

Vyuntspakhkite-(Y)

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Crystal Data: Monoclinic. *Point Group:* $2/m$. As slender prismatic crystals, to 0.7 mm.**Physical Properties:** *Tenacity:* Brittle. Hardness = 6–7 $D(\text{meas.}) = 4.02$ $D(\text{calc.}) = 4.07$
Faint yellow-green cathodoluminescence when rich in Y.**Optical Properties:** Transparent. *Color:* Colorless to tan. *Luster:* Adamantine.
Optical Class: Biaxial (+). *Orientation:* $X \wedge c = 40^\circ$; $Z \wedge a = 68^\circ$. $\alpha = 1.680$ $\beta = 1.692$
 $\gamma = 1.720$ $2V(\text{meas.}) = 68^\circ$ $2V(\text{calc.}) = 66^\circ$ **Cell Data:** *Space Group:* $P2_1/c$. $a = 5.830(2)$ $b = 14.763(4)$ $c = 6.221(2)$
 $\beta = 123.05(2)^\circ$ $Z = 1$ **X-ray Powder Pattern:** Mt. Ploskaya, Russia.
3.47 (10b), 2.604 (8), 7.40 (6), 4.98 (6), 4.92 (6), 2.87 (6), 2.95 (5)**Chemistry:**

	(1)	(2)	(3)
SiO ₂	26.15	31.64	31.62
Al ₂ O ₃	13.64	14.39	16.10
Y ₂ O ₃	17.76	34.66	47.54
Gd ₂ O ₃	0.28	0.24	
Tb ₂ O ₃	0.37	0.00	
Dy ₂ O ₃	2.67	1.65	
Ho ₂ O ₃	0.22	0.32	
Er ₂ O ₃	6.86	3.22	
Tm ₂ O ₃	2.05	0.70	
Yb ₂ O ₃	22.80	7.03	
Lu ₂ O ₃	3.40	0.89	
H ₂ O	[3.80]	[5.26]	4.74
Total	[100.00]	[100.00]	100.00

(1) Mt. Ploskaya, Russia; by electron microprobe, H₂O by difference, original total given as 100.10%; corresponds to $(\text{Y}_{1.78}\text{Yb}_{1.31}\text{RE}_{0.98})_{\Sigma=4.07}\text{Al}_{3.03}\text{Si}_{4.94}\text{O}_{18}(\text{OH})_{4.96}$. (2) Do.; corresponds to $(\text{Y}_{3.08}\text{Yb}_{0.36}\text{RE}_{0.36})_{\Sigma=3.80}\text{Al}_{2.83}\text{Si}_{5.28}\text{O}_{18}(\text{OH})_{5.18}$. (3) $\text{Y}_4\text{Al}_2\text{AlSi}_5\text{O}_{18}(\text{OH})_5$.

Occurrence: Two generations of crystals occur in fluorite in “amazonite” pegmatites.**Association:** Fluorite, gadolinite, xenotime, bastnäsite (Mt. Ploskaya, Russia).**Distribution:** From Mt. Ploskaya, Keivy massif, Kola Peninsula, Russia. In the Evans Lou pegmatite, Wakefield, Quebec, Canada.**Name:** For Mt. Vyuntspakhk, 5 km southeast of Mt. Ploskaya, Kola Peninsula, Russia, and its yttrium content.**Type Material:** Geology Museum, Kola Branch, Academy of Sciences, Apatity, 5767; Mining Institute, St. Petersburg, 1341/1; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 82544.

References: (1) Voloshin, A.V., Y.A. Pakhomovskii, Y.P. Menshikov, A.S. Povarennykh, and D.L. Rogachev (1983) Vyuntspakhite $\text{Y}_4\text{Al}_2\text{AlSi}_5\text{O}_{18}(\text{OH})_5$, a new yttrium-aluminum silicate from amazonite pegmatites of the Kola Peninsula. Mineral. Zhurnal, 5(4), 89–94 (in Russian with English abs.). (2) (1984) Amer. Mineral., 69, 1193 (abs. ref. 1). (3) Yakubovich, O.V., M.A. Simonov, A.V. Voloshin, and Y.A. Pakhomovskii (1984) Crystal structure of vyuntspakhkite $(\text{Y, TR})_4^{VIII}(\text{Al}_{2.5}\square_{1.5})^V[\text{Al}_{0.33}\text{Si}_{0.67}]_{1.5}\square_{2.5}^{IV}[\text{SiO}_4]_4[\text{O}_{0.5}(\text{OH})_{3.5}]_2$. Kristallografiya (Sov. Phys. Crystal.), 29, 238–242 (in Russian).

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