# Tillmannsite

$(Ag_3Hg)(V,As)O_4$

TETRAGONAL

**Locality**: Roua copper occurrences, upper Var valley (Daluis gorge), at the western margin of the Barrot Dome, Alpes-Maritimes, France.

**Occurrence**: It is a secondary alteration mineral and is associated with pecoraite, vésigniéite, olivenite, kolfanite, janggunite, chlorargyrite, cuprite, copper, silver, mercurian silver, domeykite, djurleite and algodonite in small geodes.

**General appearance**: Aggregates up to 0.2 mm in diameter made up of pseudo-octahedral crystals up to 50 μm across.

**Physical, chemical and crystallographic properties**: *Luster*: adamantine. *Diaphaneity*: translucent. *Color*: red to brownish red. *Streak*: brownish red. *Luminescence*: nonfluorescent. *Hardness*: could not be determined. *Tenacity*: very brittle. *Cleavage*: none. *Fracture*: conchoidal. *Density*: could not be measured, 7.71 g/cm$^3$ (calc.). **Crystallography**: Tetragonal, $I\bar{4}$, *a* 7.727, *c* 4.648 Å, *V* 277.5 Å$^3$, *Z* = 2, *c*:*a* = 0.6015. Morphology: pseudo-octahedral with {111}, {110}, {100}, {101} and minor {001}. Twinning: by contact on (100). **X-ray powder-diffraction data**: 5.45(25)(110), 2.772(100)(211), 2.324(30)(002), 2.254(20)(301), 1.740(15)(411), 1.683(15)(312). **Optical data**: Uniaxial (+), T . 2.3, g . 2.5, pleochroism intense, O orange-brown, E intense red-orange. **Chemical analytical data**: Mean of fourteen sets of electron-microprobe data: Ag 49.82, Hg 30.40, V 5.32, As 4.23, O 9.90, Total 99.67 wt.%. Empirical formula: $Ag_{2.98}Hg_{0.98}V_{0.67}As_{0.36}O_{4.00}$. **Relationship to other species**: None apparent.

**Name**: After Professor Ekkehart Tillmanns (b. 1941), Institute of Mineralogy and Crystallography, Vienna, Austria.

**Comments**: IMA No. 2001–010.

SARP, H., PUSHCHAROVSKY, D.YU., MACLEAN, E.J., TEAT, S.J. & ZUBKOVA, N.V. (2003): Tillmannsite, $(Ag_3Hg)(V,As)O_4$, a new mineral: its description and crystal structure. *European Journal of Mineralogy* **15**, 177-180.