

**Crystal Data:** Orthorhombic. *Point Group:*  $2/m\ 2/m\ 2/m$ . As grains < 0.1 mm.

**Physical Properties:** *Cleavage:* None. *Fracture:* Conchoidal. *Tenacity:* Brittle. *Hardness* = n.d. *D(meas.)* = n.d. *D(calc.)* = 7.40

**Optical Properties:** Transparent to translucent. *Color:* Pale greenish yellow, gray with a bluish tint and colorless internal reflections in reflected light. *Streak:* White. *Luster:* Adamantine.

*Optical Class:* n.d.

$R_1$ - $R_2$ : (470) 17.2-17.9, (546) 15.7-16.3, (589) 15.5-16.1, (650) 15.4-16.1

**Cell Data:** *Space Group:*  $Pmmn$ .  $a = 12.759(1)$   $b = 27.169(4)$ ,  $c = 11.515(1)$   $Z = 2$

**X-ray Powder Pattern:** Kombat mine, Namibia.

2.860 (100), 2.733 (84), 3.707 (49), 3.068 (37), 2.075 (32), 1.601 (32), 1.5950 (28)

<b>Chemistry:</b>	(1)
PbO	91.15
MnO	1.34
B <sub>2</sub> O <sub>3</sub>	[3.13]
Cl	5.59
H <sub>2</sub> O	[0.84]
<u>-O=Cl<sub>2</sub></u>	<u>1.29</u>
Total	100.76

(1) Kombat mine, Namibia; average of 15 electron microprobe analyses, B<sub>2</sub>O<sub>3</sub> and H<sub>2</sub>O calculated from structural analysis; corresponding to  $\text{Pb}_{36.32}\text{O}_{19}\text{Mn}_{1.68}\text{Cl}_{13.99}(\text{BO}_3)_8 \cdot 2\text{H}_2\text{O}$ .

**Occurrence:** Most likely a late-stage, low-temperature hydrothermal (epigenetic) reworking of primary Pb-Cu-Zn-Ag sulfides. Known from a single specimen purchased commercially.

**Association:** Hereroite, asisite, damaraite, kombatite, sahlinite, quartz, native copper, barysilite, hausmannite, jacobsonite, manganite.

**Distribution:** From the Kombat mine, Grootfontein, Namibia.

**Name:** Honors Professor Vladimir Gerasimovich Krivovichev (b. 1946), Head of the Mineralogy Department, Geological Faculty, St. Petersburg State University, Russia.

**Type Material:** Natural History Museum, London, England (BM2010, 101).

**References:** (1) Turner, R., O.I. Siidra, M.S. Rumsey, S.V. Krivovichev, C.J. Stanley, and J. Spratt (2012) Hereroite and vladkrivovichevite: two novel lead oxychlorides from the Kombat mine, Namibia. *Mineral. Mag.*, 76(4), 883-890. (2) (2015) *Amer. Mineral.*, 100, 1325-1326 (abs. ref. 1). (3) Siidra, O.I., S.V. Krivovichev, R.W. Turner, M.S. Rumsey, and J. Spratt (2013) Crystal chemistry of layered Pb oxychloride minerals with PbO-related structures: Part II. Crystal structure of vladkrivovichevite,  $[\text{Pb}_{32}\text{O}_{18}][\text{Pb}_4\text{Mn}_2\text{O}]\text{Cl}_{14}(\text{BO}_3)_8 \cdot 2\text{H}_2\text{O}$ . *Amer. Mineral.*, 98, 256-261.