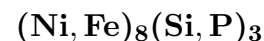


Perryite



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Crystal Data: Hexagonal (synthetic). *Point Group:* $3m$. In narrow laths, to 1 cm long, exsolved $\parallel \{111\}$, and in blebs along grain boundaries of kamacite in meteorites.

Physical Properties: *Tenacity:* Ductile. Hardness = n.d. D(meas.) = n.d. D(calc.) = 7.63(1)

Optical Properties: Opaque. *Color:* Cream-yellow in reflected light. *Optical Class:* Uniaxial. *Anisotropism:* Distinct. *Birefractance:* Weak. R: n.d.

Cell Data: *Space Group:* $R3c$ (synthetic). $a = 6.640(2)$ $c = 37.982(7)$ $Z = 12$

X-ray Powder Pattern: Synthetic.

1.977 (100), 1.924 (100), 2.150 (64), 2.103 (64), 1.778 (41), 2.613 (33), 2.585 (33)

Chemistry:

	(1)	(2)
Fe	4.0	9.4
Co	0.04	0.05
Ni	80.5	75.6
Cu	0.29	0.20
Si	12.0	11.8
P	4.1	3.4
Total	100.93	100.45

(1) Horse Creek meteorite; by electron microprobe, corresponds to $(\text{Ni}_{7.35}\text{Fe}_{0.39})_{\Sigma=7.74}(\text{Si}_{2.28}\text{P}_{0.72})_{\Sigma=3.00}$. (2) Mt. Egerton meteorite; by electron microprobe, corresponds to $(\text{Ni}_{7.29}\text{Fe}_{1.00})_{\Sigma=8.29}(\text{Si}_{2.37}\text{P}_{0.63})_{\Sigma=3.00}$.

Occurrence: In anomalously silicon-rich mesosiderite and enstatite chondrite meteorites, probably formed by exsolution from kamacite.

Association: Kamacite, troilite, schreibersite (Horse Creek, Kota-Kota meteorites); kamacite, enstatite (South Oman meteorite).

Distribution: In the Horse Creek and Mount Egerton iron meteorites, and the Kota-Kota, South Oman, St. Marks, Norton County, Indarch, and other enstatite chondrite meteorites.

Name: For Stuart Hoffman Perry (1874–1957), American newspaperman and leading private collector of meteorites, who originally described the Horse Creek meteorite.

Type Material: National Museum of Natural History, Washington, D.C., USA.

References: (1) Fredriksson, K. and E.P. Henderson (1965) The Horse Creek, Baca County, Colorado, iron meteorite. *Trans. Amer. Geophys. Union*, 46, 121 (abs.). (2) (1967) *Amer. Mineral.*, 52, 559 (abs. ref. 1). (3) Reed, S.J.B. (1968) Perryite in the Kota-Kota and South Oman enstatite chondrites. *Mineral. Mag.*, 36, 850–854. (4) Wai, C.M. (1970) The metal phase of Horse Creek, Mount Egerton, and Norton County enstatitic meteorites. *Mineral. Mag.*, 37, 905–908. (5) Buchwald, V.F. (1975) *Handbook of iron meteorites*, v. II, 661–664. (6) Okada, A., K. Kobayashi, T. Ito, and T. Sakurai (1991) Structure of synthetic perryite, $(\text{Ni, Fe})_8(\text{Si, P})_3$. *Acta Cryst.*, C47, 1358–1361. (7) Saini, G.S., L.D. Calvert, and J.B. Taylor (1964) Compounds of the type M_5X_2 : Pd_5As_2 , Ni_5Si_2 , and Ni_5P_2 . *Can. J. Chem.*, 42, 1511–1517.