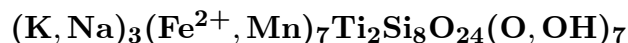


Astrophyllite



©2001 Mineral Data Publishing, version 1.2

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. Crystals tabular \perp {001}, bladed or acicular, some faces commonly striated, to 10 cm; groups may be stellate.

Physical Properties: *Cleavage:* Perfect on {001}, poor on {100}. *Tenacity:* Brittle. Hardness = 3 D(meas.) = 3.2–3.4 D(calc.) = n.d.

Optical Properties: Opaque to translucent in thin leaves. *Color:* Bronze-yellow to gold-yellow, brown to reddish brown. *Streak:* Golden. *Luster:* Submetallic, pearly, greasy. *Optical Class:* Biaxial (+). *Pleochroism:* Strong; X = deep orange-red; Y = orange-yellow; Z = lemon-yellow. *Orientation:* X \simeq c; Y \simeq b; Z \simeq a. *Dispersion:* $r > v$, strong. *Absorption:* X > Y > Z. $\alpha = 1.678\text{--}1.695$ $\beta = 1.703\text{--}1.726$ $\gamma = 1.733\text{--}1.758$ 2V(meas.) = 66°–84°

Cell Data: *Space Group:* $A\bar{1}$. $a = 5.36$ $b = 11.76$ $c = 21.08$ $\alpha = 85^\circ 8'$ $\beta = 90^\circ 0'$ $\gamma = 103^\circ 13'$ Z = 2

X-ray Powder Pattern: Låven Island, Norway; nearly identical with kupletskite. (ICDD 14-194).

10.6 (100), 3.51 (80), 2.77 (60), 2.64 (60), 2.57 (60), 9.82 (30), 1.76 (30)

Chemistry:

	(1)		(1)
SiO ₂	36.64	MnO	5.68
TiO ₂	10.76	CaO	0.98
ZrO ₂	0.66	Na ₂ O	2.52
Nb ₂ O ₅	0.77	K ₂ O	5.13
FeO	31.50	H ₂ O	[4.92]
		Total	[99.56]

(1) Kangerdlugssuaq Fjord, Greenland; by electron microprobe, H₂O calculated from stoichiometry; corresponds to (K_{1.40}Na_{1.04}Ca_{0.22}) $\Sigma=2.66$ (Fe_{5.62}Mn_{1.03}) $\Sigma=6.65$ (Ti_{1.73}Nb_{0.07}Zr_{0.07}) $\Sigma=1.87$ Si_{7.82}O₂₄(OH)_{7.00}.

Polymorphism & Series: Forms a series with kupletskite.

Mineral Group: Astrophyllite group.

Occurrence: In nepheline syenites, alkali granites, and their pegmatites; less commonly in fenites and other metasomatized rocks; in nepheline syenite gneisses and paragneisses.

Association: Albite, aegirine, arfvedsonite, nepheline, natrolite, zircon, biotite, leucophanite, eudialyte, catapleiite, djerfisherite, rasvumite, delhayelite, kupletskite.

Distribution: Some prominent localities include: on Låven Island and near Brevik, Langesundsfjord, Norway. In Greenland, at Narssârssuk, in the Ílímaussaq intrusion, and elsewhere. In Spain, south of La Guia, and at Monte Galiñeiro, Vigo, Pontevedra Province. In the USA, in Colorado, at St. Peters Dome, near Pikes Peak, El Paso Co., and in Maine, near Biddeford, York Co. From Mont Saint-Hilaire, Quebec, and the Red Wine complex, Labrador, Newfoundland, Canada. On Rouma Isle, Los Islands, Guinea. From Pilansberg, Transvaal, South Africa. In the Khan-Bogdinskii granitic massif, Gobi, Mongolia. From Mts. Yukspor and Eveslogchorr, Khibiny massif; in the Lovozero massif, Kola Peninsula; and other less-well-defined localities in Russia.

Name: From the Greek for *star* and *leaf*, for the stellate and foliated micaceous habit.

Type Material: Mining Academy, Freiberg, Germany, 26244.

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.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 719–720. (2) Woodrow, P.J. (1967) The crystal structure of astrophyllite. *Acta Cryst.*, 22, 673–678. (3) Layne, G.D., J.C. Rucklidge, and C.K. Brooks (1982) Astrophyllite from Kangerdlugssuaq, East Greenland. *Mineral. Mag.*, 45, 149–156. (4) Mandarino, J.A. and V. Anderson (1989) *Monteregian Treasures*. Cambridge Univ. Press, 31–32. (5) Phillips, W.R. and D.T. Griffen (1981) *Optical mineralogy*, 530.