Iridosmine (Os, Ir)

Crystal Data: Hexagonal. *Point Group:* $6/m\ 2/m\ 2/m$. Rounded to sub-rounded grains, rarely hexagonal in cross-section; as laths in iron-bearing platinum.

Physical Properties: *Cleavage:* Perfect but difficult on {0001}. *Tenacity:* Slightly malleable to brittle. Hardness = 6–7 VHN = 974–1064 (100 g load). D(meas.) = n.d. D(calc.) = 22.15

Optical Properties: Opaque. *Color:* White, with a bluish gray tinge in reflected light. *Streak:* Gray. *Luster:* Metallic. *Anisotropism:* Weak to moderate.
R_1–R_2: (400) 62.6–63.6, (420) 63.2–64.2, (440) 63.8–64.8, (460) 64.3–65.3, (480) 64.6–65.6, (500) 64.8–66.0, (520) 64.6–66.2, (540) 64.3–66.2, (560) 64.0–66.0, (580) 63.5–65.7, (600) 63.1–65.4, (620) 62.8–65.4, (640) 62.6–65.4, (660) 62.4–65.5, (680) 62.2–65.6, (700) 62.0–65.8

Cell Data: *Space Group:* $P6_3/mmc$. $a = 2.724(3)$ $c = 4.333(7)$ Z = [2]

X-ray Powder Pattern: Spruce Creek, Canada.
2.168 (100), 2.071 (80), 1.231 (80), 0.8478 (70), 0.8136 (70), 0.9135 (60), 0.8736 (60)

Chemistry:

	(1)	(2)
Os	55.5	55.7
Ir	42.0	43.5
Ru	1.3	1.5
Pt	0.3	
Pd		
Rh	0.2	
Fe	0.3	0.2
Cu		0.4
Total	99.6	101.3

(1) Ruby Creek, Canada; by electron microprobe. (2) Sorashigawa placer, Japan; by electron microprobe.

Occurrence: In magmatic segregation deposits, and concentrated into placers on their reduction by weathering.

Association: Osmiridium, irarsite, laurite, isoferroplatinum, platinum, rutheniridosmine.

Distribution: In Canada, in British Columbia, from Ruby Creek, Atlin district; Spruce Creek; and Granite Creek, in the Tulameen River area. From the Sorashigawa placer and other localities in Japan. From the Heazlewood Complex and the Adamsfield district, Tasmania, Australia. In the Guma Water placers, Sierra Leone. From near Vershilo, Bourgas district, Bulgaria. From Vourinos, Greece. At Anduo, Tibet, China. In the Inagli and Konder massifs, Aldan Shield, Yakutia; and a number of other less well defined localities in the USSR.

Name: For the composition, intermediate between iridium and osmium.

Type Material: n.d.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 111–113. (2) Harris, D.C. and L.J. Cabri (1973) The nomenclature of the natural alloys of osmium, iridium and ruthenium based on new compositional data of alloys from world-wide occurrences. Can. Mineral., 12, 104–112. (3) (1975) Amer. Mineral., 60, 946 (abs. ref. 2). (4) Cabri, L.J., Ed. (1981) Platinum group elements: mineralogy, geology, recovery. Can. Inst. Min. & Met., 112–113.