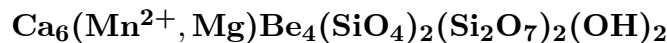


Harstigit



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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Crystals stout prismatic, to 2 cm, terminated by {110} and small {221}.

Physical Properties: *Fracture:* Small conchoidal to splintery. *Tenacity:* Brittle. Hardness = 5.5 D(meas.) = 3.16 D(calc.) = 3.19

Optical Properties: Transparent to translucent. *Color:* Colorless. *Luster:* Vitreous. *Optical Class:* Biaxial (+). *Orientation:* $X = a$; $Y = b$; $Z = c$. *Dispersion:* $r < v$, weak. $\alpha = 1.678$ $\beta = 1.68$ $\gamma = 1.683$ $2V(\text{meas.}) = 52^\circ$

Cell Data: *Space Group:* $Pnam$. $a = 9.793(2)$ $b = 13.636(3)$ $c = 13.830(3)$ $Z = 4$

X-ray Powder Pattern: Harstigen mine, Sweden.

2.695 (100), 2.817 (50), 2.788 (50), 2.268 (50), 4.35 (40), 3.222 (40), 3.545 (30)

Chemistry:

	(1)
SiO ₂	40.00
MnO	7.05
BeO	11.49
MgO	0.94
CaO	37.82
F	0.15
H ₂ O	2.48
Total	99.93

(1) Harstigen mine, Sweden; corresponds to $\text{Ca}_{5.88}(\text{Mn}_{0.86}\text{Mg}_{0.20})_{\Sigma=1.06}\text{Be}_{4.00}\text{Si}_{5.80}\text{O}_{21.34}(\text{OH})_{2.40}$.

Occurrence: A rare mineral found in open fissures in a metamorphosed manganese deposit.

Association: Hausmannite, dolomite, calcite, rhodonite, andradite, manganoan humite, barite.

Distribution: At the Harstigen mine, near Persberg, Värmland, Sweden.

Name: For the Harstigen mine, Sweden, where it was found.

Type Material: Swedish Museum of Natural History, Stockholm, Sweden.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 532–533.

(2) Moore, P.B. (1968) Relations of the manganese-calcium silicates, gageite and harstigit. Amer. Mineral., 53, 309–315. (3) Moore, P.B. (1968) Relation of the manganese-calcium silicates,

gageite and harstigit: a correction. Amer. Mineral., 53, 1418–1420. (4) Hesse, K.-F. and G. Stümpel (1986) Crystal structure of harstigit, $\text{MnCa}_6\text{Be}_4[\text{SiO}_4]_2[\text{Si}_2\text{O}_7]_2(\text{OH})_2$. Zeits. Krist., 177,

143–148.