

Bicapite **$\text{KNa}_2\text{Mg}_2(\text{H}_2\text{PV}^{5+}_{14}\text{O}_{42}) \cdot 25\text{H}_2\text{O}$**

Crystal Data: Tetragonal. *Point Group:* $4/m$. As square tablets to ~0.2 mm on edge, displaying {001}, {101} and {011}.

Physical Properties: *Cleavage:* Excellent on {100}. *Fracture:* Irregular, stepped. *Tenacity:* Brittle. Hardness = 1.5 D(meas.) = 2.44(2) D(calc.) = 2.428 Dissolves slowly in dilute HCl.

Optical Properties: Translucent. *Color:* Dark red-brown, often appearing black. *Streak:* Orange. *Luster:* Vitreous. *Optical Class:* Uniaxial (+). $\omega = 1.785(5)$ $\varepsilon \approx 1.81$ *Pleochroism:* Red-brown. *Absorption:* $E > O$, slight.

Cell Data: Space Group: $I4/m$. $a = 11.5446(12)$ $c = 20.5460(14)$ $Z = 2$

X-ray Powder Pattern: Pickett Corral mine, Bull Canyon, Montrose County, Colorado, USA. 10.14 (100), 2.978 (29), 2.809 (11), 2.583 (11), 5.037 (10), 4.348 (10), 40142 (8)

Chemistry:	(1)	(2)	(3)
K ₂ O	3.49	2.89	2.35
Na ₂ O	4.16	3.44	3.10
MgO	3.59	2.97	4.03
P ₂ O ₅	4.35	3.60	3.54
V ₂ O ₅	76.25	63.04	63.59
MoO ₃	0.61	0.50	
<u>H₂O</u>		[23.57]	23.39
Total		100.01	100.00

(1) Pickett Corral mine, Bull Canyon, Montrose County, Colorado, USA; average of 4 electron microprobe analyses, H₂O calculated from structure; corresponds to $(\text{K}_{1.23}\text{Na}_{2.23}\text{Mg}_{1.48})_{\Sigma=4.94}[\text{H}_{2.51}\text{P}_{1.02}(\text{V}^{5+}_{13.91}\text{Mo}^{6+}_{0.07})_{\Sigma=13.98}\text{O}_{42}] \cdot 25\text{H}_2\text{O}$. (2) Do., Normalized. (3) $\text{KNa}_2\text{Mg}_2(\text{H}_2\text{PV}^{5+}_{14}\text{O}_{42}) \cdot 25\text{H}_2\text{O}$.

Occurrence: Formed by the oxidation of montroseite-corvusite assemblages in a moist environment on sandstone in a Colorado Plateau type, roll-front uranium/vanadium deposit.

Association: Gypsum, huemulite, thenardite, montroseite, corvusite.

Distribution: From the Pickett Corral mine, Bull Canyon, Montrose County, Colorado, USA.

Name: In recognition of this being the only known mineral with a structure based on a *bicapped* Keggin anion.

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA (66915 and 66916).

References: (1) Kampf, A.R., J.M. Hughes, B.P. Nash, and J. Marty (2019) Bicapite, $\text{KNa}_2\text{Mg}_2(\text{H}_2\text{PV}^{5+}_{14}\text{O}_{42}) \cdot 25\text{H}_2\text{O}$, a new polyoxometalate mineral with a bicapped Keggin anion from the Pickett Corral mine, Montrose County, Colorado, U.S.A. *Amer. Mineral.*, 104(12), 1851-1856.