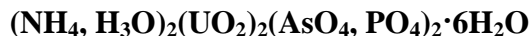


Uramarsite

Crystal Data: Tetragonal. *Point Group:* $4/m\ 2/m\ 2/m$. As imperfect platy crystals, to 2 mm, as films and, less often, as flattened square crystals, to 0.1 mm; dominated by {001} with minor {010}.

Physical Properties: *Cleavage:* Perfect {001}, imperfect {010}. *Fracture:* Stepped. *Tenacity:* Brittle. Hardness = 2.5 D(meas.) = 3.22 D(calc.) = 3.286

Optical Properties: Transparent. *Color:* Pale green; colorless in thin section. *Streak:* White. *Luster:* Vitreous. Fluoresces green in UV. *Optical Class:* Anomalously biaxial (-). $\alpha = 1.562(2)$ $\beta \approx \gamma = 1.593(2)$ $2V < 5^\circ$ *Orientation:* $X = c$; $Y \approx b$.

Cell Data: *Space Group:* $P4/nmm$. $a = 7.19(1)$ $c = 9.15(2)$ $Z = 1$

X-ray Powder Pattern: Bota-Burum deposit, Southern Kazakhstan Region, Kazakhstan. 9.27 (100), 4.58 (25), 3.86 (20), 2.28 (20), 2.80 (13), 1.823 (8), 1.713 (7)

Chemistry:	(1)	(2)
Na ₂ O	0.3	
UO ₃	61.8	59.46
As ₂ O ₅	15.0	23.89
P ₂ O ₅	5.9	
(NH ₄) ₂ O	3.2	5.41
<u>H₂O</u>	<u>13.8</u>	<u>11.24</u>
total	86.2	100.00

(1) Bota-Burum deposit, Southern Kazakhstan Region, Kazakhstan; electron microprobe analysis, NH₄ by ionometric electrode, H₂O by difference; water, hydronium and anionic groups confirmed by IR, corresponding to [(NH₄)_{1.15}(H₃O)_{0.72}Na_{0.09}]_{Σ=1.96}(UO₂)_{2.02}[(AsO₄)_{1.22}(PO₄)_{0.78}]_{Σ=2}·6.1H₂O.
 (2) (NH₄)₂(UO₂)₂(AsO₄)₂·6H₂O.

Occurrence: In the oxidized zone of pitchblende-sulfide mineralization in highly-fractured, hydrothermally-altered felsite porphyry and tuff breccia.

Association: Calcite, arsenopyrite, pyrite, galena, chistyakovaite, natrourosanospinite, scorodite, arseniosiderite, mansfieldite, metazeunerite, trögerite.

Distribution: Bota-Burum deposit, south of Alakol' Lake, southwestern Balkhash area, Southern Kazakhstan Region, Kazakhstan.

Name: An acronym for the major chemical components URanium, AMmonium, ARSenate.

Type Material: Fedorovskiy All-Russia Research Institute of Mineral Resources, Moscow, 350/59/zel.

References: (1) Sidorenko, G.A., N.V. Chukanov, N.I. Chistyakova, G.I. Bebesheko, A.E. Zadov, and I.S. Naumova (2007) Uramarsite (NH₄, H₃O)₂(UO₂)₂(AsO₄, PO₄)₂·6H₂O: a new mineral of the metaautunite group. Dokl. Akad. Nauk 415, 804–808 (in Russian); Dokl. Earth Sci. 415A, 965–969 (in English). (2) (2009) Amer. Mineral., 94, 405 (abs. ref. 1).