

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As tabular crystals with {010} dominant, to 1 mm; as small clusters of irregular crystals, to 1 cm. "Exhibits simple twinning."

Physical Properties: *Cleavage:* {010}, perfect. *Fracture:* Uneven to conchoidal.
Tenacity: Brittle. *Hardness* = < 5 *D(meas.)* = n.d. *D(calc.)* = 6.36

Optical Properties: Translucent. *Color:* Brownish grey. *Streak:* Light brownish grey.
Luster: Vitreous to adamantine.
Optical Class: Biaxial. $n = 1.9\text{-}2.0$

Cell Data: *Space Group:* $P\bar{1}$. $a = 7.060(3)$ $b = 10.238(4)$ $c = 5.464(3)$ $\alpha = 101.22(4)^\circ$
 $\beta = 109.93(3)^\circ$ $\gamma = 87.93(4)^\circ$ $Z = 1$

X-ray Powder Pattern: Smrkovec, Slavkovský Les Mountains, Czech Republic.
10.059 (100), 3.084 (95), 3.125 (86), 3.251 (72), 3.005 (52), 3.346 (43), 2.726 (42)

Chemistry:	(1)	(2)	(1)	(2)
CaO	0.04		P ₂ O ₅	7.65 10.17
Cu	0.30		V ₂ O ₅	0.12
PbO	0.24		As ₂ O ₅	4.15
Fe ₂ O ₃	0.40		UO ₃	18.73 20.49
Bi ₂ O ₃	65.39	66.76	<u>H₂O</u>	<u>2.59 2.58</u>
SiO ₂	0.18		Total	100.09 100.00

(1) Smrkovec, Slavkovský Les Mountains, Czech Republic; average of 8 electron microprobe analyses, H₂O molecule confirmed by IR and amount calculated from stoichiometry; corresponds to [(UO₂)_{0.91}Ca_{0.08}Fe_{0.07}Cu_{0.05}Pb_{0.01}]_{Σ=1.12}Bi_{3.91}O_{3.91}[(PO₄)_{1.50}(AsO₄)_{0.50}(SiO₄)_{0.04}(VO₄)_{0.02}]_{Σ=2.06}•2.00H₂O.
(2) (UO₂)Bi₄O₄(PO₄)₂•2H₂O.

Polymorphism & Series: Forms a series with walpurkite.

Occurrence: A secondary mineral formed by weathering of primary bismuth and uraninite in hydrothermal quartz veins.

Association: "Apatite", atelestite, bismutoferrite, bismutite, eulytite, hechtsbergite, metatorbernite, mixite, petitjeanite, preisingerite, pucherite, retgersite, schumacherite, smrkovecite, walpurkite.

Distribution: From the dumps of an abandoned mine near Smrkovec, 10 km NNE of Mariánské Lázně, Slavkovský Les Mountains, western Bohemia, Czech Republic.

Name: Signifies the (PO₄)-dominant composition, *phospho*, and structural relationship to *walpurkite*.

Type Material: Department of Mineralogy and Petrology, National Museum, Prague, Czech Republic; P1p 10/2001.

References: (1) Sejkora, J., J. Čejka, J. Hloušek, M. Novák, and V. Šrein (2004) Phosphowalpurkite, the (PO₄)-dominant analogue of walpurkite, from Smrkovec, Slavkovský Les Mountains, Czech Republic. *Can. Mineral.* 42(4), 963-972. (2) (2005) *Amer. Mineral.*, 90, 770 (abs. ref. 1).