

# Picromerite

# $K_2Mg(SO_4)_2 \cdot 6H_2O$

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**Crystal Data:** Monoclinic. *Point Group:*  $2/m$ . Equant crystals, to 5 cm, showing {001}, {010}, {100}, {110}, {011},  $\{\bar{2}01\}$ ,  $\{\bar{1}11\}$ , several other forms; incrusting other salts; massive.

**Physical Properties:** *Cleavage:* On  $\{\bar{2}01\}$ , perfect (synthetic). Hardness = 2.5  
D(meas.) = 2.028 (synthetic). D(calc.) = 2.031 Soluble in  $H_2O$ , taste bitter.

**Optical Properties:** Transparent. *Color:* Colorless or white; pale red, pale yellow, gray due to impurities; colorless in transmitted light. *Luster:* Vitreous.

*Optical Class:* Biaxial (+). *Orientation:*  $Y = b$ ;  $X \wedge a = -1^\circ$ . *Dispersion:*  $r > v$ , weak.

$\alpha = 1.461$   $\beta = 1.463$   $\gamma = 1.476$   $2V(\text{meas.}) = 47^\circ 54'$

**Cell Data:** *Space Group:*  $P2_1/a$  (synthetic).  $a = 9.066$   $b = 12.254$   $c = 6.128$   
 $\beta = 104^\circ 47'$   $Z = 2$

**X-ray Powder Pattern:** Synthetic.

3.71 (100), 4.06 (95), 4.16 (85), 3.06 (70), 2.964 (60), 3.16 (40), 2.813 (40)

## Chemistry:

	(1)	(2)
SO <sub>3</sub>	39.74	39.76
MgO	10.40	10.01
K <sub>2</sub> O	23.28	23.39
Cl	0.28	
H <sub>2</sub> O	26.87	26.84
-O = Cl <sub>2</sub>	[0.06]	
Total	[100.51]	100.00

(1) Leopoldshall, Germany. (2)  $K_2Mg(SO_4)_2 \cdot 6H_2O$ .

**Mineral Group:** Picromerite group.

**Occurrence:** Principally occurs in oceanic bedded salt deposits; a volcanic sublimate in fumaroles; in a sulfate-rich hydrothermal ore deposit.

**Association:** Halite, anhydrite, kainite, epsomite (oceanic salt deposits); hohmannite, metavoltine, metasideronatriite (Chuquicamata, Chile).

**Distribution:** From Vesuvius, Campania, Italy. In Germany, in Saxony-Anhalt, from the Leopoldshall-Stassfurt district, and at Aschersleben; large crystals from the Ellers mine, Neuhof, near Fulda, Hessen; in the Adolfsglück mine, Schwarmstedt, Lower Saxony. At Kalusz, Stebnyk, and Godyn, Ukraine. From Whitby, Yorkshire, England. At volcanoes on the Kamchatka Peninsula, Russia. From the Qarhan salt lake, Qinghai Province, China. At Chuquicamata, Antofagasta, Chile.

**Name:** From the Greek for *bitter* and *part*, in allusion to the magnesium in its composition.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 453-454. (2) Carapezza, M. and L. Riva di Sanseverino (1970) Crystallography and genesis of double sulfates and their hydrates. III. Picromerite,  $K_2Mg(SO_4)_2 \cdot 6H_2O$ : a methodological check. Mineral. Petrog. Acta, 16, 5-11. (3) (1970) NBS Mono. 25, 8.