Haigerachite

KFe$_3$$(H_2PO_4)_6$(HPO$_4$)$_2$$\cdot$4H$_2$O

Crystal Data: Monoclinic.  Point Group: 2/m.  Forms spherules, to 0.2 mm, consisting of scaly crystals to 0.05 mm; rarely as well-developed, thin tabular, six-sided, pseudohexagonal crystals flattened on (001), showing {100} and {110}.

Physical Properties: Cleavage: Good on {001}.  Fracture: Uneven.  Hardness = 2

D(meas.) = 2.44(1)  D(calc.) = 2.445  Soluble in dilute HCl.


Cell Data: Space Group: C2/c [synthetic].  a = 16.95(3)  b = 9.59(2)  c = 17.57(3)  β = 90.85(15)°  Z = 4

X-ray Powder Pattern: Silberbrünnle mine, central Black Forest, Germany.

8.83 (100), 3.75 (100), 3.02 (90), 3.23 (50), 7.60 (40), 3.30 (40), 3.11 (40)

Chemistry

\[
\begin{array}{ll}
\text{K}_2\text{O} & 3.79 \\
\text{Na}_2\text{O} & 0.34 \\
\text{CaO} & 0.66 \\
\text{Fe}_2\text{O}_3 & 21.66 \\
\text{Al}_2\text{O}_3 & 0.66 \\
\text{MnO} & 0.42 \\
\text{MgO} & 0.19 \\
\text{P}_2\text{O}_5 & 53.39 \\
\text{H}_2\text{O} & [18.89] \\
\hline
\text{Total} & 100.00
\end{array}
\]

(1) Silberbrünne mine, central Black Forest, Germany; electron microprobe analysis, H$_2$O by difference; corresponds to K$_{0.83}$Na$_{0.12}$Ca$_{0.12}$Fe$_{2.85}$Al$_{0.14}$Mn$_{0.06}$Mg$_{0.03}$P$_{7.91}$H$_{2.05}$O$_{36}$.

Occurrence: A secondary phosphate formed on a mine dump.

Association: Quartz, pyrite, gypsum, jarosite, diadochite, gengenbachite.

Distribution: From the Silberbrünne mine dump, upper Haigerachtal, near Gengenbach, central Black Forest, Baden-Württemberg, Germany.

Name: For the village and valley near the mine.

Type Material: Institute of Mineralogy and Crystal Chemistry, University of Stuttgart, and the Staatlichen Museum für Naturkunde, Stuttgart, Germany.