

Crystal Data: Monoclinic, pseudo-orthorhombic. *Point Group:* $2/m$. Prismatic $\parallel$ [001]; prism zone typically tapered, to 2 mm. *Twinning:* On {101}, forming penetration and contact twins, with cruciform and butterfly shapes, very common.

Physical Properties: *Tenacity:* Brittle. Hardness = $\sim 5\text{--}6$ VHN = 572–673 (100 g load). D(meas.) = 6.72 D(calc.) = 6.95

Optical Properties: Opaque. *Color:* Silver-white to steel-gray in polished section. *Luster:* Metallic. *Pleochroism:* Distinct, in pure white and pinkish white. *Anisotropism:* Strong, in yellow and red tints.

$R_1\text{--}R_2$: (400) 49.1–54.3, (420) 49.4–55.7, (440) 49.5–56.1, (460) 49.7–56.4, (480) 49.9–56.8, (500) 50.2–57.1, (520) 50.7–57.0, (540) 51.3–56.7, (560) 52.0–56.3, (580) 52.7–55.8, (600) 53.2–55.1, (620) 53.6–54.5, (640) 53.9–53.9, (660) 54.1–53.4, (680) 54.2–52.7, (700) 54.4–52.4

Cell Data: *Space Group:* $P2_1/c$. $a = 10.00$ $b = 5.95$ $c = 6.73$ $\beta = 90^\circ 00'$ $Z = 8$

X-ray Powder Pattern: Gudmundstorp, Sweden.
2.55 (10), 1.917 (7), 4.09 (5), 1.416 (5), 2.81 (4), 1.098 (4), 1.024 (4)

Chemistry:

	(1)	(2)	(3)
Fe	26.79	26.4	26.63
Ni	trace		
Sb	57.31	58.3	58.08
As		0.2	
S	15.47	14.6	15.29
Total	99.57	99.5	100.00

(1) Gudmundstorp, Sweden; corresponds to $\text{Fe}_{0.99}\text{Sb}_{0.98}\text{S}_{1.00}$. (2) Vlastějovice, Czech Republic; by electron microprobe, corresponds to $\text{Fe}_{0.98}\text{Sb}_{0.99}\text{As}_{0.01}\text{S}_{0.94}$. (3) FeSbS.

Mineral Group: Arsenopyrite group.

Occurrence: A late-stage hydrothermal mineral formed in sulfide deposits.

Association: Pyrite, pyrrhotite, chalcopyrite, lead sulfantimonides, antimony, bismuth, kermesite, arsenopyrite, argentian gold.

Distribution: In Sweden, from Gudmundstorp, 3 km north of Sala, Västmanland [TL]; also at Boliden, Holmtjärn, Malånäs, Tunaberg, and in the Vena mines, near Askersund, Örebro. In Finland, from Kalliolampi, near Nurma. At Sulitjelma, Norway. From Waldsassen, Bavaria, Germany. In the Salsigne mine, 15 km north of Carcassonne, Aude, France. In the Czech Republic, at Vlastějovice, Sázava. From the Pezinok mine, Male Karpaty Mountains, Slovakia. In Ireland, at the Shallee and Gortnadyne mines, Silvermines, Co. Tipperary. From the Ilímaussaq intrusion, southern Greenland. An ore at the Lac Nicolet antimony mine, South Ham, Quebec; in the Hemlo gold deposit, Thunder Bay district; and from near Red Lake, Ontario, Canada. At Broken Hill, New South Wales, Australia. From Askot, Pithoragarh district, and in the Kolar Gold Fields, Karnataka, India. A number of other minor occurrences are known.

Name: For the occurrence at Gudmundstorp, Sweden.

Type Material: n.d.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 325–326. (2) Buerger, M.J. (1939) The crystal structure of gudmundite (FeSbS) and its bearing on the existence field of the arsenopyrite structural type. *Zeits. Krist.*, 101, 290–316. (3) Berry, L.G. and R.M. Thompson (1962) X-ray powder data for the ore minerals. *Geol. Soc. Amer. Mem.* 85, 106–107. (4) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 217.

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