Pilsenite Bi_4Te_3

Crystal Data: Hexagonal. *Point Group:* $\overline{3}\ 2/m$. Rare tabular crystals; massive, commonly interlayered with very thin layers of hessite.

Physical Properties: Hardness = Soft. VHN = 48–60, 53 average (25 g load).
D(meas.) = n.d. D(calc.) = [8.4]

Optical Properties: Opaque. *Color:* Tin-white to pale steel-gray. *Luster:* Metallic. *Anisotropism:* Noticeable.
R_1–R_2: (400) 61.6–62.9, (420) 62.3–63.4, (440) 62.8–64.0, (460) 63.2–64.4, (480) 63.5–64.8, (500) 63.7–65.3, (520) 63.9–65.8, (540) 64.1–66.2, (560) 64.3–66.7, (580) 64.4–67.0, (600) 64.5–67.3, (620) 64.5–67.4, (640) 64.5–67.6, (660) 64.6–67.7, (680) 64.6–67.7, (700) 64.6–67.8

Cell Data: *Space Group:* $R\overline{3}m$. $a = 4.446(2)$ $c = 41.94(2)$ $Z = 3$

X-ray Powder Pattern: Nagybörzsöny, Hungary.
3.25 (vs), 2.36 (s), 2.22 (s), 1.998 (s), 1.833 (s), 1.485 (s), 4.68 (m)

Chemistry:

	(1)	(2)	(3)
Bi	65.2	68.8	68.59
Ag	0.1		
Pb	1.1	0.3	
Fe	0.0		
Te	31.1	30.4	31.41
S	0.1		
Total	[97.6]	99.5	100.00

(1) Nagybörzsöny, Hungary; by electron microprobe, average of four analyses; corresponds to $(Bi_{3.86}Pb_{0.07}Ag_{0.01})_{\Sigma=3.94}(Te_{3.02}S_{0.04})_{\Sigma=3.06}$. (2) Nagybörzsöny, Hungary; by electron microprobe, corresponds to $(Bi_{4.05}Pb_{0.02})_{\Sigma=4.07}Te_{2.93}$. (3) Bi_4Te_3.

Occurrence: Of hydrothermal origin.

Association: Hessite, joséite, bismuthinite (Nagybörzsöny, Hungary); tsumoite (Sylvanite, New Mexico, USA); argentian pentlandite, hessite, argentian tetrahedrite (Koronuda deposit, Macedonia).

Distribution: From Nagybörzsöny, Börzsöny Mountains, near Esztergom (Gran), Hungary [TL]. At Săcărîmb (Nagyág), Romania. In the Koronuda Au–Cu deposit, Macedonia. From the Bereznyakov gold deposit, Southern Ural Mountains, Russia. At Sylvanite, Hidalgo Co., New Mexico, USA. In the Corrego Criminosa gold district, Goias, Brazil. From the Huangshandong Cu–Ni deposit, Hami, Xinjiang Province, China.

Name: For the type locality, Nagybörzsöny (Deutsch-Pilsen), Hungary.

Type Material: Loránd Eötvös University, Budapest, Hungary, A-563.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 167 [wehrlite = pilsenite]. (2) Ozawa, T. and H. Shimazaki (1982) Pilsenite redefined and wehrlite discredited. Proc. Japan Acad., 58, Ser. B, 291–294 (in English). (3) (1984) Amer. Mineral., 69, 215 (abs. ref. 1). (4) Yamana, K., K. Kihara, and T. Matsumoto (1979) ??title?? Acta Cryst., 35, 147–149. (5) Ramdohr, P. (1969) The ore minerals and their intergrowths, (3rd edition), 438–439. (6) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 436.