

Crystal Data: Cubic. *Point Group:* $4/m\bar{3}2/m$. Massive granular, also in thin coatings; typically seen in polished section as “decomposed” into a predominantly coarse myrmekitic intergrowth of gold and bismuth in which are wedges of maldonite, or rimming gold grains.

Physical Properties: *Cleavage:* Distinct on {001} and {110}. *Fracture:* Conchoidal. *Tenacity:* Malleable and sectile. Hardness = 1.5–2 VHN = 147–264 (100 g load). D(meas.) = 15.46 D(calc.) = 15.70

Optical Properties: Opaque. *Color:* Silver-white with pinkish tinge on fresh surface, tarnishes copper-red to black. *Luster:* Metallic.

R: (400) 48.3, (420) 49.0, (440) 50.2, (460) 51.5, (480) 53.2, (500) 54.9, (520) 56.6, (540) 58.0, (560) 59.0, (580) 59.6, (600) 59.9, (620) 60.0, (640) 60.0, (660) 60.0, (680) 60.0, (700) 60.1

Cell Data: *Space Group:* $Fd\bar{3}m$. $a = 7.971$ $Z = 8$

X-ray Powder Pattern: Nuggety Reef, Australia.

2.41 (100), 1.537 (60), 2.30 (50), 1.412 (50), 2.82 (40), 1.038 (40), 1.629 (30)

Chemistry:	(1)	(2)	(3)	(4)
Au	65.12	63.80	65.92	65.36
Bi	34.88	36.80	34.07	34.64
Total	100.00	100.60	99.99	100.00

(1) Nuggety Reef, Australia; corresponds to Au_{1.99}Bi_{0.99}. (2) Salsigne mine, France; by electron microprobe, corresponds to Au_{1.94}Bi_{1.06}. (3) Tyrnyauz deposit, Russia; by electron microprobe, corresponds to Au_{2.02}Bi_{0.98}. (4) Au₂Bi.

Occurrence: Formed below 373 °C, under hydrothermal conditions in gold-quartz veins and stockworks, and calc-silicate skarns.

Association: Gold, bismuth, bismuthinite, joséite, arsenopyrite, löllingite, pyrite, pyrrhotite, chalcopyrite, cubanite, scheelite, apatite, siderite, calcite, quartz.

Distribution: In Australia, in Victoria, near Maldon, from Nuggety Reef [TL], and in the Eagle Hawk mine, Union Reef; at Kingsgate and from the Lucky Draw mine, New South Wales. In the Salsigne gold deposit, 15 km north of Carcassone, Aude, and from Scoufour, Cantal, France. At the Ortosa Au–Bi–Te deposit, Asturias, Spain. From Baita ??, Romania. In the Radzimowice deposit, Kaczawa Mountains, Poland. At the Orlik deposit, near Humpolec, Czech Republic. From the Tyrnyauz W–Mo deposit, left bank of the Baksan River Valley, northern Caucasus Mountains, Russia. At Syrymbet, Kazakhstan. From Ingram, Ontario, Canada. In the USA, in Alaska, in the Shotgun deposit, about 150 km north of Dillingham, and on the Pogo claims, 145 km southeast of Fairbanks. A number of other minor occurrences are known.

Name: For the locality at Maldon, Australia.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana’s system of mineralogy, (7th edition), v. I, 95–96. (2) Boyer, F. and P. Picot (1963) Sur la présence de maldonite (Au₂Bi) à Salsigne (Aude). Bull. Soc. fr. Minéral., 86, 429 (in French). (3) Prokuronov, P.V., Y.I. Dryzhak, and V.I. Shkurskii (1976) First find of maldonite in the USSR. Zap. Vses. Mineral. Obshch., 105, 453–456 (in Russian). (4) Jurriaanse, T. (1935) The crystal structure of Au₂Bi. Zeits. Krist., 90, 322–329. (5) Berry, L.G. and R.M. Thompson (1962) X-ray powder data for the ore minerals. Geol. Soc. Amer. Mem. 85, 15. (6) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 348.