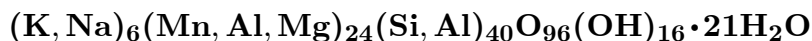


Ganophyllite



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Crystal Data: Monoclinic. *Point Group:* $2/m$. Short to long prismatic crystals, to 2.5 cm, forming rosettes; as six-sided flakes.

Physical Properties: *Cleavage:* Perfect micaceous on {001}; distinct on {100}, {010}.
Hardness = 4–4.5 $D(\text{meas.}) = 2.77\text{--}2.84$ $D(\text{calc.}) = 2.875$

Optical Properties: Transparent to translucent. *Luster:* Vitreous, brilliant. *Color:* Light brown, pale pink.

Optical Class: Biaxial (-). *Pleochroism:* Dark to pale yellow-brown. *Orientation:* $X \simeq c$; $Y \simeq a$; $Z = b$. *Dispersion:* $r < v$. $\alpha = 1.571$ $\beta = 1.610$ $\gamma = 1.611$ $2V(\text{meas.}) = \text{Small}$.

Cell Data: *Space Group:* $A2/a$. $a = 16.60$ $b = 27.13$ $c = 50.18$ $\beta = 93.96^\circ$ $Z = 8$

X-ray Powder Pattern: Harstigen mine, Sweden.

12.5 (100), 3.14 (25), 2.696 (14), 3.46 (10), 2.980 (10), 2.598 (10), 2.465 (10)

Chemistry:	(1)	(2)	(3)		(1)	(2)	(3)
SiO ₂	39.67	40.0	40.4	MgO	0.20	0.5	0.2
Al ₂ O ₃	7.95	7.9	7.9	CaO	1.11	1.0	1.5
Fe ₂ O ₃	0.90			BaO		0.6	0.3
FeO		0.4	0.3	Na ₂ O	2.18	1.3	1.1
MnO	35.15	34.0	34.1	K ₂ O	2.70	3.2	2.6
ZnO		0.2	0.6	H ₂ O ⁺	9.79	[10.9]	[11.0]
PbO	0.20			Total	99.85	[100.0]	[100.0]

(1) Pajsberg, Sweden. (2) Do.; by electron microprobe, H₂O by difference. (3) Franklin, New Jersey, USA; by electron microprobe, average of 10 analyses, H₂O by difference.

Occurrence: In manganese-rich portions of metamorphosed Zn-Mn mineral deposits.

Association: Calcite, rhodonite, caryopilite, barite, lead, garnet, manganoan biotite, pyrophanite (Harstigen mine, Sweden); rhodonite, willemite, bustamite, axinite, clinohedrite, datolite, roebingite, charlesite (Franklin, New Jersey, USA); parsettensite, caryopilite (Molinello mine, Italy).

Distribution: In Sweden, from the Harstigen mine, near Persberg, and at Långban, Värmland; and in the Sjö mine, near Grythyttan, Örebro. At the Benallt and Nant mines, Rhiw, Lleyrn Peninsula, Wales. From the Molinello and Gambatesa manganese mines, near Chiavari, Val Graveglia, Liguria, Italy. In the USA, in the Maple-Hovey deposits, west of Bridgewater, Aroostook Co., Maine, and at Franklin, Sussex Co., New Jersey. From Mont Saint-Hilaire, Quebec, Canada. In the Ananai mine, Nagaoka, Kochi Prefecture; the Noda-Tamagawa mine, Iwate Prefecture; the Kumahata mine, Shiga Prefecture; and the Osu and Yonoyama mines, Kita, Ehime Prefecture, Japan. From Broken Hill, New South Wales, Australia.

Name: From the Greek for *luster* and *leaf*, for the high luster on cleavages.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 564–565. (2) Smith, M.L. and C. Frondel (1968) The related layered minerals ganophyllite, bannisterite and stilpnomelane. *Mineral. Mag.*, 36, 893–913. (3) Kato, T. (1980) The crystal structure of ganophyllite; monoclinic subcell. *Mineral. J. (Japan)*, 10, 1–13. (4) Dunn, P.J., D.R. Peacor, J.E. Nelen, and R.A. Ramik (1983) Ganophyllite from Franklin, New Jersey; Pajsberg, Sweden; and Wales: new chemical data. *Mineral. Mag.*, 47, 563–566. (5) Eggleton, R.A. and S. Guggenheim (1986) A re-examination of the structure of ganophyllite. *Mineral. Mag.*, 50, 307–315.

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