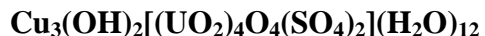


Pseudojohannite

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As aggregates of irregular tabular crystals to 25 μm .

Physical Properties: *Cleavage:* Perfect on $\{\bar{1} 01\}$. *Tenacity:* Brittle. *Hardness* = n.d.
D(meas.) = 4.31 D(calc.) = 4.38

Optical Properties: Transparent to translucent. *Color:* Moss-green. *Streak:* n.d. *Luster:* n.d.
Optical Class: Biaxial. $n(\text{min.}) = 1.725$ $n(\text{max.}) = 1.740$

Cell Data: *Space Group:* $P\bar{1}$. $a = 8.6744(4)$ $b = 8.8692(4)$ $c = 10.0090(5)$ $\alpha = 72.105(4)^\circ$
 $\beta = 70.544(4)^\circ$ $\gamma = 76.035(4)^\circ$ $Z = 1$

X-ray Powder Pattern: Jáchymov, Czech Republic.
9.13 (100), 4.566 (80), 7.09 (26), 3.046 (26), 5.511 (22), 2.862 (20), 3.443 (17)

Chemistry:	(1)	(2)
MgO	0.03	0.03
CuO	14.62	13.39
SiO ₂	1.68	0.11
SO ₃	7.43	8.41
UO ₃	66.99	66.16
<u>H₂O</u>	<u>[13.50]</u>	<u>[13.38]</u>
Total	104.24	101.48

(1) Widowmaker mine, White Canyon, Utah, USA; average of 8 electron microprobe analyses, H₂O from stoichiometry; corresponding to $(\text{Cu}_{3.07}\text{Mg}_{0.01})_{\Sigma=3.08}(\text{UO}_2)_{3.91}\text{O}_4[(\text{SO}_4)_{1.55}(\text{SiO}_4)_{0.47}]_{\Sigma=2.02}(\text{OH})_{1.01}(\text{H}_2\text{O})_{12}$. (2) Jáchymov, Czech Republic, average of 5 electron microprobe analyses, H₂O from stoichiometry; corresponds to $(\text{Cu}_{2.99}\text{Mg}_{0.01})_{\Sigma=3.00}(\text{UO}_2)_{4.10}\text{O}_4[(\text{SO}_4)_{1.86}(\text{SiO}_4)_{0.03}]_{\Sigma=1.89}(\text{OH})_{2.35}(\text{H}_2\text{O})_{12}$.

Mineral Group: Zippeite group.

Occurrence: A secondary mineral formed by the interaction of acidic sulfate mine water with uraninite or uranyl silicate minerals.

Association: Johannite, uranopilite, gypsum, uraninite, pyrite, tennantite, chalcopyrite (Jáchymov, Czech Republic); coal, uraninite, chalcocite (Widowmaker mine); uranopilite, metaschoepite, kasolite, α -uranophane, cuprosklodowskite (Musonoï quarry).

Distribution: From the Rovnost (Werner) shaft, Jáchymov (St. Joachimsthal), Western Bohemia, Czech Republic. At the Musonoï quarry, Katanga, Democratic Republic of the Congo. From the La Creusaz prospect, canton Valais, Western Swiss Alps, Switzerland. From the Widowmaker mine, White Canyon, San Juan County, Utah, USA.

Name: Expresses a chemical and paragenesis relation to johannite.

Type Material: Mineralogical collection, National Museum Prague, Czech Republic (P1p 1/2000).

References: (1) Brugger, J., K.S. Wallwork, N. Meisser, A. Pring, P. Ondruš, and J. Čejka, (2006) Pseudojohannite from Jáchymov, Musonoï, and La Creusaz: A new member of the zippeite-group. *Amer. Mineral.*, 91, 929-936. (2) Plášil, J., K. Fejfarová, K.S. Wallwork, M. Dušek, R. Škoda, J. Sejkora, J. Čejka, F. Veselovský, J. Hloušek, N. Meisser, and J. Brugger (2012) Crystal structure of pseudojohannite, with a revised formula, $\text{Cu}_3(\text{OH})_2[(\text{UO}_2)_4\text{O}_4(\text{SO}_4)_2](\text{H}_2\text{O})_{12}$. *Amer. Mineral.*, 97, 1796-1803.