Mt. Rasvumchorr, Khibiny massif, Kola Peninsula.

Name: For the *Ti, Na, K, Si* in the composition.

Type Material: n.d.

References: (1) Rogov, Y.G., V.P. Rogova, A.A. Voronkov, and V.A. Moleva (1965) Tinaksite, $NaK_2Ca_2TiSi_7O_{19}(OH)$, a new mineral. Doklady Acad. Nauk SSSR, 162, 658–661 (in Russian). (2) (1965) Amer. Mineral., 50, 2098–2099 (abs. ref. 1). (3) Sokolova, M.N., N.I. Zabavnikova, T.A. Yakovlevskaya, and E.S. Rudnitskaya (1975) Tinaksite from pegmatites of the apatite deposit Rasvumchorr (Khibiny Massif). Miner. Paragenezisy Miner. Endog. Mestorozhd., 39–43 (in Russian). (4) (1976) Chem. Abs., 85, 80928 (abs. ref. 3). (5) Bissert, G. (1980) Verfeinerung der Struktur von Tinaksit, $Ca_2K_2NaTiO[Si_7O_{18}(OH)]$. Acta Cryst., 36, 259–263 (in German with English abs.).