

Crystal Data: Monoclinic, pseudo-orthorhombic. *Point Group:* $2/m$. Crystals microscopic, rare; earthy to pulverulent, compact granular, massive.

Physical Properties: *Fracture:* Uneven to earthy when massive. Hardness = 4.5
D(meas.) = 8.64–9.22 D(calc.) = 10.4

Optical Properties: Transparent in very small fragments. *Color:* Grayish green, greenish yellow to bright yellow. *Streak:* Gray to yellow. *Luster:* Subadamantine to dull, earthy.
Optical Class: Biaxial. *Dispersion:* High. $n = > 2.42$ $2V(\text{meas.}) = \text{n.d.}$

Cell Data: *Space Group:* $P2_1/c$. $a = 5.851$ $b = 8.169$ $c = 7.513$ $\beta = 112^\circ 58'$ $Z = 4$

X-ray Powder Pattern: Colavi, Bolivia.
3.232 (10), 2.676 (9), 1.670 (8), 1.640 (8), 1.951 (7.5), 1.740 (7.5), 1.167 (7)

Chemistry: Modern analyses of authenticated material are lacking.

Polymorphism & Series: Dimorphous with sphaerobismoite.

Occurrence: An oxidation product of bismuth.

Association: Bismuth, bismutite, cassiterite.

Distribution: From near Colavi, at Tazna, and Llallagua, Bolivia. In the USA, at the Harding mine, Dixon, Taos Co., New Mexico; at the Victor mine, Rincon, and in a number of the pegmatites at Pala, San Diego Co., and near Baker, San Bernardino Co., California; an ore mineral in the Missouri mine, Park Co., Colorado. In the Ebisu mine, Gifu Prefecture, Japan. Numerous localities for bismuth oxides have been reported, but modern confirmation is required, as most have proven to be carbonates, etc.

Name: For BISMuth in its composition.

Type Material: Harvard University, Cambridge, Massachusetts, USA, 97831.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 599–601. (2) Frondel, C. (1943) Mineralogy of the oxides and carbonates of bismuth. *Amer. Mineral.*, 28, 521–535. (3) Corria Neves, J.M., J.E. Lopes Nunes, T.G. Sahama, M. Lehtinen, O. von Knorring (1974) Bismuth and antimony minerals in the granite pegmatites of northern Mozambique. *Rev. Cienc. Geol., Ser. A*, 7, 1–37. (4) (1975) *Chem. Abs.*, 83, 190 (abs. ref. 3).