

# Chvaleticeite

# (Mn<sup>2+</sup>, Mg)SO<sub>4</sub>•6H<sub>2</sub>O

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**Crystal Data:** Monoclinic (by analogy to hexahydrite). *Point Group:* 2/*m*. As efflorescences and coatings, granular, to 0.05 mm.

**Physical Properties:** Hardness = 1.5 D(meas.) = 1.84 D(calc.) = 1.84 Dehydrates readily in air; easily soluble in H<sub>2</sub>O.

**Optical Properties:** Translucent to transparent. *Color:* White, pale pink, yellowish green; colorless in transmitted light. *Luster:* Vitreous.

*Optical Class:* Biaxial.  $\alpha = 1.457$  ( $\alpha'$ )  $\beta = \text{n.d.}$   $\gamma = 1.506$  ( $\gamma'$ ) 2V(meas.) = n.d.

**Cell Data:** *Space Group:* C2/*c* (by analogy to hexahydrite).  $a = 10.05(2)$   $b = 7.24(2)$   $c = 24.3(1)$   $\beta = 98.0(2)^\circ$   $Z = 8$

**X-ray Powder Pattern:** Chvaletice, Czech Republic.

4.91 (10), 5.45 (8), 4.47 (8), 3.98 (8), 3.25 (8), 3.42 (7), 2.967 (7)

## Chemistry:

	(1)
SO <sub>3</sub>	31.48
Al <sub>2</sub> O <sub>3</sub>	trace
Fe <sub>2</sub> O <sub>3</sub>	0.10
FeO	trace
MnO	15.81
MgO	6.41
CaO	0.04
Na <sub>2</sub> O	0.01
K <sub>2</sub> O	0.01
H <sub>2</sub> O <sup>+</sup>	0.37
H <sub>2</sub> O <sup>-</sup>	45.22
insol.	0.36
Total	99.81

(1) Chvaletice, Czech Republic; Ca, Fe, K, and Na by AA, H<sub>2</sub>O by the Penfield method; corresponds to (Mn<sub>0.57</sub>Mg<sub>0.40</sub>)<sub>Σ=0.97</sub>SO<sub>4</sub>•6.39H<sub>2</sub>O.

**Mineral Group:** Hexahydrite group.

**Occurrence:** Formed in the oxidation zone of a pyrite–manganese silicate deposit (Chvaletice, Czech Republic).

**Association:** Melanterite, magnesian–manganoan melanterite, epsomite, magnesian–ferroan mallardite, magnesian jokokuite, magnesian ilesite, rozenite, copiapite, gypsum (Chvaletice, Czech Republic); apjohnite, copiapite, epsomite, gypsum (Jáchymov, Czech Republic).

**Distribution:** In the Czech Republic, from Chvaletice, and at Jáchymov (Joachimsthal).

**Name:** For the locality where the first specimens were collected, Chvaletice, Czech Republic.

**Type Material:** Geological Survey, Prague, Czech Republic.

**References:** (1) Pašava, J., K. Breiter, M. Huka, and J. Korecký (1986) Chvaleticeite, (Mn, Mg)SO<sub>4</sub>•6H<sub>2</sub>O, a new mineral. Neues Jahrb. Mineral., Monatsh., 121–125. (2) (1987) Amer. Mineral., 72, 1023–1024 (abs. ref. 1).