

**Crystal Data:** Hexagonal. *Point Group:*  $\bar{3}2/m$ . As steep rhombohedral crystals, displaying {10 $\bar{1}$ 1} and {0001}, to 1 mm, and as parallel stacked aggregates. *Twinning:* V-shaped twins by reflection on {10 $\bar{1}$  $\bar{2}$ }.

**Physical Properties:** *Cleavage:* Perfect on {10 $\bar{1}$ 1}. *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = ~3 D(meas.) = 3.64(2) D(calc.) = 3.709 Soluble in dilute HCl.

**Optical Properties:** Transparent. *Color:* Medium to deep green. *Streak:* Light green.

*Luster:* Vitreous.

*Optical Class:* Uniaxial (-).  $\omega$  and  $\epsilon > 1.8$  *Pleochroism:* *O* = bluish green, *E* = slightly yellowish green. *Absorption:* *O* > *E*.

**Cell Data:** *Space Group:*  $R\bar{3}m$ .  $a = 6.8436(6)$   $c = 14.0637(10)$   $Z = 3$

**X-ray Powder Pattern:** Torrecillas mine, Salar Grande, Iquique Province, Tarapacá Region, Chile. 2.766 (100), 5.469 (90), 2.269 (66), 1.711 (33), 1.822 (26), 1.383 (23), 2.905 (22)

Chemistry:	(1)	(2)
CuO	62.80	56.48
CoO	7.49	17.73
NiO	1.23	
MnO	2.72	
MgO	0.06	
Cl	15.40	16.78
H <sub>2</sub> O	[12.57]	12.79
-Cl = O	3.47	3.79
Total	98.80	100.00

(1) Torrecillas mine, Salar Grande, Iquique Province, Tarapacá Region, Chile; average of 9 electron microprobe analyses, H<sub>2</sub>O from stoichiometry and structure analysis; corresponding to Cu<sub>3</sub>(Co<sub>0.43</sub>Cu<sub>0.40</sub>Mn<sub>0.17</sub>Ni<sub>0.07</sub>Mg<sub>0.01</sub>) $\Sigma=1.08$ Cl<sub>1.87</sub>O<sub>6.13</sub>H<sub>6</sub>. (2) Cu<sub>3</sub>CoCl<sub>2</sub>(OH)<sub>6</sub>.

**Mineral Group:** Paratacamite group.

**Occurrence:** As a secondary mineral in a weathered vein of copper and arsenic minerals.

**Association:** Akaganeite, anhydrite, chalcophanite, goethite, halite, manganite, pyrite, quartz, todorokite.

**Distribution:** At the Torrecillas mine, Salar Grande, Iquique Province, Tarapacá Region, Chile.

**Name:** Honors Peter Leverett (b. 1944), professor of Chemistry, University of Western Sydney, Australia, in recognition of his contributions to research and teaching in chemistry and chemical geology.

**Type Material:** Natural History Museum of Los Angeles County, Los Angeles, California, USA (64031-64034).

**References:** (1) Kampf, A.R., M.J. Sciberras, P.A. Williams, M. Dini, and A.A. Molina Donoso (2013) Leverettite from the Torrecillas mine, Iquique Province, Chile: the Co-analogue of herbertsmithite. *Mineral. Mag.*, 77(7), 3047-3054. (2) (2016) *Amer. Mineral.*, 101, 489 (abs. ref. 1).