

Lepkhenelmitite-Zn**Ba₂Zn(Ti,Nb)₄[Si₄O₁₂]₂(O,OH)₄·7H₂O**

Crystal Data: Monoclinic. *Point Group:* *m*. As length-striated, flattened prismatic crystals, elongated on [010], to 7 mm, displaying {100} and {001}. In sheaf-like aggregates.

Physical Properties: *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Brittle. *Hardness* = ~5
D(meas.) = 2.96 D(calc.) = 3.07

Optical Properties: Transparent. *Color:* Light brown. *Streak:* White. *Luster:* Vitreous.
Optical Class: Biaxial (+). $\alpha = 1.683(2)$ $\beta = 1.692(2)$ $\gamma = 1.795(4)$ $2V(\text{obs.}) = 30(10)^\circ$
 $2V(\text{calc.}) = 34.5^\circ$ *Pleochroism:* Weak, $X = Z = \text{colorless}$; $Y = \text{pale yellowish-brown}$.
Orientation: $Y = b$. *Dispersion:* None.

Cell Data: Space Group: *Cm*. $a = 14.381(3)$ $b = 13.889(3)$ $c = 7.793(2)$ $\beta = 117.52(3)^\circ$
 $Z = 2$

X-ray Powder Pattern: Pegmatite no. 45, Mount Lepkhe-Nel'm, Lovozero massif, Russia.
3.194 (100), 6.95 (37), 3.101 (22), 6.39 (10), 3.050 (8), 2.906 (6), 2.585 (6)

| Chemistry: | (1) | | (1) |
|-------------------|-------|--------------------------------|--------------|
| Na ₂ O | 0.59 | ZnO | 3.66 |
| K ₂ O | 1.98 | Al ₂ O ₃ | 0.42 |
| CaO | 1.16 | SiO ₂ | 37.01 |
| SrO | 1.79 | TiO ₂ | 18.56 |
| BaO | 11.04 | Nb ₂ O ₅ | 10.60 |
| MgO | 0.02 | <u>H₂O</u> | <u>11.80</u> |
| MnO | 0.81 | Total | 99.65 |
| FeO | 0.21 | | |

(1) Pegmatite no. 45, Mount Lepkhe-Nel'm, Lovozero massif, Russia; electron microprobe analyses, H₂O by TGA; corresponding to (Ba_{0.92}K_{0.54}Ca_{0.26}Na_{0.24}Sr_{0.22}) $\Sigma=2.18$ (Zn_{0.58}Mn_{0.15}Fe_{0.04}Mg_{0.01}) $\Sigma=0.78$ (Ti_{2.97}Nb_{1.02}) $\Sigma=3.99$ (Si_{7.89}Al_{0.11}) $\Sigma=8.00$ O₂₄[O_{2.01}(OH)_{1.99}] $\Sigma=4.00$ ·7.39H₂O.

Polymorphism & Series: Forms a series with kuzmenkoite-Zn.

Mineral Group: Labuntsovite group.

Occurrence: A late-stage hydrothermal mineral in a complex granitic (eudialite, agerine, feldspar) pegmatite.

Association: Lamprophyllite, eudialyte, tsepinitite-Na, kuzmenkoite-Zn, paratsepinitite-Ba.

Distribution: From Pegmatite no. 45, north slope of Mount Lepkhe-Nel'm, Lovozero massif, Kola peninsula, Russia.

Name: For the locality that produced the first specimens and the dominant element in the D structural site, Zn.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Science, Moscow, Russia; 2709/1.

References: (1) Pekov, I.V., N.V., Chukanov, G.V., Shilov, N.N., Kononkova, and A.E., Zadov, (2004) Lepkhenelmitite-Zn, Ba₂Zn(Ti,Nb)₄[Si₄O₁₂]₂(O,OH)₄·7H₂O, a new mineral of the labuntsovite group, and its crystal structure. Zapiski Vseross. Mineral. Obshch., 133(1), 49-58 (in Russian, English abstract). (2) (2005) Amer. Mineral., 90, 769-770 (abs. ref. 1).