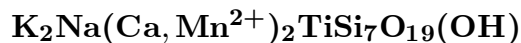


# Tinaksite



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**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)  $\wedge$  (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:*  $P\bar{1}$ .  $a = 10.377(3)$   $b = 12.166(3)$   $c = 7.059(1)$   $\alpha = 90.91(1)^\circ$   $\beta = 99.3(1)^\circ$   $\gamma = 92.76(3)^\circ$  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 <sub>2</sub>	55.82
TiO <sub>2</sub>	10.12
Al <sub>2</sub> O <sub>3</sub>	trace
Fe <sub>2</sub> O <sub>3</sub>	0.91
FeO	0.92
MnO	0.40
MgO	0.04
CaO	14.20
Na <sub>2</sub> O	4.30
K <sub>2</sub> O	12.55
H <sub>2</sub> O <sup>+</sup>	1.20
H <sub>2</sub> O <sup>-</sup>	0.08
Total	100.54

(1) Murun massif, Russia; corresponds to  $\text{K}_{1.97}\text{Na}_{1.02}(\text{Ca}_{1.88}\text{Fe}_{0.10}^{2+}\text{Fe}_{0.08}^{3+}\text{Mn}_{0.04})_{\Sigma=2.10}\text{Ti}_{0.94}\text{Si}_{6.88}\text{O}_{19.76}(\text{OH})_{0.98}$ .

**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,  $\text{NaK}_2\text{Ca}_2\text{TiSi}_7\text{O}_{19}(\text{OH})$ , 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. Paragenезis 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,  $\text{Ca}_2\text{K}_2\text{NaTiO}[\text{Si}_7\text{O}_{18}(\text{OH})]$ . Acta Cryst., 36, 259–263 (in German with English abs.).

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