

Paulkerrite **$K(\text{Mg}, \text{Mn}^{2+})_2(\text{Fe}^{3+}, \text{Al})_2\text{Ti}(\text{PO}_4)_4(\text{OH})_3 \cdot 15\text{H}_2\text{O}$**

©2001-2005 Mineral Data Publishing, version 1

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Equant crystals, to 0.2 mm, may be flattened on {010}, elongated along [001]; forms noted are {010}, {100}, {111}.

Twinning: Multiple, parallel {010}, possible.

Physical Properties: *Cleavage:* On {100}, perfect. *Fracture:* Even. Hardness = ~ 3
D(meas.) = 2.36(4) D(calc.) = 2.36

Optical Properties: Transparent. *Color:* Light yellowish brown to colorless. *Streak:* White.
Luster: Vitreous.

Optical Class: Biaxial (-). *Orientation:* $X = c; Y = b; Z = a$. *Dispersion:* $r > v$, strong.
 $\alpha = 1.591\text{--}1.598$ $\beta = 1.615\text{--}[1.624]$ $\gamma = 1.639\text{--}1.643$ $2V(\text{meas.}) = \sim 80^\circ$

Cell Data: *Space Group:* $Pbca$. $a = 10.49(7)$ $b = 20.75(13)$ $c = 12.44(2)$ $Z = 4$

X-ray Powder Pattern: 7U7 Ranch, Arizona, USA.

6.20 (100), 10.3 (90), 7.46 (80), 3.13 (70), 3.75 (40), 2.872 (40), 3.95 (30)

Chemistry:

	(1)
P_2O_5	29.4
TiO_2	9.8
Al_2O_3	1.6
Fe_2O_3	12.2
MnO	7.1
MgO	4.6
K_2O	4.4
F	0.9
H_2O	[30.4]
$-\text{O} = \text{F}_2$	0.4
Total	[100.0]

(1) 7U7 Ranch, Arizona, USA; by electron microprobe, total Fe as Fe_2O_3 , confirmed by microchemical test, total Mn as MnO, H_2O by difference; corresponds to $\text{K}_{0.90}(\text{Mg}_{1.04}\text{Mn}_{0.96})_{\Sigma=2.00}(\text{Fe}_{1.47}\text{Al}_{0.30}\text{Ti}_{0.18}\text{Mg}_{0.06})_{\Sigma=2.01}\text{Ti}_{1.00}(\text{PO}_4)_{3.98}[(\text{OH})_{2.64}\text{F}_{0.46}]_{\Sigma=3.00} \cdot 14.98\text{H}_2\text{O}$.

Occurrence: An alteration product of triplite in complex zoned granite pegmatites.

Association: Triplite, bermanite, phosphosiderite, leucophosphite, strengite, switzerite (7U7 Ranch, Arizona, USA).

Distribution: From the 7U7 Ranch, 40 km west of Hillside, Bagdad district, Yavapai Co., Arizona, USA. In the Bendada pegmatite, near Guarda, Portugal.

Name: To honor Dr. Paul Francis Kerr (1897–1981), Professor of Mineralogy, Columbia University, New York City, New York, USA.

Type Material: National Museum of Natural History, Washington, D.C., USA, R7778, 120405, 163777.

References: (1) Peacor, D.R., P.J. Dunn, and W.B. Simmons (1984) Paulkerrite, a new titanium phosphate from Arizona. *Mineral. Record*, 15, 303–306. (2) (1985) *Amer. Mineral.*, 70, 875 (abs. ref. 1).