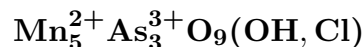


Magnussonite



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Crystal Data: Cubic. *Point Group:* $4/m\bar{3}2/m$. As fine-grained incrustations and fracture fillings; in granular aggregates, massive.

Physical Properties: *Fracture:* Conchoidal. Hardness = 3.5–4 D(meas.) = 4.14–4.49 D(calc.) = 4.55–4.62

Optical Properties: Transparent to translucent. *Color:* Grass-green, emerald-green, blue-green, pale olive-green, brownish orange. *Streak:* White. *Luster:* Vitreous to resinous. *Optical Class:* Isotropic; may be anomalously uniaxial (–). *Absorption:* $E > O$. $n = 1.980(5)$, birefringence 0.001.

Cell Data: *Space Group:* $Ia\bar{3}d$. $a = 19.680(4)$ $Z = 32$

X-ray Powder Pattern: Långban, Sweden.

2.85 (10), 3.12 (3), 1.74 (2), 8.01 (1), 4.02 (1), 1.48 (1), 5.26 (< 1)

Chemistry:	(1)	(2)	(3)		(1)	(2)	(3)
As ₂ O ₃	45.26	45.2	44.1	MgO	1.53	0.2	0.2
FeO		1.2	0.5	CaO		0.7	0.3
MnO	49.17	49.6	48.7	Cl	0.87	0.7	1.7
CuO	2.15	2.3	3.3	H ₂ O	1.21	1.5	n.d.
ZnO		0.0	2.4	–O = Cl ₂	0.19	0.2	0.4
				Total	[100.00]	101.2	100.8

(1) Långban, Sweden; recalculated to 100% after deduction of insoluble 3.68% as barite. (2) Do.; by electron microprobe, total Mn as MnO, total Cu as CuO, H₂O by TGA; corresponds to $(\text{Mn}_{4.59}\text{Cu}_{0.19}\text{Fe}_{0.11}\text{Ca}_{0.08}\text{Mg}_{0.04})_{\Sigma=5.01}\text{As}_3\text{O}_{8.90}[(\text{OH})_{1.10}\text{Cl}_{0.13}]_{\Sigma=1.23}$. (3) Sterling Hill, New Jersey, USA; by electron microprobe, total Mn as MnO, total Cu as CuO; with H₂O assumed for OH+Cl = 1, corresponds to $(\text{Mn}_{4.56}\text{Cu}_{0.29}\text{Zn}_{0.23}\text{Fe}_{0.04}\text{Ca}_{0.03}\text{Mg}_{0.03})_{\Sigma=5.18}\text{As}_3\text{O}_{9.18}[(\text{OH})_{0.66}\text{Cl}_{0.34}]_{\Sigma=1.00}$.

Occurrence: In a metamorphosed Fe–Mn orebody (Långban, Sweden); very rare in a metamorphosed stratiform zinc orebody (Sterling Hill, New Jersey, USA).

Association: Dolomite, hausmannite, hematite, calcite, trigonite, dixenite, manganiferous serpentine (Långban, Sweden); katoptrite, sonolite, hausmannite, manganosite, magnetite (Brattfors mine, Sweden); zincite, willemite, franklinite, kraisslite (Sterling Hill, New Jersey, USA).

Distribution: From Långban, Värmland, and in the Brattfors mine, Nordmark, Värmland, Sweden. In the USA, from Sterling Hill, Ogdensburg, Sussex Co., New Jersey.

Name: For Nils Harald Magnusson (1890–1976), formerly Director, Geological Survey of Sweden, for his contributions to knowledge of the Långban mine.

Type Material: Swedish Museum of Natural History, Stockholm, Sweden; The Natural History Museum, London, England, 1963,233; Harvard University, Cambridge, Massachusetts, USA, 106140, 106337.

References: (1) Gabrielson, O. (1957) Magnussonite, a new arsenite mineral from the Långban mine in Sweden. *Arkiv Mineral. Geol.*, 2(4), 133–135. (2) (1957) *Amer. Mineral.*, 42, 581 (abs. ref. 1). (3) Moore, P.B. (1970) Stenhuggarite, a new mineral from Långban and new data on magnussonite. *Arkiv Mineral. Geol.*, 5, 55–62. (4) Moore, P.B. and T. Araki (1979) Magnussonite, manganese arsenite, a fluorite derivative structure. *Amer. Mineral.*, 64, 390–401. (5) Dunn, P.J. and R.A. Ramik (1984) Magnussonite: new chemical data, an occurrence at Sterling Hill, New Jersey, and new data on a related phase from the Brattfors mine, Sweden. *Amer. Mineral.*, 69, 800–802. (6) Hålenius, U. and B. Lindqvist (1996) Chromophoric divalent iron in optically anisotropic magnussonite. *Eur. J. Mineral.*, 8, 25–34.

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