Telluroperite $Pb(Te_{0.5}Pb_{0.5})O_2Cl$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. As rounded square tablets and flakes to 0.25 mm on edge and 0.02 mm thick. The form {001} is prominent and is probably bounded by {100}, {010}, and {110}.

Physical Properties: *Cleavage*: Perfect on {001}. *Tenacity*: Brittle. *Fracture*: Curved. Hardness = 2-3 D(meas.) = n.d. D(calc.) = 7.323

Optical Properties: Transparent. *Color*: Bluish green. *Streak*: Pale bluish green. *Luster*: Adamantine.
Optical Class: Biaxial (-). α(calc.) = 2.091 β(calc.) = 2.237 γ(calc.) = 2.242 2V = ~10°
Orientation: $X = c$. *Pleochroism*: Moderate, bluish green. *Absorption*: $X < Y = Z$.

Cell Data: *Space Group*: *Bmmb*. a = 5.5649(6) b = 5.5565(6) c = 12.4750(14) Z = 2

X-ray Powder Pattern: Bird Nest drift, Otto Mountain, San Bernardino County, California, USA. 2.857 (100), 3.750 (58), 1.620 (52), 2.781 (43), 2.075 (31), 1.966 (30), 1.665 (21)

Chemistry:

	(1)	(2)
PbO	72.70	75.74
TeO_2	19.26	18.05
Cl	9.44	8.02
- O = Cl	2.31	1.81
Total	99.27	100.00

(1) Bird Nest drift, Otto Mountain, San Bernardino County, California, USA; average of 4 electron microprobe analyses; corresponds to $Pb_{1.40}Te^{4+}_{0.52}O_{1.86}Cl_{1.14}$. (2) $Pb(Te_{0.5}Pb_{0.5})O_2Cl$.

Occurrence: A secondary phase on fracture surfaces and in small vugs in quartz veins. Formed from the partial oxidation of primary sulfides (e.g., galena) and tellurides (e.g., hessite) during or following brecciation of the quartz veins. The Cl may be sourced in part from primary phases; however, it is most likely from salty brines interacting with primary tellurides.

Association: Acanthite, bromine-rich chlorargyrite, caledonite, cerussite, galena, goethite, linarite.

Distribution: From the Bird Nest drift, southwest flank of Otto Mountain, ~2 km northwest of Baker, San Bernardino County, California, USA.

Name: Indicates the structural analogy to *perite* with essential tellurium in the composition.

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA (62513 and 62514).

References: (1) Kampf, A.R., S.J. Mills, R.M. Housley, J. Marty, and B. Thorne (2010) Lead-tellurium oxysalts from Otto Mountain near Baker, California: VI. Telluroperite, $Pb_3Te^{4+}O_4Cl_2$, the Te analog of perite and nadorite. Amer. Mineral., 95, 1569-1573.