Hisingerite $Fe_2^{3+}Si_2O_5(OH)_4 \cdot 2H_2O$

Crystal Data: Amorphous to poorly crystalline. *Point Group:* n.d. Commonly massive, compact; may be minutely spherical.

Physical Properties: *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 2.5–3
D(meas.) = 2.43–2.67 D(calc.) = n.d.

Optical Properties: Transparent to translucent. *Color:* Black, dark brown; dark green masses may turn brown in light; in thin section, greenish brown or golden yellow. *Streak:* Yellowish brown. *Luster:* Resinous, vitreous, greasy.
Optical Class: Isotropic; locally anisotropic. n = 1.50–1.66

Cell Data: *Space Group:* n.d.

X-ray Powder Pattern: Riddarhyttan, Sweden; easily confused with neotocite.
4.45 (s), 3.53 (s), 2.56 (s), 1.71 (s), 1.54 (s)

Chemistry:

	(1)	(2)
SiO_2	35.08	34.15
Al_2O_3	1.38	
Fe_2O_3	40.28	45.38
FeO	2.23	
MgO	0.35	
CaO	0.36	
H_2O	20.78	20.47
Total	100.46	100.00

(1) Riddarhyttan, Sweden. (2) $Fe_2Si_2O_5(OH)_4 \cdot 2H_2O$.

Occurrence: A secondary mineral, formed from the weathering, or late-stage deuteric or hydrothermal alteration, of iron-bearing silicates or sulfides; by late-stage hydrothermal activity during sulfide ore deposition.

Association: Olivine, pyroxene, pyrite, chalcopyrite, pyrrhotite.

Distribution: In small amounts, easily overlooked, from many localities worldwide. Some for described material are: at Riddarhyttan, Västmanland, and Långban, Värmland, Sweden. From Fagul Cetatii, Balan, Romania. At Salberg, Norway. Found near Helsingfors, Finland. From Llallagua, Bolivia. In the USA, in the Hibbing district, St. Louis Co., Minnesota; in Arizona, at the Castle Dome mine, Gila Co., and on the Mildren and Steppe claims, Cababi district, Pima Co.; at the Gap Nickel mine, Lancaster Co., Pennsylvania. In Canada, from the Wilcox mine, Parry Sound, Ontario; at the Tetrault mines, near Montauban-les-mines, Quebec; and from Goldfields, Saskatchewan. In the Kawayama mine, Yamaguchi Prefecture; the Sano mine, Wakayama Prefecture; the Suzuyama mine, Kagoshima Prefecture; and other localities in Japan.

Name: For the Swedish chemist and mineralogist, Vilhelm Hisinger (1766–1852).

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 702–703. (2) Whelan, J.A. and S.S. Goldich (1961) New data for hisingerite and neotocite. Amer. Mineral., 46, 1412–1423. (3) Eggleton, R.A., J.H. Pennington, R.S. Freeman, and I.M. Threadgold (1983) Structural aspects of the hisingerite-neotocite series. Clay Minerals, 18, 21–31. (4) Farmer, V.C. (1992) Possible confusion between so-called ferrihydrites and hisingerites. Clay Minerals, 27, 373–378.