

Leucosphenite

BaNa₄Ti₂B₂Si₁₀O₃₀

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Crystal Data: Monoclinic. *Point Group:* $2/m$. Crystals tabular and elongated || [100], typically wedge-shaped, to 3 cm; as rosettes and laminated masses. *Twining:* Common \perp {001}, contact plane {001}.

Physical Properties: *Cleavage:* {010}, {001}, distinct. *Fracture:* Uneven to subconchoidal. *Tenacity:* Brittle. Hardness = 6–6.5 D(meas.) = 3.04–3.09 D(calc.) = 3.103

Optical Properties: Transparent to translucent. *Color:* Colorless, white, pale to dark green, pale yellow, pale gray to blue; brown to black and sectorial from inclusions. *Streak:* White. *Luster:* Vitreous to pearly.

Optical Class: Biaxial (+). *Orientation:* $Z = b$; $Y \wedge c \simeq 0^\circ$. *Dispersion:* $r > v$, may be crossed. $\alpha = 1.644$ – 1.648 $\beta = 1.660$ – 1.664 $\gamma = 1.687$ – 1.691 $2V(\text{meas.}) = 75^\circ$ – 78°

Cell Data: *Space Group:* $C2/m$. $a = 9.814(4)$ $b = 16.851(5)$ $c = 7.210(3)$
 $\beta = 93.35(3)^\circ$ $Z = 2$

X-ray Powder Pattern: Mont Saint-Hilaire, Canada.
4.22 (100), 8.45 (90), 3.37 (70), 2.891 (60), 3.31 (50), 2.813 (40), 2.732 (40)

Chemistry:	(1)	(2)	(1)	(2)
SiO ₂	54.3	53.66	MnO	trace
TiO ₂	13.92	14.52	MgO	0.15
ZrO ₂	0.00	0.00	CaO	0.00
B ₂ O ₃	6.36	6.6	SrO	0.03
Al ₂ O ₃	0.00	0.11	BaO	13.00
Fe ₂ O ₃	0.28		Na ₂ O	10.70
Nb ₂ O ₅	0.1	0.77	K ₂ O	0.79
FeO		0.04	H ₂ O	0.00
			Total	99.63
				99.86

(1) Inagli massif, Russia; corresponds to $(\text{Ba}_{0.94}\text{Fe}_{0.04}\text{Mg}_{0.04})_{\Sigma=1.02}(\text{Na}_{3.82}\text{K}_{0.18})_{\Sigma=4.00}\text{Ti}_{1.92}\text{B}_{2.02}\text{Si}_{10}\text{O}_{29.95}$. (2) Mont Saint-Hilaire, Canada; by electron microprobe, corresponds to $(\text{Ba}_{0.94}\text{Ca}_{0.01})_{\Sigma=0.95}(\text{Na}_{4.10}\text{K}_{0.12})_{\Sigma=4.22}(\text{Ti}_{1.99}\text{Nb}_{0.06})_{\Sigma=2.05}\text{B}_{2.08}\text{Si}_{9.78}\text{O}_{29.90}$.

Occurrence: In pegmatite in syenite (Greenland, Russia, Canada); in aegirine-feldspar veins (Inagli massif, Russia); an authigenic mineral in shales (Utah and Wyoming, USA).

Association: Elpidite, aegirine, epididymite, albite, polyolithionite (Narsarsuk, Greenland); arfvedsonite, eudialyte, neptunite, lamprophyllite, lorenzenite (Inagli massif, Russia); albite, aegirine, narsarsukite, molybdenite, calcite, fluorite (Mont Saint-Hilaire, Canada).

Distribution: From Narsarsuk, Greenland. In the USA, from the Green River Formation, in the Uinta basin, Utah and in the Bridger basin, Sweetwater Co., Wyoming. At Mont Saint-Hilaire, Quebec, Canada. From the Inagli massif, 30 km west of Aldan, Yakutia, and in the Lovozero massif, Kola Peninsula, Russia. From the Dara-i-Pioz massif, Alai Range, Tien Shan, Tajikistan. At Ohmi, Niigata Prefecture, Japan.

Name: From the Greek for *white* and *wedge*, its color and crystal habit.

Type Material: University of Copenhagen, Copenhagen, Denmark; The Natural History Museum, London, England; Harvard University, Cambridge, Massachusetts; National Museum of Natural History, Washington, D.C., USA, 135739, R3878.

References: (1) Dana, E.S. and W.E. Ford (1909) Dana's system of mineralogy, (6th edition), app. II, 64. (2) Yefimov, A.F. and Z.T. Kataeva (1959) The first discovery of leucosphenite in All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of Mineral Data Publishing.

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