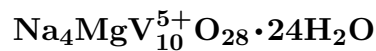


# Huemulite



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**Crystal Data:** Triclinic. *Point Group:* 1 or  $\bar{1}$ . In aggregates of fine fibers and thin films; botryoidal, massive.

**Physical Properties:** Hardness = 2.5–3, recrystallized.  $D(\text{meas.}) = 2.39(5)$   
 $D(\text{calc.}) = 2.404$ , recrystallized. Easily soluble in  $\text{H}_2\text{O}$ , from which it can be recrystallized by slow evaporation.

**Optical Properties:** Semitransparent. *Color:* Yellowish orange to orange. *Streak:* Yellow. *Luster:* Dull.

*Optical Class:* Biaxial (–) (recrystallized synthetic). *Pleochroism:*  $X$  = light yellow;  $Y$  = golden yellow;  $Z$  = yellowish orange. *Dispersion:*  $r > v$ , strong.  $\alpha = 1.679(3)$   $\beta = 1.734(3)$   $\gamma = 1.742(3)$   $2V(\text{meas.}) = 25^\circ\text{--}30^\circ$

**Cell Data:** *Space Group:*  $P1$  or  $P\bar{1}$ , (recrystallized).  $a = 11.770(19)$   $b = 11.838(8)$   
 $c = 9.018(9)$   $\alpha = 107^\circ 13'(5)'$   $\beta = 112^\circ 10'(6)'$   $\gamma = 101^\circ 30'(5)'$   $Z = 1$

**X-ray Powder Pattern:** Malargüe district, Argentina.

7.62 (100), 10.6 (90), 9.1 (60), 10.2 (55), 8.22 (35), 2.833 (35), 3.054 (30)

Chemistry:	(1)	(2)	(3)
$\text{V}_2\text{O}_5$	40.21	59.8	60.38
MnO	0.02		
MgO	1.18	3.0	2.68
CaO	3.53		
$\text{Na}_2\text{O}$	3.94	8.4	8.23
$\text{K}_2\text{O}$	0.52		
$\text{H}_2\text{O}^+$	8.80	29.2	28.71
$\text{H}_2\text{O}^-$	12.00		
$\text{SO}_3$	4.45		
insol.	25.43		
Total	100.08	100.4	100.00

(1) Malargüe district, Argentina; dissolved in  $\text{H}_2\text{O}$ , CaO and  $\text{SO}_3$  are gypsum. (2) Recrystallized.

(3)  $\text{Na}_4\text{MgV}_{10}\text{O}_{28}\cdot 24\text{H}_2\text{O}$ .

**Occurrence:** Formed after opening Cu–U deposits in sandstones and conglomerates; the vanadium may be derived from associated asphalt.

**Association:** Hummerite, rossite, thenardite, gypsum, epsomite.

**Distribution:** In the Agua Botada, Huemul, and Agua Botada Sur mines, Malargüe district, Mendoza Province, Argentina.

**Name:** For the Huemul mine, Argentina, where it occurs.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 120076.

**References:** (1) Gordillo, C.E., E. Linares, R.O. Toubes, and H. Winchell (1966) Huemulite,  $\text{Na}_4\text{MgV}_{10}\text{O}_{28}\cdot 24\text{H}_2\text{O}$ , a new hydrous sodium and magnesium vanadate from Huemul mine, Mendoza Province, Argentina. *Amer. Mineral.*, 51, 1–13.