

Volkovskite

KCa₄B₂₂O₃₂(OH)₁₀Cl·4H₂O.

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Crystal Data: Triclinic, pseudohexagonal. *Point Group:* 1. Pseudohexagonal to triangular crystals and micaceous plates, to 1 cm; may be in booklike aggregates.

Physical Properties: *Cleavage:* Perfect on {010}. *Fracture:* Splintery. *Tenacity:* Brittle. Hardness = 2–2.5 D(meas.) = 2.27(3) D(calc.) = 2.28

Optical Properties: Transparent. *Color:* Colorless to pink. *Luster:* Vitreous. *Optical Class:* Biaxial (+). *Orientation:* Y = b; Z ∧ a = 31°. α = 1.523–1.536 β = 1.530–1.539 γ = 1.596–1.603 2V(meas.) = n.d. 2V(calc.) = 37°

Cell Data: *Space Group:* P1. a = 6.575(2) b = 23.921(8) c = 6.522(2) α = 90.58(3)° β = 119.10(2)° γ = 95.56(3)° Z = 1

X-ray Powder Pattern: Inder deposit, Kazakhstan. 8.1 (10), 3.28 (9), 2.63 (8), 2.81 (7), 2.15 (7), 1.980 (7), 6.03 (6)

Chemistry:	(1)	(2)	(3)	(4)
B ₂ O ₃	59.80	61.00	60.5	62.42
CaO	14.12	19.76	17.5	18.28
SrO	4.06		0.4	
Na ₂ O	0.14			
K ₂ O	2.42	2.55	3.8	3.84
Cl	1.98	2.83	2.8	2.89
H ₂ O	16.30	[14.50]	13.5	13.22
–O = Cl ₂	0.45	[0.64]	0.6	0.65
Total	98.37	[100.00]	97.9	100.00

(1) Inder deposit, Kazakhstan; corresponds to (K_{0.63}Na_{0.06})_{Σ=0.69}(Ca_{3.09}Sr_{0.48})_{Σ=3.57}B_{21.09}O_{46.31}H_{22.21}Cl_{0.69}. (2) Louann Salt Formation, Alabama, USA; H₂O by difference; corresponds to K_{0.66}Ca_{4.29}B_{21.39}O_{46.03}H_{19.64}Cl_{0.97}. (3) Denison-Potacan mine, Canada; by electron microprobe, B₂O₃ by wet methods, H₂O by TGA-EGA; corresponds to K_{1.01}(Ca_{3.91}Sr_{0.05})_{Σ=3.96}B_{21.77}O_{46.01}H_{18.77}Cl_{0.99}. (4) KCa₄B₂₂O₃₂(OH)₁₀Cl·4H₂O.

Occurrence: Uncommon in water-insoluble residues from salt domes and potash deposits.

Association: Halite, sylvite, hilgardite, boracite, anhydrite (Inder deposit, Kazakhstan).

Distribution: From the Inder borate deposit, Kazakhstan. In the Nepskoye potash deposit, eastern Siberia, Russia. From the Louann Salt Formation, Clarke Co., Alabama, USA. In the Penobsquis and Salt Springs evaporite deposits, near Sussex, New Brunswick, Canada.

Name: To honor A.I. Volkovskaya, petrographer, who first noted the mineral.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia; Royal Ontario Museum, Toronto, Canada, M44196.

References: (1) Kondrat'eva, V.V., I.V. Ostrovskaya, and Y.Y. Yarzhemskii (1966) A new hydrous calcium borate – volkovskite. Zap. Vses. Mineral. Obshch., 95, 45–50 (in Russian). (2) (1966) Amer. Mineral., 51, 1550 (abs. ref. 1). (3) Simmons, W.B. and K.L. Webber (1989) Volkovskite: new data from an occurrence in the subsurface, Clarke Co., Alabama. Rochester Mineral. Symposium Program Abs., 16, 16. (4) Mandarino, J.A., A.L. Rachlin, P.J. Dunn, Y. Le Page, M.E. Back, B.L. Murowchick, R.A. Ramik, and R.B. Falls (1990) Redefinition of volkovskite and its description from Sussex, New Brunswick. Can. Mineral., 28, 351–356. (5) Pekov, I.V. (1998) Minerals first discovered on the territory of the former Soviet Union. Ocean Pictures, Moscow, 232.

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