

Tancoite

HNa₂LiAl(PO₄)₂(OH)

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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Crystals, typically equant to tabular {010}, elongated along [001], with {001}, {010}, {100}, {021}, {111}, to 1 mm, and in subparallel [001] druses.

Physical Properties: *Cleavage:* On {010} and {100}, fair. *Fracture:* Conchoidal. Hardness = 4–4.5 D(meas.) = 2.752 D(calc.) = 2.724

Optical Properties: Transparent. *Color:* Colorless to pale pink; colorless in transmitted light. *Streak:* White. *Luster:* Vitreous.

Optical Class: Biaxial (-). *Orientation:* $X = c; Y = z; Z = a$. *Dispersion:* $r < v$, weak. $\alpha = 1.541(2)$ $\beta = 1.563(2)$ $\gamma = 1.564(2)$ $2V(\text{meas.}) = 23(2)^\circ$ $2V(\text{calc.}) = 24^\circ$

Cell Data: *Space Group:* $Pn\bar{c}m$. $a = 6.948(2)$ $b = 14.089(4)$ $c = 14.065(3)$ $Z = 8$

X-ray Powder Pattern: Tanco mine, Canada.

4.672 (100), 3.150 (100), 3.413 (90), 2.479 (90), 1.760 (40), 1.438 (40), 1.429 (40)

Chemistry:	(1)	(2)
P ₂ O ₅	50.1	49.31
Al ₂ O ₃	18.3	17.71
CaO	0.5	
Li ₂ O	5.2	5.19
Na ₂ O	20.0	21.53
H ₂ O	6.8	6.26
Total	100.9	100.00

(1) Tanco mine, Canada; Li by AA, H₂O by DTA-TGA-EGA analysis, presence of (OH)¹⁻ and absence of H₂O confirmed by IR; corresponds to H_{1.13}Na_{1.82}Li_{0.98}Ca_{0.03}Al_{1.01}(P_{1.00}O₄)₂(OH).

(2) HNa₂LiAl(PO₄)₂(OH).

Occurrence: In cavities in dump material from a complex granite pegmatite.

Association: Lithiophosphate, apatite, spodumene, cookeite, barite, calcite, quartz.

Distribution: From the Tanco mine, Bernic Lake, Manitoba, Canada.

Name: For the Tanco mine, Canada, its original locality.

Type Material: University of Manitoba, Winnipeg, Manitoba, M5533, M5534; Royal Ontario Museum, Toronto, M36416–8; Canadian Museum of Nature, Ottawa, Canada, 42900; The Natural History Museum, London, England, 1980,52; National School of Mines, Paris, France; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia; 1980,52; Harvard University, Cambridge, Massachusetts, 117129; National Museum of Natural History, Washington, D.C., USA, 146284, 146893.

References: (1) Ramik, R.A., B.D. Sturman, P.J. Dunn, and A.S. Povarennykh (1980) Tancoite, a new lithium sodium aluminum phosphate from the Tanco pegmatite, Bernic Lake, Manitoba. *Can. Mineral.*, 18, 185–190. (2) (1981) *Amer. Mineral.*, 66, 1278 (abs. ref. 1). (3) Hawthorne, F.C. (1983) The crystal structure of tancoite. *Tschermaks Mineral. Petrog. Mitt.*, 31, 121–135.