

**Crystal Data:** Orthorhombic. *Point Group:* 2/m 2/m 2/m. As thin prisms elongated on [100] with diamond-shaped cross section and irregular terminations to 0.4 mm; in jack-straw aggregates, “puff balls”, and massive intergrowths.

**Physical Properties:** *Cleavage:* None observed, however likely on {001}. *Fracture:* Irregular. *Tenacity:* Brittle. *Hardness* = 2.5 *D(meas.)* = n.d. *D(calc.)* = 4.056

**Optical Properties:** Transparent. *Color:* Colorless. *Streak:* White. *Luster:* Adamantine. *Optical Class:* Biaxial (-).  $\alpha = 1.800(5)$   $\beta = 1.96(1)$   $\gamma = 2.03(\text{calc})$   $2V(\text{meas.}) = 62.1(5)^\circ$   $2V(\text{calc.}) = \text{n.d.}$  *Dispersion:* None. *Orientation:*  $X = c$ ,  $Y = b$ ,  $Z = a$ .

**Cell Data:** *Space Group:* *Pmcn*.  $a = 5.2580(9)$   $b = 8.0620(13)$   $c = 18.654(3)$   $Z = 4$

**X-ray Powder Pattern:** Torrecillas mine, Iquique Province, Chile.  
3.035 (100), 2.642 (84), 4.031 (78), 2.853 (39), 2.426 (34), 4.298 (33), 1.8963 (32)

Chemistry:	(1)	(2)
Na <sub>2</sub> O	6.56	6.82
MgO	0.15	
As <sub>2</sub> O <sub>3</sub>	68.64	87.13
Sb <sub>2</sub> O <sub>3</sub>	18.43	
Cl	6.75	7.81
<u>-O=Cl</u>	<u>1.52</u>	<u>1.76</u>
Total	99.01	100.00

(1) Torrecillas mine, Iquique Province, Chile; average of 6 electron microprobe analyses; corresponding to  $(\text{Na}_{1.03}\text{Mg}_{0.02})_{\Sigma=1.05}(\text{As}_{3.39}\text{Sb}_{0.62})_{\Sigma=4.01}\text{O}_{6.07}\text{Cl}_{0.93}$ . (2)  $\text{NaAs}^{3+}_4\text{O}_6\text{Cl}$ .

**Occurrence:** A secondary mineral formed by the oxidation of native As and As-bearing minerals in hydrothermal veins followed by later alteration by saline fluids derived from evaporating meteoric water under hyperarid conditions.

**Association:** Anhydrite, cinnabar, gypsum, halite, lavendulan, magnesiokoritnigite, marcasite, quartz, pyrite, scorodite, wendwilsonite, leverettite, canutite.

**Distribution:** From the Torrecillas mine, Torrecillas Hill, northern Atacama Desert, Iquique Province, Tarapacá Region, Chile.

**Name:** For the locality that produced the first specimens.

**Type Material:** Natural History Museum of Los Angeles County, Los Angeles, California, USA (#64079, 64080, 64081, 64082).

**References:** (1) Kampf, A.R., B.P. Nash, M. Dini, and A.A. Molina Donoso (2014) Torrecillasite,  $\text{Na}(\text{As,Sb})^{3+}_4\text{O}_6\text{Cl}$ , a new mineral from the Torrecillas mine, Iquique Province, Chile: description and crystal structure. *Mineral. Mag.*, 78(3), 747-755. (2) (2015) *Amer. Mineral.*, 100, 338 (abs. ref. 1).