

**Chabournéite****(Tl, Pb)<sub>23</sub>(Sb, As)<sub>91</sub>S<sub>147</sub>**

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**Crystal Data:** Triclinic. *Point Group:* 1. Rarely in crystals larger than 1 mm; typically in intimate intergrowths with pierrotite.

**Physical Properties:** *Fracture:* Conchoidal. Hardness = n.d. VHN = 78–124, 95 average (25 g load). D(meas.) = 5.104 D(calc.) = 5.121

**Optical Properties:** Opaque. *Color:* Black; white in reflected light, red internal reflections noted along cracks. *Streak:* Red-brown. *Luster:* Submetallic to greasy. *Pleochroism:* Weak. *Anisotropism:* Strong, in bluish and greenish colors.

R<sub>1</sub>–R<sub>2</sub>: (400) 33.8–39.7, (420) 33.5–39.1, (440) 33.2–38.6, (460) 32.8–37.9, (480) 32.3–37.2, (500) 32.0–36.6, (520) 31.7–36.1, (540) 31.4–35.6, (560) 31.1–34.9, (580) 30.7–34.3, (600) 30.3–33.7, (620) 29.7–33.0, (640) 29.1–32.2, (660) 28.5–31.6, (680) 27.9–30.9, (700) 27.3–30.3

**Cell Data:** *Space Group:* P1. *a* = 16.346(5) *b* = 42.602(10) *c* = 8.534(3)  $\alpha$  = 95.86(3) $^\circ$   $\beta$  = 86.91(3) $^\circ$   $\gamma$  = 96.88(3) $^\circ$  *Z* = 1

**X-ray Powder Pattern:** Jas Roux, France.

3.573 (10), 2.135 (9), 2.808 (8), 3.928 (7), 3.358 (7), 2.853 (7), 2.709 (7)

**Chemistry:**

	(1)	(2)
Tl	23.87	17.88
Pb	0.00	10.94
Sb	32.92	31.61
As	17.63	14.83
S	26.05	24.82
Total	100.47	100.08

(1) Jas Roux, France; by electron microprobe, corresponding to Tl<sub>21.13</sub>(Sb<sub>48.93</sub>As<sub>42.58</sub>) $\Sigma=91.51$  S<sub>147.00</sub>. (2) Abuta, Japan; by electron microprobe, corresponding to (Tl<sub>16.61</sub>Pb<sub>10.03</sub>) $\Sigma=26.64$  (Sb<sub>49.31</sub>As<sub>37.59</sub>) $\Sigma=86.90$  S<sub>147.00</sub>.

**Occurrence:** In a hydrothermal deposit in dolomitic limestones with other As–Tl minerals (Jas Roux, France).

**Association:** Pierrotite, parapierrrotite, stibnite, pyrite, sphalerite, twinnite, zinkenite, madocite, andorite, smithite, laffittite, routhierite, aktashite, wakabayashilite, realgar, orpiment (Jas Roux, France); getchellite, sphalerite, barite (Abuta, Japan).

**Distribution:** In France, from the Jas Roux deposit, 10 km east of Chapelle-en-Valgaudemar, Hautes-Alpes [TL]. In the Toya mine, Abuta, Hokkaido, Japan.

**Name:** For Chabournéou Glacier, near the Jas Roux deposit, France.

**Type Material:** National School of Mines, Paris, France.

**References:** (1) Johan, Z., J. Mantiene, and P. Picot (1981) La chabournéite, un nouveau minéral thallifère. Bull. Minéral., 104, 10–15 (in French with English abs.). (2) (1982) Amer. Mineral., 67, 621 (abs. ref. 1). (3) Nagl, A. (1979) The crystal structure of a thallium sulfosalt, Tl<sub>8</sub>Pb<sub>4</sub>Sb<sub>21</sub>As<sub>19</sub>S<sub>68</sub>. Zeits. Krist., 150, 85–106. (4) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 81.