

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As crystals, tabular on {001}, with rectangular outline, to 2 mm; typically as an incrustation.

**Physical Properties:** *Cleavage:* In two directions. Hardness = n.d. D(meas.) = 3.27 D(calc.) = 3.28 Soluble in H<sub>2</sub>O.

**Optical Properties:** Semitransparent. *Color:* Emerald-green; emerald-green in transmitted light.

*Optical Class:* Biaxial (+). *Pleochroism:* X = pale grass-green; Y = grass-green; Z = bright yellow-green.  $\alpha = 1.580$   $\beta = 1.605$   $\gamma = 1.644$  2V(meas.) = Moderately large.

**Cell Data:** *Space Group:* C2/a.  $a = 18.41(5)$   $b = 9.43(3)$   $c = 14.21(5)$   $\beta = 113.7(3)^\circ$  Z = 8

**X-ray Powder Pattern:** Vesuvius, Italy.

8.44 (100), 2.816 (47), 2.544 (45), 2.843 (40), 2.852 (37), 3.475 (30), 3.237 (25)

**Chemistry:**

	(1)	(2)
SO <sub>3</sub>	41.41	43.13
Al <sub>2</sub> O <sub>3</sub>	0.06	
CuO	43.69	42.85
MgO	0.17	
CaO	0.07	
Na <sub>2</sub> O	6.35	5.56
K <sub>2</sub> O	8.25	8.46
Total	[100.00]	100.00

(1) Vesuvius, Italy; by electron microprobe, average of seven analyses, recalculated to 100% from an original total of 101.86%, (SO<sub>4</sub>)<sup>2-</sup> shown present by IR; corresponds to K<sub>1.01</sub>Na<sub>1.18</sub>Mg<sub>0.02</sub>Ca<sub>0.01</sub>Cu<sub>3.15</sub>O<sub>1.27</sub>(SO<sub>4</sub>)<sub>3</sub>. (2) KNaCu<sub>3</sub>O(SO<sub>4</sub>)<sub>3</sub>.

**Occurrence:** A rare sublimate around volcanic fumaroles.

**Association:** Dolerophanite, eriochalcite, chalcocyanite, melanothallite (Vesuvius, Italy); stoiberite, fingerite, ziesite, thénardite, mcbirneyite (Izalco volcano, El Salvador); eriochalcite, melanothallite, fedotovite, vergasovaite, chalcocyanite, dolerophanite, tenorite, cuprian anglesite, gold (Tolbachik volcano, Russia).

**Distribution:** From Vesuvius, Campania, Italy. On the Izalco volcano, El Salvador. At the Tolbachik fissure volcano, Kamchatka Peninsula, Russia,

**Name:** From the Greek for *pale green*, in allusion to the typical color.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 571. (2) Scordari, F., F. Stasi, and A. DeMarco (1989) Euchlorin: new crystallographic and chemical data. Neues Jahrb. Mineral., Monatsh., 541–550. (3) Scordari, F. and F. Stasi (1990) The crystal structure of euchlorin, NaKCu<sub>3</sub>O(SO<sub>4</sub>)<sub>3</sub>. Neues Jahrb. Mineral., Monatsh., 241–253.