

**Tsepinite-Sr****(Sr, Ba, K)<sub>2</sub>(Ti, Nb)<sub>2</sub>(Si<sub>4</sub>O<sub>12</sub>)(OH, O)<sub>2</sub>·3H<sub>2</sub>O**

**Crystal Data:** Monoclinic. *Point Group:* *m*. As prismatic crystals elongated along [010], to 3 mm; as crusts to 5 mm.

**Physical Properties:** *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 5  
D(meas.) = 2.67(2) D(calc.) = 2.63 Nonfluorescent.

**Optical Properties:** Transparent to translucent. *Color:* Colorless to white, pale brown; colorless in transmitted light. *Streak:* White. *Luster:* Vitreous.

*Optical Class:* Biaxial (+).  $\alpha = 1.649(2)$   $\beta = 1.651(2)$   $\gamma = 1.770(4)$   $2V(\text{meas.}) = 20(5)^\circ$   
 $2V(\text{calc.}) = 16^\circ$  *Dispersion:* Very weak,  $r < v$ . *Orientation:*  $Y = b$ .

**Cell Data:** *Space Group:* *Cm*.  $a = 14.490(3)$   $b = 14.23(1)$   $c = 7.881(3)$   $\beta = 117.28(2)^\circ$   $Z = 4$

**X-ray Powder Pattern:** Mt. Eveslogchorr, Khibiny complex, Kola Peninsula, Russia.  
3.230 (100), 7.10 (90), 3.135 (80), 2.510 (80), 6.45 (50), 1.728 (50), 1.570 (45)

<b>Chemistry:</b>	(1)
Na <sub>2</sub> O	0.61
K <sub>2</sub> O	1.30
BaO	4.27
CaO	0.92
MgO	0.01
MnO	0.05
SrO	5.12
ZnO	0.26
FeO	0.08
Al <sub>2</sub> O <sub>3</sub>	0.18
SiO <sub>2</sub>	41.89
TiO <sub>2</sub>	18.49
Nb <sub>2</sub> O <sub>5</sub>	16.07
<u>H<sub>2</sub>O</u>	<u>11.14</u>
Total	100.39

(1) Mt. Eveslogchorr, Khibiny complex, Kola Peninsula, Russia; average electron microprobe analysis supplemented by IR spectroscopy, H<sub>2</sub>O by TGA; corresponds to (Sr<sub>0.28</sub>Ba<sub>0.16</sub>K<sub>0.16</sub>Na<sub>0.11</sub>Ca<sub>0.09</sub>Zn<sub>0.02</sub>) $\Sigma=0.82$ (Ti<sub>1.32</sub>Nb<sub>0.69</sub>Fe<sub>0.01</sub>) $\Sigma=2.02$ (Si<sub>3.98</sub>Al<sub>0.02</sub>) $\Sigma=4$ O<sub>12</sub>[(OH)<sub>1.89</sub>O<sub>0.11</sub>] $\Sigma=2.00$ ·2.59H<sub>2</sub>O.

**Mineral Group:** Labuntsovite group, vuoriyarvite subgroup.

**Occurrence:** In cavities formed by hydrothermal alteration of nepheline-syenite pegmatite.

**Association:** Microcline, albite, natrolite, analcime, aegirine, eudialyte, leifite, vuoriyarvite-K, tsepinite-Ca, kuzmenkoite-Zn, paratsepinite-Ba, takanelite. As zones in tsepinite-Na; epitactical on labuntsovite; encrusting lamprophyllite and eudialyte.

**Distribution:** From Mt. Eveslogchorr and Mt. Khibinpakhkchorr, Khibiny alkaline massif, and Mt. Lepkhe-Nel'm, Lovozero massif, Kola Peninsula, Russia.

**Name:** Honors Russian microprobe analyst Anatolii I. Tsepin (b. 1946) and the suffix indicates the Sr-dominant analog of *tsepinite*-K and *tsepinite*-Ca.

**Type Material:** A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia.

**References:** (1) Pekov, I.V., N.V. Chukanov, A.E. Zadov, K.A. Rozenberg, and R.K. Rastsvetaeva (2005) Tsepinite-Sr, (Sr,Ba,K)(Ti,Nb)<sub>2</sub>((Si<sub>4</sub>O<sub>12</sub>)(OH,O)<sub>2</sub>·3H<sub>2</sub>O), a new mineral of the labuntsovite group. *New Data on Minerals*, 40, 11-16. (2) Chukanov, N.V., I.V. Pekov, and A.P. Khomyakov (2002) Recommended nomenclature for labuntsovite group minerals. *Eur. J. Mineral.*, 14, 165-173.