Zýkaite

\[
\text{Fe}^{3+}_4(\text{AsO}_4)_3(\text{SO}_4)(\text{OH}) \cdot 15\text{H}_2\text{O}
\]

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Crystal Data: Orthorhombic. Point Group: n.d. Fine acicular crystals, to 0.02 mm, covering and composing nodules, to 3 cm, and as a massive cavity filling.


\[D(\text{meas.}) = 2.50 \quad D(\text{calc.}) = 2.504\]

Optical Properties: Semitransparent. Color: Grayish white with pale yellowish green or brownish tint; colorless in transmitted light. Streak: Pale yellowish. Luster: Dull. Optical Class: Biaxial (−). Orientation: Positive elongation, parallel extinction. \[\alpha = 1.632 \quad \beta = \text{n.d.} \quad \gamma = 1.646 \quad 2V(\text{meas.}) = \text{Large}\]

Cell Data: Space Group: n.d. \[a = 20.853(20) \quad b = 7.033(4) \quad c = 36.991(23) \quad Z = 8\]

X-ray Powder Pattern: Kaňk, Czech Republic.


Chemistry:

\[
\begin{array}{c|cc}
\text{SO}_3 & 8.36 & 7.82 \\
\text{P}_2\text{O}_5 & 0.12 \\
\text{As}_2\text{O}_5 & 33.67 & 33.69 \\
\text{Fe}_2\text{O}_3 & 30.58 & 31.21 \\
\text{CaO} & 0.02 \\
\text{H}_2\text{O} & 26.50 & 27.28 \\
\text{insol.} & 0.49 & \\
\hline
\text{Total} & 99.74 & 100.00
\end{array}
\]

(1) Kaňk, Czech Republic; average of two analyses, \(\text{H}_2\text{O}\) by TGA; after deduction of gypsum, corresponds to \(\text{Fe}_{3.96}[\text{AsO}_4]_{3.03}(\text{PO}_4)_{0.02}\Sigma = 3.05(\text{SO}_4)_{1.08}(\text{OH}) \cdot 14.91\text{H}_2\text{O}\). (2) \(\text{Fe}_4(\text{AsO}_4)_3(\text{SO}_4)(\text{OH}) \cdot 15\text{H}_2\text{O}\).

Occurrence: An alteration product of arsenopyrite and pyrite in ancient mine dumps.

Association: Kaňkite, scorodite, pitticite, “limonite”, arsenopyrite, gypsum, quartz.

Distribution: From the Šafary mine dump, near Kaňk, Kutná Hora district, Czech Republic.

Name: To honor Dr. Václav Zýka (1926–), Director, Institute of Raw Materials, Kutná Hora, Czech Republic.

Type Material: Charles University, Prague, Czech Republic, 20558; National School of Mines, Paris, France; National Museum of Natural History, Washington, D.C., USA, 144940, 144941.