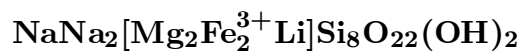


## Leakeite



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**Crystal Data:** Monoclinic. *Point Group:*  $2/m$ . Anhedral crystals, prismatic along [001], to 1 mm, bounded by cleavage planes and terminated by irregular fracture surfaces.

**Physical Properties:** *Cleavage:* Perfect on {110} [intersecting at  $\sim 56^\circ$  and  $\sim 124^\circ$ ].  
*Fracture:* Irregular. *Tenacity:* Brittle. *Hardness* = 6 *D(meas.)* = 3.11 *D(calc.)* = 3.107

**Optical Properties:** Translucent. *Color:* Deep red. *Streak:* Very pale pink.

*Luster:* Vitreous.

*Optical Class:* Biaxial (-). *Pleochroism:* Strong;  $X \simeq Y$  = dark mauve-red;  $Z$  = light pinkish red. *Orientation:*  $Z = b$ ;  $X \wedge c = 10^\circ$ ;  $Y \wedge a = 4^\circ$ . *Dispersion:*  $r \ll v$ , strong. *Absorption:*  $X \simeq Y > Z$ .  $\alpha = 1.667(1)$   $\beta = 1.675(1)$   $\gamma = 1.691(1)$   $2V(\text{meas.}) = 59^\circ\text{--}71^\circ$   $2V(\text{calc.}) = 72(10)^\circ$

**Cell Data:** *Space Group:*  $C2/m$ .  $a = 9.822(3)$   $b = 17.836(6)$   $c = 5.286(2)$   
 $\beta = 104.37(3)^\circ$   $Z = 2$

**X-ray Powder Pattern:** Kajlidongri mine, India.

3.122 (100), 8.399 (56), 2.798 (48), 3.254 (20), 3.383 (18), 2.696 (15), 4.461 (13)

**Chemistry:**

	(1)
SiO <sub>2</sub>	55.80
TiO <sub>2</sub>	0.03
Al <sub>2</sub> O <sub>3</sub>	1.27
Fe <sub>2</sub> O <sub>3</sub>	12.23
Mn <sub>2</sub> O <sub>3</sub>	3.86
MgO	10.96
CaO	0.50
Li <sub>2</sub> O	[1.42]
Na <sub>2</sub> O	9.69
K <sub>2</sub> O	1.12
F	1.08
H <sub>2</sub> O	[1.63]
-O = F <sub>2</sub>	0.45
Total	[99.14]

(1) Kajlidongri mine, India; by electron microprobe, average of six analyses, Li and H<sub>2</sub>O calculated from stoichiometry, original total given as 99.11%; corresponds to  $(\text{Na}_{2.67}\text{K}_{0.20}\text{Ca}_{0.08})_{\Sigma=2.95}(\text{Mg}_{2.32}\text{Fe}_{1.31}^{3+}\text{Li}_{0.81}\text{Mn}_{0.42}^{3+}\text{Al}_{0.14})_{\Sigma=5.00}(\text{Si}_{7.98}\text{Al}_{0.07})_{\Sigma=8.00}\text{O}_{22}[(\text{OH})_{1.49}\text{F}_{0.51}]_{\Sigma=2.00}$ .

**Mineral Group:** Amphibole (alkali) group:  $\text{Na}_B \geq 1.34$ ;  $\text{Li}_C \geq 0.5$ ;  $\text{Fe}^{3+} > \text{Mn}^{3+}$ .

**Occurrence:** In a metasediment rich in manganese minerals, crosscut by epigenetic veins.

**Association:** Albite, braunite, bixbyite.

**Distribution:** In the Kajlidongri manganese mine, Jhabua district, Madhya Pradesh, India.

**Name:** To honor Bernard E. Leake, Professor of Geology, Glasgow University, Glasgow, Scotland, for his work on amphiboles.

**Type Material:** Canadian Museum of Nature, Ottawa, Canada.

**References:** (1) Hawthorne, F.C., R. Oberti, L. Ungaretti, and J. Grice (1992) Leakeite,  $\text{NaNa}_2(\text{Mg}_2\text{Fe}_2^{3+}\text{Li})\text{Si}_8\text{O}_{22}(\text{OH})_2$ , a new alkali amphibole from the Kajlidongri manganese mine, Jhabua district, Madhya Pradesh, India. *Amer. Mineral.*, **77**, 1112–1115.

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