

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 $(Y_{1.78}Yb_{1.31}RE_{0.98})_{\Sigma=4.07}Al_{3.03}Si_{4.94}O_{18}(OH)_{4.96}$. (2) Do.; corresponds to $(Y_{3.08}Yb_{0.36}RE_{0.36})_{\Sigma=3.80}Al_{2.83}Si_{5.28}O_{18}(OH)_{5.18}$. (3) $Y_4Al_2AlSi_5O_{18}(OH)_5$.

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 $Y_4Al_2AlSi_5O_{18}(OH)_5$, 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 $(Y, TR)_4^{III}(Al_{2.5}\square_{1.5})^V[Al_{0.33}Si_{0.67}]_{1.5}\square_{2.5}^{IV}[SiO_4]_4[O_{0.5}(OH)_{3.5}]_2$. *Kristallografiya (Sov. Phys. Crystal.)*, 29, 238–242 (in Russian).

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