Fillowite

\[ \text{Na}_2\text{Ca(Mn}^{2+},\text{Fe}^{2+})_7(\text{PO}_4)_6 \]

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Crystal Data: Hexagonal. Point Group: \( \text{3} \). Rarely as tiny rhombohedral crystals, showing \( \{01T2\}, \{0001\} \); usually in granular aggregates.


Optical Properties: Transparent to translucent. Color: Wax-yellow, pale yellow, greenish yellow, reddish brown, colorless; colorless to yellow in transmitted light. Streak: White. Luster: Subresinous to greasy. Optical Class: Uniaxial (+), anomalously biaxial. Dispersion: \( r < v \), strong. \( \omega = 1.672(3) \) \( \epsilon = 1.676(3) \) \( 2V(\text{meas.}) = 30^\circ \)

Cell Data: Space Group: \( \text{R}3 \). \( a = 15.282(2) \) \( c = 43.507(3) \) \( Z = 18 \)

X-ray Powder Pattern: Branchville, Connecticut, USA. 2.814 (100), 3.017 (70), 3.640 (60), 2.552 (60), 3.789 (40), 1.888 (40), 11.44 (35)

Chemistry:

\[
\begin{array}{ccc}
\text{P}_2\text{O}_5 & 39.10 & 39.68 & 40.80 \\
\text{FeO} & 9.33 & 9.69 & 24.10 \\
\text{MnO} & 39.42 & 39.58 & 23.79 \\
\text{CaO} & 4.08 & 3.63 & 5.37 \\
\text{Li}_2\text{O} & 0.06 & 0.07 & \\
\text{Na}_2\text{O} & 5.74 & 5.44 & 5.94 \\
\text{H}_2\text{O}^+ & 1.66 & 1.58 & \\
\text{insol} & 0.88 & 1.02 & \\
\text{Total} & 100.27 & 100.69 & 100.00 \\
\end{array}
\]

(1) Branchville, Connecticut, USA: average of two analyses, insoluble is quartz. (2) Do.: insoluble is quartz. (3) \( \text{Na}_2\text{Ca(Mn, Fe)}^{2+}_7(\text{PO}_4)_6 \) with Mn:Fe = 1:1.

Occurrence: A primary accessory mineral in a zoned granite pegmatite (Branchville, Connecticut, USA).

Association: Triploidite, fairfieldite, reddingite (Branchville, Connecticut, USA).

Distribution: In the USA, from Branchville, Fairfield Co., Connecticut; in the White Picacho district, Maricopa and Yavapai Cos., Arizona; at the Animike Red Ace pegmatite, Florence Co., Wisconsin. From Buranga, Kiluli, and Rusororo, Rwanda. At Kabira, Uganda.

Name: In honor of Abijah N. Fillow (1822–1895), Branchville, Connecticut, USA, who early supplied minerals from his quarry at the locality.

Type Material: Yale University, New Haven, Connecticut, 3.3094, 3.3096; Harvard University, Cambridge, Massachusetts, USA, 96840.