Aluminite

\[ \text{Al}_2(\text{SO}_4)(\text{OH})_4\cdot7\text{H}_2\text{O} \]

Crystal Data: Monoclinic. Point Group: 2/m. As needles and fibers, to 0.1 mm, commonly in reniform, nodular, or spherulitic masses, and as veinlets.

D(meas.) = 1.66–1.82  D(calc.) = 1.794

Optical Properties: Translucent, opaque if massive. Color: White to grayish white; colorless in transmitted light. Luster: Dull to earthy. Optical Class: Biaxial (+). Orientation: X = elongation. \( \alpha = 1.459–1.460 \)  \( \beta = 1.464 \)  \( \gamma = 1.470 \)  2V(meas.) = \( \sim 90^\circ \)

Cell Data: Space Group: \( P2_1/c \).  
\[ \begin{align*}
    a &= 7.440(1) \\
    b &= 15.583(2) \\
    c &= 11.700(2) \\
    \beta &= 110.18(2)^\circ \\
    Z &= 4
\end{align*} \]

X-ray Powder Pattern: Gánt, Hungary.  
7.93 (100), 9.01 (90), 3.7224 (72), 4.760 (71), 3.7049 (70), 5.033 (63), 4.868 (63)

Chemistry:  
\[ \begin{array}{ccc}
    & (1) & (2) \\
    \text{SO}_3 & 23.37 & 23.26 \\
    \text{Al}_2\text{O}_3 & 29.87 & 29.63 \\
    \text{H}_2\text{O} & 46.76 & 47.11 \\
    \hline
    \text{Total} & [100.00] & 100.00
\end{array} \]

1) Newhaven, England; recalculated to 100% after deduction of a small amount of gypsum.  
2) \( \text{Al}_2(\text{SO}_4)(\text{OH})_4\cdot7\text{H}_2\text{O} \).

Occurrence: Typically in clays or lignites, formed by the reaction of sulfate-bearing solutions from the decomposition of marcasite or pyrite at moderate temperatures with aluminous silicates; as a volcanic sublimate; in sulfur deposits; rarely in caves.

Association: Basaluminite, gibbsite, epsomite, gypsum, celestine, dolomite, goethite.


Name: For aluminum in the composition.