Wickenbergite $Pb_3CaAl_2Si_{10}O_{27}\cdot 4H_2O$

Crystal Data: Hexagonal. *Point Group*: 3*m*. Tabular holohedral crystals, dominated by {000} and {1011}, to 1.5 mm. As spongy aggregates of small, highly perfect individuals; as subparallel aggregates or rosettes; granular.

Physical Properties: *Cleavage*: {0001}, indistinct. *Tenacity*: Brittle but tough. Hardness = 5 D(meas.) = 3.85 D(calc.) = 3.87 Fluoresces dull orange under SW UV.

Optical Properties: Transparent to translucent. *Color*: Colorless to white; rarely salmon-pink. *Luster*: Vitreous.
Optical Class: Uniaxial (-). ω = 1.692 ε = 1.648 *Dispersion*: $r < v$; moderate.

Cell Data: *Space Group*: *P*31*c*. a = 8.555(2) c = 20.190(5) Z = 2

X-ray Powder Pattern: Near Wickenburg, Arizona, USA.
10.1 (100), 3.26 (80), 3.93 (60), 3.36 (40), 2.639 (40), 5.96 (30), 5.04 (30)

Chemistry:

	(1)	(2)
SiO_2	42.1	40.04
Al_2O_3	7.6	6.79
PbO	44.0	44.62
CaO	3.80	3.74
H_2O	3.77	4.80
Total	101.27	99.99

(1) Near Wickenburg, Arizona, USA. (2) $Pb_3CaAl_2Si_{10}O_{27}\cdot 4H_2O$.

Occurrence: In oxidized hydrothermal veins, carrying galena and sphalerite, in quartz and fluorite gangue (near Wickenburg, Arizona, USA).

Association: Phoenicochroite, mimetite, cerussite, willemite, crocoite, duftite, hemihedrite, alamosite, melanotekite, luddenite, ajoite, shattuckite, vauquelinite, descloizite, laumontite.

Distribution: In the USA, in Arizona, at several localities south of Wickenburg, Maricopa Co., including the Potter-Cramer property, Belmont Mountains, and the Moon Anchor mine; on dumps at a Pb-Ag-Cu prospect in the Artillery Peaks area, Mohave Co.; and in the Dives (Padre Kino) mine, Silver district, La Paz Co.

Name: For *Wickenburg*, Arizona, USA, the community near which it was discovered.

Type Material: Harvard University, Cambridge, Massachusetts, 119099; National Museum of Natural History, Washington, D.C., USA, 122875.

References: (1) Williams, S.A. (1968) Wickenburgite, a new mineral from Arizona. Amer. Mineral., 53, 1433-1438. (2) Lam, A.E., L.A. Groat, M.A. Cooper, and F.C. Hawthorne (1994) The crystal structure of wickenburgite, $Pb_3CaAl[AlSi_{10}O_{27}](H_2O)_3$, a sheet structure. Can. Mineral., 32, 525-532. (3) Hesse, K.-F., F. Liebau, and H.-H. Eulert (2003) Wickenbergite, a double-layer silicate $Pb_3Al^{[6]}[Ca^{[6]}Al^{[4]}Si^{[4]}{}_{10}O_{27}(H_2O)_3]\cdot H_2O$: crystal chemistry and thermal behaviour. Zeits. Kristallogr., 218, 542-552. (4) (2004) Amer. Mineral., 89, 471 (abs. ref. 3).