

# Rhodizite

# (K, Cs)Al<sub>4</sub>Be<sub>4</sub>(B, Be)<sub>12</sub>O<sub>28</sub>

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**Crystal Data:** Cubic. *Point Group:*  $\bar{4}3m$ . Typically as well-formed dodecahedra and tetrahedra, to 3.5 cm, modified by {001} and  $\{\bar{1}11\}$ . *Twinning:* On {111}, uncommon.

**Physical Properties:** *Cleavage:* {111} and  $\{\bar{1}11\}$ , indistinct. *Fracture:* Conchoidal. Hardness = 8–8.5 D(meas.) = 3.22–3.44 D(calc.) = 3.2–3.62 Strongly piezoelectric and pyroelectric.

**Optical Properties:** Transparent to translucent. *Color:* Colorless to white, may have a pale gray or pale yellow tinge; in transmitted light, colorless. *Luster:* Vitreous to slightly adamantine.

*Optical Class:* Isotropic, may display zoned anomalous birefringence.  $n = 1.693(1)$

**Cell Data:** *Space Group:*  $P\bar{4}3m$ .  $a = 7.317\text{--}7.319$   $Z = 1$

**X-ray Powder Pattern:** Manjaka, Madagascar; very similar to londonite. 2.983 (100), 2.440 (51), 3.274 (48), 2.111 (37), 1.775 (25), 1.956 (22), 2.205 (21)

Chemistry:	(1)	(2)		(1)	(2)
SiO <sub>2</sub>		0.08	CaO	0.18	0.04
CO <sub>2</sub>	0.15		Li <sub>2</sub> O	0.03	0.03
B <sub>2</sub> O <sub>3</sub>	50.2	[49.60]	Na <sub>2</sub> O	0.06	0.19
Fe <sub>2</sub> O <sub>3</sub>		0.02	K <sub>2</sub> O	2.77	5.03
Al <sub>2</sub> O <sub>3</sub>	25.8	26.35	Rb <sub>2</sub> O	0.73	0.51
BeO	14.3	[16.21]	Cs <sub>2</sub> O	6.4	1.70
MnO		0.03	H <sub>2</sub> O <sup>+</sup>	0.32	
MgO	0.01		Total	[101.0]	[99.79]

(1) Ambatofinandrahana, Madagascar; B<sub>2</sub>O<sub>3</sub> by ICP, SiO<sub>2</sub> 6.23% assumed as quartz; calculated neglecting impurities, corresponds to (K<sub>0.46</sub>Cs<sub>0.36</sub>Rb<sub>0.06</sub>Na<sub>0.02</sub>Li<sub>0.02</sub>)<sub>Σ=0.92</sub>Al<sub>3.99</sub>Be<sub>4.00</sub>(B<sub>11.35</sub>Be<sub>0.55</sub>)<sub>Σ=11.90</sub>O<sub>28.00</sub>. (2) Andasy, Madagascar; by electron microprobe, average of seven analyses, B<sub>2</sub>O<sub>3</sub> and BeO calculated for stoichiometry; corresponds to (K<sub>0.82</sub>Cs<sub>0.09</sub>Rb<sub>0.04</sub>Na<sub>0.05</sub>Li<sub>0.02</sub>Ca<sub>0.01</sub>)<sub>Σ=1.03</sub>(Al<sub>3.99</sub>Si<sub>0.01</sub>)<sub>Σ=4.00</sub>Be<sub>4.00</sub>(B<sub>10.99</sub>Be<sub>1.00</sub>)<sub>Σ=11.99</sub>O<sub>28.00</sub>.

**Occurrence:** A rare late-stage accessory mineral in alkali-rich granite pegmatites.

**Association:** Londonite, elbaite, spodumene, beryl, béhierite, albite, microcline, quartz.

**Distribution:** Found near Sarapulka and Shaitanka, Mursinka district, Ural Mountains, Russia. In Madagascar, from Antandrokomby, near Mt. Bity, at Andasy, Besesitra, and Ifsina, Manandona Valley, Antsirabe district; from Fiakarandava, south of the Manandona Valley; from the Ambatofinandrahana district, in the Ankarata Mountains; at Antsongombato, 25 km southwest of Mahaiza, Betafo district; from Ampanivana, 15 km south of Antsongombato; at Ampakita and Sahanivotry, in the Sahatany Valley; and from Ambalalehifotsy. In England, from Meldon and Okehampton, Devon. In the USA, found in the Animikie Red Ace pegmatite, near Pine River, Florence Co., Wisconsin.

**Name:** From the Greek for *rose-colored*, for the rose-red color the mineral imparts to the blowpipe flame.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 329–330. (2) Pring, A., V.K. Din, D.A. Jefferson, D.A., and J.M. Thomas (1986) The crystal chemistry of rhodizite: a re-examination. *Mineral. Mag.*, 50, 163–172. (3) Simmons, W.B., F. Pezzotta, A.U. Falster, and K.L. Webber (2001) Londonite, a new mineral species: the Cs-dominant analogue of rhodizite from the Antandrokomby granitic pegmatite, Madagascar. *Can. Mineral.*, 39, 747–755.

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