

Crystal Data: Monoclinic, pseudotetragonal. *Point Group:* 2. As subparallel to random intergrowths of thin, square plates to $\sim 100\ \mu\text{m}$.

Physical Properties: *Cleavage:* Perfect on {001}. *Tenacity:* Brittle. *Fracture:* Curved. Hardness = ~ 2.5 D(meas.) = 3.24 D(calc.) = 3.256

Optical Properties: Translucent. *Color:* Dark blue. *Streak:* Light greenish blue. *Luster:* Vitreous. *Optical Class:* Uniaxial (-). $\omega = 1.84(1)$ $\varepsilon = 1.81(2)$ *Orientation:* $X \approx c$. *Pleochroism:* Shades of greenish blue. *Absorption:* $O > E$.

Cell Data: *Space Group:* P2. $a = 6.1537(16)$ $b = 6.1534(18)$ $c = 21.356(7)$ $\beta = 90.058(9)^\circ$ $Z = 2$

X-ray Powder Pattern: Pandora mine, La Sal district, San Juan County, Colorado, USA. 10.9 (100), 2.559 (26), 2.739 (20), 1.9345 (20), 2.812 (19), 3.631 (18), 2.176 (13)

Chemistry:	(1)
Na ₂ O	0.11
K ₂ O	0.09
CaO	0.36
SrO	1.10
BaO	15.54
Al ₂ O ₃	0.13
Fe ₂ O ₃	3.41
VO ₂	42.99
V ₂ O ₅	26.40
<u>H₂O</u>	<u>[6.60]</u>
Total	96.73

(1) Pandora mine, La Sal district, San Juan County, Colorado, USA; average electron microprobe analysis, H₂O calculated from structure, total VO₂ (67.07) allocated as VO₂ and V₂O₅ for charge balance; corresponds to $(\text{Ba}_{0.83}\text{Sr}_{0.09}\text{Ca}_{0.05}\text{Na}_{0.03}\text{K}_{0.02})_{\Sigma=1.02}(\text{V}^{4+}_{4.25}\text{V}^{5+}_{2.38}\text{Fe}^{3+}_{0.35}\text{Al}_{0.02})_{\Sigma=7.00}\text{O}_{16}\cdot 3\text{H}_2\text{O}$.

Polymorphism & Series: Complete solid solution between pandoraite-Ba and pandoraite-Ca.

Occurrence: Deposited from solutions rich in U and V where they encountered pockets of strongly reducing solutions developed around accumulations of carbonaceous plant material.

Association: Carnotite, a Ba-Fe-V-bearing member of the alunite supergroup.

Distribution: From the Pandora mine, La Sal district (Paradox Valley district), San Juan County, Colorado, USA.

Name: For the mine where it was discovered, and a suffix indicates the dominant interlayer cation.

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA (67293 and 67294).

References: (1) Kampf, A.R., J.M. Hughes, B.P. Nash, and J. Marty (2019) Pandoraite-Ba and Pandoraite-Ca, $\text{Ba}(\text{V}^{4+}_5\text{V}^{5+}_2)\text{O}_{16}\cdot 3\text{H}_2\text{O}$ and $\text{Ca}(\text{V}^{4+}_5\text{V}^{5+}_2)\text{O}_{16}\cdot 3\text{H}_2\text{O}$, two new vanadium oxide bronze minerals in solid solution from the Pandora mine, La Sal mining district, San Juan County, Colorado, USA. *Can. Mineral.*, 57(2), 255-265. (2) (2021) *Amer. Mineral.*, 106, 1187 (abs. ref. 1).