Huemulite $Na_4MgV_{10}^{5+}O_{28}\cdot 24H_2O$

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

Physical Properties: Hardness = 2.5–3, recrystallized. D(meas.) = 2.39(5) D(calc.) = 2.404, recrystallized. Easily soluble in H_2O, 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(meas.) = 25°–30°

Cell Data: *Space Group:* $P1$ or $P\overline{1}$, (recrystallized). $a = 11.770(19)$ $b = 11.838(8)$ $c = 9.018(9)$ $\alpha = 107°13(5)'$ $\beta = 112°10(6)'$ $\gamma = 101°30(5)'$ 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)
V_2O_5	40.21	59.8	60.38
MnO	0.02		
MgO	1.18	3.0	2.68
CaO	3.53		
Na_2O	3.94	8.4	8.23
K_2O	0.52		
H_2O^+	8.80	29.2	28.71
H_2O^-	12.00		
SO_3	4.45		
insol.	25.43		
Total	100.08	100.4	100.00

(1) Malargüe district, Argentina; dissolved in H_2O, CaO and SO_3 are gypsum. (2) Recrystallized. (3) $Na_4MgV_{10}O_{28}\cdot 24H_2O$.

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, $Na_4MgV_{10}O_{28}\cdot 24H_2O$, a new hydrous sodium and magnesium vanadate from Huemul mine, Mendoza Province, Argentina. Amer. Mineral., 51, 1–13.