

Innelite

 $\text{Na}_2\text{CaBa}_4\text{Ti}_3\text{O}_4(\text{Si}_2\text{O}_7)_2(\text{SO}_4)_2$

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Crystal Data: Triclinic. *Point Group:* 1. As plates, to 1 cm, rarely with faces, with {001} and {010} the most common; in radiating groups. *Twinning:* Polysynthetic Manebach twinning.

Physical Properties: *Cleavage:* Perfect on {010}, {110}, {1 $\bar{1}$ 0}, good on {001}.
Tenacity: Brittle. Hardness = 4.75 VHN = 435 D(meas.) = 3.96 D(calc.) = [3.81]
 Piezoelectric; slightly electromagnetic.

Optical Properties: Transparent to translucent. *Color:* Pale yellow to brown.
Luster: Vitreous on cleavages, slightly resinous on fractures.
Optical Class: Biaxial (+). *Pleochroism:* X = Y = light yellow; Z = pale brownish yellow.
Orientation: Z \simeq a. *Dispersion:* r > v, strong; sections cut \perp {001} show anomalous bluish interference color. $\alpha = 1.726(1)$ $\beta = 1.737(1)$ $\gamma = 1.766(1)$ 2V(meas.) = 82(2) $^\circ$

Cell Data: *Space Group:* P1. a = 14.76 b = 7.14 c = 5.38 $\alpha = 90^\circ$ $\beta = 95^\circ$ $\gamma = 99^\circ$
 Z = 1

X-ray Powder Pattern: Inagli massif, Russia.
 3.92 (10), 3.04 (6), 2.95 (6), 1.964 (6), 1.845 (6), 1.735 (6), 6.31 (5)

Chemistry:

	(1)		(1)
SiO ₂	18.78	BaO	44.16
TiO ₂	18.50	Na ₂ O	5.63
Al ₂ O ₃	0.23	K ₂ O	0.72
Fe ₂ O ₃	0.66	F	0.40
FeO	0.57	H ₂ O ⁺	0.88
MnO	1.04	H ₂ O ⁻	0.09
MgO	0.83	SO ₃	7.19
CaO	0.72	-O = F ₂	0.17
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		Total	100.23

(1) Inagli massif, Russia; corresponds to $(\text{Na}_{2.33}\text{Mg}_{0.27}\text{Ca}_{0.16}\text{Fe}_{0.11}^{2+}\text{Fe}_{0.10}^{3+})_{\Sigma=2.97}$
 $(\text{Ba}_{3.69}\text{K}_{0.20}\text{Mn}_{0.19})_{\Sigma=4.08}\text{Ti}_{2.96}(\text{Si}_2\text{O}_7)_2(\text{S}_{0.58}\text{O}_4)_2[\text{O}_{2.75}(\text{OH})_{1.25}\text{F}_{0.27}]_{\Sigma=4.27}$.

Occurrence: Inmiarolitic cavities of aegirine-eckermannite-microcline pegmatites in dunites; in pulaskite and shonkinite.

Association: Natrolite, albite, lorenzenite, batisite.

Distribution: In the Inagli massif, 30 km west of Aldan, and the Yakokut massif, near Schelochnoy Spring, Yakutia, Russia.

Name: From the Yakut name, *Inneli*, for the Inagli River, Yakutia, Russia.

Type Material: Institute of Mineralogy and Geochemistry of Rare Elements, Moscow; Mining Institute, St. Petersburg, 846a/1-2; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia; National Museum of Natural History, Washington, D.C., USA, 143822.

References: (1) Kravchenko, S.M., E.V. Vlasova, M.E. Kazakova, V.V. Ilokhin, and K.K. Abrashev (1961) Innelite, a new barium silicate. Doklady Acad. Nauk SSSR, 141, 1198-1199 (in Russian). (2) (1962) Amer. Mineral., 47, 805-806 (abs. ref. 1). (3) Chernov, A.N., V.V. Ilyukhin, B.A. Maksimov, and N.V. Belov (1971) Crystal structure of innelite, Na₂Ba₃(Ba, K, Mn)(Ca, Na)Ti(TiO₂)₂[Si₂O₇]₂(SO₄)₂. Kristallografiya (Sov. Phys. Crystal.), 16, 87-92 (in Russian).