

**Crystal Data:** Triclinic. *Point Group:*  $\bar{1}$ . As sprays of bladed prismatic crystals, to 0.4 mm; commonly fibrous.

**Physical Properties:** *Cleavage:* Perfect on {010}. Hardness = n.d.  $D(\text{meas.}) = 2.96$   
 $D(\text{calc.}) = 2.951$

**Optical Properties:** Translucent. *Color:* Bluish green.

*Optical Class:* Biaxial (+).  $\alpha = 1.550(1)$   $\beta = 1.583(1)$   $\gamma = 1.641(1)$   $2V(\text{meas.}) = 80(1)^\circ$   
 $2V(\text{calc.}) = 76.4^\circ$  *Pleochroism:*  $X =$  very light bluish green;  $Y = Z =$  brilliant bluish green.  
*Orientation:*  $X = b$ ;  $Z \wedge c = 15^\circ$ .

**Cell Data:** *Space Group:*  $P\bar{1}$ .  $a = 13.634(5)$   $b = 13.687(7)$   $c = 14.522(7)$   $\alpha = 110.83(1)^\circ$   
 $\beta = 107.21(1)^\circ$   $\gamma = 105.68(1)^\circ$   $Z = 3$

**X-ray Powder Pattern:** Ajo, Arizona, USA.

12.25 (100), 2.455 (12), 4.08 (10), 3.061 (10), 3.381 (8), 2.832 (8), 2.258 (8)

<b>Chemistry:</b>	(1)
SiO <sub>2</sub>	41.2
Al <sub>2</sub> O <sub>3</sub>	3.81
FeO	0.11
MnO	0.02
CuO	42.2
CaO	0.04
Na <sub>2</sub> O	0.84
K <sub>2</sub> O	2.50
<u>H<sub>2</sub>O</u>	<u>8.35</u>
Total	99.07

(1) Ajo, Arizona, USA; Si, Al, and Cu by electron microprobe, corresponding to  $(\text{K}_{0.70}\text{Na}_{0.36}\text{Ca}_{0.01})_{\Sigma=1.07}(\text{Cu}_{6.97}\text{Fe}_{0.02})_{\Sigma=6.99}\text{Al}_{0.98}\text{Si}_{9.00}\text{O}_{24}(\text{OH})_{6.00}\cdot 3.09\text{H}_2\text{O}$ .

**Occurrence:** In oxidized copper-rich base-metal deposits.

**Association:** Shattuckite, conichalcite, quartz, muscovite, pyrite (Ajo, Arizona, USA); creaseyite, fluorite (Potter-Cramer property, Arizona, USA); shattuckite, duhamelite, sillénite (Munihuaza, Mexico); quartz, papagoite (Messina, South Africa).

**Distribution:** In the USA, in Arizona, from the New Cornelia mine, Ajo, Pima Co.; at the Moon Anchor mine and Potter-Cramer property, near Wickenburg, Maricopa Co.; and a prospect in Copper Creek, Pinal Co. From Munihuaza, near Alamos, Sonora, Mexico. At Messina, Transvaal, South Africa.

**Name:** For the type occurrence at *Ajo*, Arizona, USA.

**Type Material:** National Museum of Natural History, Washington, D.C., USA (113220).

**References:** (1) Schaller, W.T. and A.C. Vlisidis (1958) Ajoite, a new hydrous aluminum copper silicate. *Amer. Mineral.*, 43, 1107-1111. (2) Kato, T. and Y. Miura (1976) Cell dimension of ajoite. *Mineral. J. (Japan)*, 8, 234-239. (3) (1980) *Mineral. Abs.*, 31, 415 (abs. ref. 2). (4) Chao, G.Y. (1981) Ajoite: new data. *Amer. Mineral.*, 66, 201-203. (5) Pluth, J.J. and J.V. Smith (2002) Arizona porphyry copper/hydrothermal deposits II: Crystal structure of ajoite,  $(\text{K}+\text{Na})_3\text{Cu}_{20}\text{Al}_3\text{Si}_{29}\text{O}_{76}(\text{OH})_{16}\cdot\sim 8\text{H}_2\text{O}$ . *Proceed. National Acad. Sci. USA*, 99, 11002-11005. (6) (2003) *Amer. Mineral.*, 88(10), 1629 (abs. ref. 5).