

Crystal Data: Hexagonal. *Point Group:* $\bar{3} 2/m$. Ribbonlike sheets and plates, to 5 cm, rarely with straight edges.

Physical Properties: *Cleavage:* {0001}, perfect. *Tenacity:* Flexible. *Hardness* = 2 VHN = 29–43 (25 g load). *D(meas.)* = 8.18 *D(calc.)* = [8.67] ??ck

Optical Properties: Opaque. *Color:* Silver-white; white in polished section. *Luster:* High metallic, tarnishing lead-gray, iridescent, steel-blue to iron-black. *Anisotropism:* Nearly isotropic in basal sections, transverse sections moderately anisotropic in greenish gray to dark greenish gray. *R₁–R₂:* (400) 51.7–53.7, (420) 51.6–53.9, (440) 51.6–54.0, (460) 51.6–54.4, (480) 51.6–54.7, (500) 51.6–55.0, (520) 51.6–55.2, (540) 51.5–55.4, (560) 51.3–55.4, (580) 51.1–55.5, (600) 50.9–55.4, (620) 50.6–55.3, (640) 50.3–55.1, (660) 50.0–54.8, (680) 49.7–54.6, (700) 49.3–54.3

Cell Data: *Space Group:* $R\bar{3}m$. *a* = 4.24(1) *c* = 39.69(6) *Z* = 3

X-ray Powder Pattern: Glacier Gulch, Canada.
3.07 (10), 2.24 (5), 2.11 (5), 1.744(3), 1.537 (3), 4.38 (2), 3.61 (2)

Chemistry:	(1)	(2)	(3)	(4)
Bi	79.15	81.23	82.7	81.34
Te	15.93	14.67	12.0	12.42
Se	1.48	2.84		
S	3.15	1.46	6.0	6.24
Total	99.71	100.20	100.7	100.00

(1) San José, Brazil; corresponds to Bi_{4.00}Te_{1.32}Se_{0.20}S_{1.04}. (2) Do.; corresponds to Bi_{4.00}Te_{1.18}Se_{0.37}S_{0.47}. (3) Glacier Gulch, Canada; corresponds to Bi_{4.00}Te_{0.95}S_{1.89}. (4) Bi₄TeS₂.

Occurrence: In bismuth-rich hydrothermal deposits.

Association: Gold, bismuth, bismuthinite, galenobismutite, hessite, cosalite, laitakarite, tetradymite, joséite-B.

Distribution: From San José, near Marianna, Minas Gerais, Brazil [TL]. In Canada, at Glacier Gulch, Hudson Bay Mountain, near Smithers; and the Windpass mine, near Chu Chua, British Columbia; and in Yukon Territory, from placers in Clear Creek, McQuesten district, and in Hight Creek, Mayo district. In Spain, at Serrania de Ronda, Málaga Province. From the Carrock mine, Caldbeck Fells, and the Coniston mines, Cumbria, and at Penlee Quarry, Cornwall, England. From Băița (Rézbánya), Romania. In the Sosukchan deposit, northeastern Sakha, and the Tyrnyauz W–Mo deposit, left bank of the Baksan River Valley, northern Caucasus Mountains, Russia. At Kingsgate, New South Wales, and Maldon, Victoria, Australia. From Chilui, Fujian Province, China. In the Tsumo mine, about 50 km northwest of Hiroshima City, Akita Prefecture, Japan. Additional localities are increasingly becoming known.

Name: For the locality at San José in Brazil.

Type Material: National Museum of Natural History, Washington, D.C., USA, R400.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 166–167. (2) R.M. Thompson (1949) The telluride minerals and their occurrence in Canada. *Amer. Mineral.*, 34, 342–382. (3) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 272.