# Ajoite $(K,Na)Cu_7AlSi_9O_{24}(OH)_6 \cdot 3H_2O$



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

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

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

**Cell Data:** *Space Group:* $P1$ or $P\overline{1}$. $a = 13.637(5)$ $b = 14.507(4)$ $c = 13.620(2)$ $\alpha = 107.16(2)°$ $\beta = 105.45(2)°$ $\gamma = 110.57(2)°$ 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)

**Chemistry:**

| | (1) |
|---|---|
| $SiO_2$ | 41.2 |
| $Al_2O_3$ | 3.81 |
| FeO | 0.11 |
| MnO | 0.02 |
| CuO | 42.2 |
| CaO | 0.04 |
| $Na_2O$ | 0.84 |
| $K_2O$ | 2.50 |
| $H_2O$ | 8.35 |
| Total | 99.07 |

(1) Ajo, Arizona, USA; Si, Al, and Cu by electron microprobe, corresponding to $(K_{0.70}Na_{0.36}Ca_{0.01})_{\Sigma=1.07}(Cu_{6.97}Fe_{0.02})_{\Sigma=6.99}Al_{0.98}Si_{9.00}O_{24}(OH)_{6.00} \cdot 3.09H_2O$.

**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. Miúra (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.