Abuite

\[ \text{CaAl}_2(\text{PO}_4)_2\text{F}_2 \]

**Crystal Data:** Orthorhombic.  *Point Group:* 222.  As grains to 500 μm; as aggregates with other minerals, to 2 mm.


D(meas.) = n.d.  D(calc.) = 3.214


**Cell Data:**  *Space Group:* \( P2_12_12_1 \).  \( a = 11.818(2) \) \( b = 11.993(3) \) \( c = 4.6872(8) \) \( Z = 4 \)

[calculated from XRD data by analogy to synthetic \( \text{SrAl}_2(\text{PO}_4)_2\text{F}_2 \)]

**X-ray Powder Pattern:** Hinomaru-Nago mine, Abu County, Yamaguchi Prefecture, Japan.  2.951 (100), 3.139 (86), 2.928 (80), 3.529 (43), 3.683 (32), 4.362 (25), 2.183 (24)

**Chemistry:**

\[
\begin{array}{ccc}
\text{P}_2\text{O}_5 & 45.04 & 42.78 \\
\text{Al}_2\text{O}_3 & 31.26 & 30.28 \\
\text{CaO} & 17.29 & 13.60 \\
\text{SrO} & 0.22 & 5.39 \\
\text{F} & 11.24 & [11.37] \\
\text{H}_2\text{O} & 0.31 & 0 \\
\text{Total} & 100.63 & 98.51 \\
\end{array}
\]

(1) Hinomaru-Nago mine, Kiyo area, Abu, Abu County, Yamaguchi Prefecture, Japan; average of 21 electron microprobe analyses, H₂O calculated from stoichiometry; corresponds to \((\text{Ca}_{0.99}\text{Sr}_{0.01})\Sigma=1.00\text{Al}_{1.96}\text{P}_{2.03}\text{O}_8(\text{F}_{1.89}\text{OH}_{0.11})\).

(2) Do., average electron microprobe analyses, F calculated from stoichiometry; corresponds to \((\text{Ca}_{0.81}\text{Sr}_{0.17})\Sigma=0.98\text{Al}_{1.99}\text{P}_{2.01}\text{O}_8(\text{F}_{2.00})\).

(3) \text{CaAl}_2(\text{PO}_4)_2\text{F}_2.

**Occurrence:** In hydrothermally altered, felsic pyroclastic rocks, related to a biotite adamellite intrusion.

**Association:** Quartz, augelite, and/or trolleite, apatite, crandallite.

**Distribution:** From the Hinomaru-Nago mine, Kiyo area, Abu, Abu County, Yamaguchi Prefecture, Japan.

**Name:** For the type locality, near the town of Abu, Abu County, Yamaguchi Prefecture, Japan.

**Type Material:** Kitakyushu Museum of Natural History and Human History, Kitakyushu, Japan (KMNHM000003).

**References:**
