Tellurantimony Sb_2Te_3

Crystal Data: Hexagonal. *Point Group:* $\overline{3}\ 2/m$. As lath-shaped crystals, to 350 μm. *Twinning:* In polished section, twinning perpendicular to the elongation axis of the lath-shaped crystals is commonly seen.

Physical Properties: Hardness = n.d. VHN = 49.8 (25 g load). D(meas.) = n.d. D(calc.) = 6.511

Optical Properties: Opaque. *Color:* In polished section, pinkish cream. *Luster:* Metallic. *Pleochroism:* Weak; from pink to cream. *Anisotropism:* Moderate; in pink and dark gray.

R_1–R_2: (400) 57.7–60.9, (420) 58.9–62.4, (440) 60.1–63.5, (460) 60.9–64.5, (480) 61.7–65.3, (500) 62.2–65.9, (520) 62.7–66.5, (540) 63.0–67.0, (560) 63.3–67.4, (580) 63.5–67.7, (600) 63.6–67.9, (620) 63.6–68.0, (640) 63.5–67.9, (660) 63.3–67.8, (680) 63.0–67.6, (700) 62.8–67.6

Cell Data: *Space Group:* $R\overline{3}m$. $a = 4.258$ $c = 30.516$ $Z = 3$

X-ray Powder Pattern: Synthetic.
3.157 (100), 2.349 (35), 2.130 (25), 1.766 (10), 1.578 (8), 1.470 (8), 1.3597 (8)

Chemistry:

	(1)	(2)	(3)
Sb	37.5	37.1	38.88
Pb		1.3	
Bi	0.3		
Te	61.8	61.5	61.12
Total	99.6	99.9	100.00

(1) Mattagami mine, Canada; by electron microprobe, average of analyses of eight grains; corresponds to $Sb_{1.91}Te_{3.00}$. (2) Kobetsuzawa mine, Japan; by electron microprobe, corresponding to $(Sb_{1.96}Pb_{0.04})_{\Sigma=2.00}Te_{3.00}$. (3) Sb_2Te_3.

Polymorphism & Series: Forms a series with tellurobismuthite.

Mineral Group: Tetradymite group.

Occurrence: In a zinc-rich stratiform massive sulfide deposit of volcanogenic origin in Archean volcanics (Mattagami Lake mine, Canada).

Association: Altaite, pyrrhotite, chalcopyrite (Mattagami Lake mine, Canada); altaite, tellurium (Kobetsuzawa mine, Japan).

Distribution: In Canada, from the Mattagami Lake mine, about 8 km southwest of the town of Matagami, Quebec [TL]. At the Smuggler, Little Johnny, Washburn, and other mines, Boulder Co., Colorado, USA. From the Kobetsuzawa mine, near Sapporo, Hokkaido, Japan. In the Danba district, Sichuan Province, China. At Kalgoorlie, Western Australia. In Romania, from Săcărîmb (Nagyág), Stănija, and Măgura-Hondol. At Kremnica (Kremnitz), Slovakia. From Enasen, ??ck, Sweden.

Name: For the composition.

Type Material: Canadian Geological Survey, Ottawa; Royal Ontario Museum, Toronto, Canada, M31957.

References: (1) Thorpe, R.I. and D.C. Harris (1973) Mattagamite and tellurantimony, two new telluride minerals from Mattagami Lake mine, Matagami area, Quebec. Can. Mineral.,

12, 55–60. (2) (1974) Amer. Mineral., 59, 383 (abs. ref. 1). (3) Nakata, M., J. Chung, H. Honma, and K. Sakurai (1985) On tellurantimony from the Kobetsuzawa mine, Sapporo, Japan. J. Mineral. Soc. Japan, 17, 79–83 (in Japanese with English abs.). (4) Effenberger, H. and F. Pertlik (1987) Hydrothermal und Kristallstruktur von stochiometrischen Tellurantimon, Sb_2Te_3, und Tellurobismutit, Bi_2Te_3. Mitt. Österreichen Mineral. Ges., 132, 157–161 (in German with English abs.??). (5) (1964) NBS Mono. 25, 3, 8. (6) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 551.