

Crystal Data: Cubic. *Point Group:* $4/m\bar{3}2/m$. Cubic crystals, typically distorted, to 1.5 cm; commonly as grains or scales, rarely as nuggets or lumps up to 30 kg. *Twinning:* On {111}, as interpenetrant contact twins.

Physical Properties: *Fracture:* Hackly. *Tenacity:* Malleable and ductile. Hardness = 4–4.5 VHN = 297–339 (100 g load). D(meas.) = 14–19 D(calc.) = 21.472 Nonmagnetic to distinctly magnetic when rich in iron.

Optical Properties: Opaque. *Color:* Whitish steel-gray to dark gray; in polished section, white. *Luster:* Metallic.

R: (400) 60.5, (420) 62.3, (440) 63.8, (460) 65.1, (480) 66.3, (500) 67.5, (520) 68.6, (540) 69.5, (560) 70.2, (580) 70.7, (600) 71.2, (620) 71.6, (640) 71.8, (660) 72.1, (680) 72.4, (700) 72.8

Cell Data: *Space Group:* $Fm\bar{3}m$. $a = 3.9231$ $Z = 4$

X-ray Powder Pattern: Synthetic.

2.265 (100), 1.9616 (53), 1.1826 (33), 1.3873 (31), 0.8008 (29), 0.9000 (22), 0.8773 (20)

Chemistry:

	(1)	(2)	(3)
Pt	86.20	79.48	92.2
Ir	0.85	0.82	
Ir–Os	0.95	1.41	
Rh	1.40	0.75	1.2
Pd	0.50	0.49	1.3
Au	1.00	0.49	
Cu	0.60		0.5
Fe	7.80	16.50	5.3
gangue	0.95		
Total	100.25	99.94	100.5

(1) Chocó, Colombia; corresponds to $Pt_{0.71}Fe_{0.22}Rh_{0.02}Cu_{0.02}Ir_{0.01}Os_{0.01}Pd_{0.01}$. (2) Birbir River, Ethiopia; corresponds to $Pt_{0.56}Fe_{0.40}Rh_{0.01}Ir_{0.01}Os_{0.01}Pd_{0.01}$. (3) Nizhni Tagil, Russia; by electron microprobe, corresponds to $Pt_{0.79}Fe_{0.16}Rh_{0.02}Pd_{0.02}Cu_{0.01}$.

Occurrence: Chiefly in placer deposits, or in mafic and ultramafic igneous rocks; rarely in hydrothermal quartz veins or contact metamorphic deposits.

Association: Pt–Fe alloys, chalcopyrite, chromite, magnetite.

Distribution: From many deposits world-wide. In the Pinto River, near Papayan, in the Department of Chocó, Cauca, Colombia [TL]. In the USA, from Platinum Creek, Goodnews Bay, Alaska; in California, in a number of placers, as in Trinity Co.; and at Oroville, Butte Co. In Oregon, at Cape Blanco, Port Orford, Curry Co. In Canada, at Rivière-du-Loup and Rivière des Plantes, Beauce Co., Quebec; in British Columbia, in the Kamloops district, on the Fraser and Tranquille Rivers, and in the Similkameen district, on Granite, Cedar, and Olivine Creeks, tributaries to the Tulameen River; in Alberta, near Edmonton. In Russia, in the Ural Mountains, in a large district surrounding Nizhni Tagil; good crystals from the Konder massif, Aldan Shield, Sakha. In South Africa, at a number of deposits along the Merensky Reef of the Bushveld complex, Transvaal.

Name: From the Spanish *platina*, diminutive of *plata*, *silver*.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 106–109. (2) Cabri, L.J. and C.E. Feather (1975) Platinum–iron alloys; nomenclature based on a study of natural and synthetic alloys. *Can. Mineral.*, 13, 117–126. (3) Harris, D.C. and L.J. Cabri (1991) Nomenclature of platinum-group element alloys: review and revision. *Can. Mineral.*, 29, 231–237. (4) Hull, ?? and ?? Davey (1921) ??title?? *Strukturberichte??*, 1, 71–?? (5) (1953) NBS Circ. 539, 1, 31. (6) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 441.

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