

Crystal Data: Orthorhombic, probably, twinned to a pseudo-hexagonal aspect. *Point Group:* 622, apparent. As anhedral embedded grains and as patchy to fine intergrowths with nepheline or potassic feldspar; massive. *Twinning:* Ubiquitous on a microscopic scale, on $\{10\bar{1}0\}$, $\{3\bar{3}\bar{6}5\}$, and $\{11\bar{2}2\}$.

Physical Properties: *Cleavage:* Poor on $\{10\bar{1}0\}$, $\{0001\}$. *Tenacity:* Brittle. Hardness = 6
D(meas.) = 2.59–2.62 D(calc.) = [2.62]

Optical Properties: Transparent to translucent. *Color:* Colorless, white, gray; in thin section, colorless. *Luster:* Vitreous to greasy.

Optical Class: Uniaxial (-). $\omega = 1.535\text{--}1.554$ $\epsilon = 1.530\text{--}1.539$

Cell Data: *Space Group:* $P6_322$ apparent. $a = 5.16$ $c = 8.69$ $Z = 2$

X-ray Powder Pattern: Synthetic.

3.118 (100), 2.579 (50), 3.973 (45), 2.175 (17), 2.472 (15), 4.351 (12), 2.432 (10)

Chemistry:

	(1)	(2)
SiO ₂	39.6	37.99
Al ₂ O ₃	21.3	32.23
Fe ₂ O ₃	5.9	
MgO	3.7	
CaO	5.0	
Na ₂ O	1.6	
K ₂ O	20.1	29.78
Total	97.2	100.00

(1) Mafuru crater, Uganda. (2) KAlSiO₄.

Polymorphism & Series: Polymorphous with kaliophilite, panunzite, and trikalsilite.

Occurrence: In the groundmass of some potassium-rich and silica-deficient lavas and tuffs; rare in syenites; may be formed by the breakdown of silica-rich leucite in alkalic ultramafic rocks; from a granulite-facies emery deposit.

Association: Olivine, melilite, clinopyroxene, phlogopite, nepheline, leucite.

Distribution: In the Mafuru and Katunga craters, Uganda. From Congo (Zaire), in the Baruta crater, Nyiragongo area, Kivu Province. From Italy, at Monte Somma and Vesuvius, Campania; Ariccia, near Rome, Lazio; and in the San Venanzo and Pian di Celle volcanos, Umbria. At Ödersdorf, Eifel district, Germany. In the Batbjerg alkalic ultramafic intrusion, Kangerdlugssuaq Glacier, Greenland. From the Khibiny massif, Kola Peninsula; the Murun massif, southwest of Olekminsk, Yakutia; and in the Tazheran alkalic massif, west of Lake Baikal, eastern Siberia, Russia. From the Punalar district, Kerala, India. In the Colima graben, about 50 km south-southwest of Guadalajara, Jalisco, Mexico. A few other localities are known.

Name: For potassium, Kalium, ALuminum, and SILicate in the composition.

Type Material: The Natural History Museum, London, England, 1942,42; Harvard University, Cambridge, Massachusetts, 101998; National Museum of Natural History, Washington, D.C., USA, 105856.

References: (1) Bannister, F.A. and M.H. Hey (1942) Kalsilite, a polymorph of KAlSiO₄ from Uganda. *Mineral. Mag.*, 26, 218–224. (2) Smith, J.V. and O.F. Tuttle (1957) The nepheline-kalsilite system. I. X-ray data for the crystalline phases. *Amer. J. Sci.*, 255, 282–305. (3) Deer, W.A., R.A. Howie, and J. Zussman (1963) *Rock-forming minerals*, v. 4, framework silicates, 231–269. (4) Perrotta, A.J. and J.V. Smith (1965) The crystal structure of kalsilite, KAlSiO₄. *Mineral. Mag.*, 35, 588–595. (5) Capobianco, C. and M. Carpenter (1989) Thermally induced changes in kalsilite (KAlSiO₄). *Amer. Mineral.*, 74, 797–811.

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