

Tetraferroplatinum

≈PtFe

©2001-2005 Mineral Data Publishing, version 1

Crystal Data: Tetragonal. *Point Group:* n.d. As tiny grains typically embedded in other Pt–Fe alloys.

Physical Properties: Hardness = n.d. VHN = 306–401. D(meas.) = n.d. D(calc.) = [15.7] Ferromagnetic.

Optical Properties: Opaque. *Color:* White in reflected light. *Luster:* Metallic. *Anisotropism:* Weak, in oil.

R: (400) – , (420) 58.5, (440) 59.9, (460) 61.4, (480) 61.9, (500) 62.7, (520) 63.7, (540) 64.2, (560) 64.5, (580) 64.8, (600) 65.0, (620) 64.8, (640) 64.8, (660) 64.6, (680) 64.9, (700) 65.2

Cell Data: *Space Group:* n.d. $a = 3.850(5)$ $c = 3.693(6)$ $Z = [2]$

X-ray Powder Pattern: Mooihoek mine, South Africa.

2.191 (100), 1.920 (70b), 1.342 (60b), 1.152 (50b), 1.099 (30b), 2.721 (20), 1.709 (20)

Chemistry:

	(1)	(2)	(3)
Pt	78.0	77.0	77.74
Rh		0.8	
Ir	0.32		
Fe	14.9	22.0	22.26
Cu	6.1		
Ni	0.50		
Sb	0.40		
Total	100.22	100.6	100.00

(1) Mooihoek mine, South Africa; by electron microprobe, corresponding to $(\text{Pt}_{1.03}\text{Ir}_{0.01})_{\Sigma=1.04}(\text{Fe}_{0.69}\text{Cu}_{0.24}\text{Ni}_{0.02}\text{Sb}_{0.01})_{\Sigma=0.96}$. (2) Sorashigawa placers, Japan; by electron microprobe, corresponding to $\text{Pt}_{0.50}\text{Rh}_{<0.01}\text{Fe}_{0.50}$. (3) PtFe.

Occurrence: In a hortonolite dunite (Mooihoek, South Africa); in Uralian ultramafics and placers derived therefrom.

Association: Geversite, irarsite, majakite, sperrylite, stannopalladinite, plumbopalladinite, chalcopyrite, pentlandite, chromite, galena, magnetite.

Distribution: In South Africa, from the Mooihoek [TL] and Onverwacht mines, in the Merensky Reef, Bushveld complex, Transvaal. At the Taimyr and Noril'sk-I mines, Noril'sk region, western Siberia; from the Ioko-Dovyren massif, Baikal region, southern Siberia; at the Kytlym and Uktus complexes, and in placers around Nizhni Tagil, Ural Mountains; and at the Konder massif, Aldan Shield, Sakha Russia. From Yubdo, Ethiopia. At the Herbeira ultramafic massif, Cabo Ortegal, [notinColombiaG]??, Spain. In the Pirogues River, New Zealand. From the Sorashigawa placers, ??Prefecture, Japan. In Canada, in the Tulameen and Similkameen Rivers, British Columbia, and in concentrates from the Wellgreen Cu–Ni–Pt–Pd deposit, Yukon Territory. At Nye, Stillwater Co., Montana, USA.

Name: For crystallization in the TETRAgonal system, and iron, FERRum, and PLATINUM in its composition.

Type Material: National Museum of Natural History, Washington, D.C., USA, 136552.

References: (1) Cabri, L.J. and C.E. Feather (1975) Platinum–iron alloys: a nomenclature based on a study of natural and synthetic alloys. *Can. Mineral.*, 13, 117–126. (2) (1976) *Amer. Mineral.*, 61, 341 (abs. ref. 1). (3) Cabri, L.J., Ed. (1981) Platinum group elements: mineralogy, geology, recovery. *Can. Inst. Min. & Met.*, 144–145. (4) Tarkian, M. (1987) Compositional variations and reflectance of the common platinum-group minerals. *Mineral. Petrol.*, 36, 169–190. (5) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 565.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of Mineral Data Publishing.