

Crystal Data: Monoclinic. *Point Group:* 2/m. As tabular to prismatic crystals, to 2 mm, with {10 $\bar{1}$ }, {010}, {100}, {20 $\bar{1}$ }, {11 $\bar{1}$ }, {110}, {21 $\bar{1}$ }. Also as mammillary crystalline or smooth spherical aggregates.

Physical Properties: *Cleavage:* {100}, indistinct. *Fracture:* Subconchoidal. Hardness = 4.5–5 D(meas.) = 7.14 D(calc.) = 6.95

Optical Properties: Transparent to translucent. *Color:* Sulfur-yellow, pale yellow, yellowish green, black; in transmitted light, pale yellow to colorless. *Luster:* Resinous to adamantine. *Optical Class:* Biaxial (+). *Dispersion:* $r < v$, strong. $\alpha = 2.14(1)$ $\beta = 2.15(1)$ $\gamma = 2.18(1)$ $2V(\text{meas.}) = 44(2)^\circ$

Cell Data: *Space Group:* $P2_1/c$. $a = 10.831(2)$ $b = 7.430(2)$ $c = 7.000(2)$ $\beta = 107.08(2)^\circ$ $Z = 4$

X-ray Powder Pattern: Neuhilfe mine, Germany. 3.239 (100b), 3.116 (40), 2.725 (30), 6.62 (20), 4.233 (20), 2.526 (20), 2.201 (20)

Chemistry:	(1)	(2)	(3)
P ₂ O ₅		1.63	
As ₂ O ₅	14.12	16.52	19.48
Bi ₂ O ₃	82.41	80.08	78.99
Fe ₂ O ₃	0.51		
H ₂ O	1.92	1.54	1.53
Total	98.96	99.77	100.00

(1) Neuhilfe mine, Germany. (2) Do.; corresponds to Bi_{2.00}O[(AsO₄)_{0.84}(PO₄)_{0.13}] _{$\Sigma=0.97$} (OH)_{0.99}. (3) Bi₂O(AsO₄)(OH).

Occurrence: As a rare secondary mineral in the oxidized zone of bismuth- and arsenic-bearing mineral deposits.

Association: Bismutite, eulytite, erythrite, bismutostibiconite, beyerite, preisingerite, walpurgite, mixite, conichalcite, torbernite, quartz.

Distribution: In Germany, in Saxony, at the Neuhilfe, the Weisser Hirsch, and the Junge Kalbe mines, Neustädtel-Schneeberg; from Gadernheim, near Bensheim, Hesse; and at Neubulach and the Schmiedestollen, near Wittichen, Black Forest. From near Smrkovec, Slavkovský Les Mountains, about 10 km north-northeast of Mariánské Lázně (Marienbad), Czech Republic. In the USA, in Utah, at the Mammoth mine, Tintic district, Juab Co., on Gold Hill, Tooele Co., and from the Northern Spy mine, Utah Co.

Name: Derivation not explicitly stated. Probably from the Greek for *incomplete*, as the composition was undetermined when the mineral was first described.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 792–793. (2) Fischer, E. (1956) Über Morphologie und chemische Zusammensetzung von Atelestite. Heidelberger Beiträge zur Mineralogie und Petrographie, 5, 113–117 (in German). (3) Culver, K.B. and L.G. Berry (1963) Flinkite and atelestite. Can. Mineral., 7, 547–553. (4) Mereiter, K. and A. Preisinger (1986) Kristallstrukturdaten der Wismutminerale Atelestite, Mixite und Pucherite. Anzeiger Österreichischen Akademie der Wissenschaften math.-naturwiss. Kl. 123, 79–81 (in German).