

Aluminite

$\text{Al}_2(\text{SO}_4)(\text{OH})_4 \cdot 7\text{H}_2\text{O}$

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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.

Physical Properties: *Fracture:* Earthy, in aggregates. *Tenacity:* Friable. Hardness = 1–2
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 $\beta = 1.464$
 $\gamma = 1.470$ $2V(\text{meas.}) = \sim 90^\circ$

Cell Data: *Space Group:* $P2_1/c$. $a = 7.440(1)$ $b = 15.583(2)$ $c = 11.700(2)$
 $\beta = 110.18(2)^\circ$ $Z = 4$

X-ray Powder Pattern: Gánt, Hungary.

7.93 (100), 9.01 (90), 3.7224 (72), 4.760 (71), 3.7419 (70), 5.033 (63), 4.868 (63)

Chemistry:

	(1)	(2)
SO_3	23.37	23.26
Al_2O_3	29.87	29.63
H_2O	46.76	47.11
Total	[100.00]	100.00

(1) Newhaven, England; recalculated to 100% after deduction of a small amount of gypsum.

(2) $\text{Al}_2(\text{SO}_4)(\text{OH})_4 \cdot 7\text{H}_2\text{O}$.

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.

Distribution: In Germany, from Morl, near Halle, Saxony-Anhalt. In the Czech Republic, at Milevsko (Mühlhausen), near Kralupy, Kuchelbad, Miletic, and Velvary. From Gánt, Vértes Mountains, and at Nagyegyháza, Hungary. In France, at Mont Vernon, near Épernay, Marne, and in the Auteuil district, Paris. At Newhaven, Sussex, England. On Vesuvius, Campania, Italy. In Ukraine, from the Beregovo district, near Mukachevo; in the Rozdol deposit; and at the Gornostayevka sulfur prospect, Kerch Peninsula. In Russia, at Vodino, near Samara, and on Mount Sokolovaya, near Saratov. Found near Zaglik, Azerbaijan. In the Mbobo Mkulu Cave, near Ngodwana, Transvaal, South Africa. Found in the Salt Range, Punjab, India. In the USA, from Joplin, Jasper Co., Missouri; in the Green River Formation, Emery Co., Utah; at Creston, southwest of Rawlins, Carbon Co., Wyoming; in Cottonwood Cave, Guadalupe Mountains, Eddy Co., New Mexico.

Name: For *aluminum* in the composition.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 600–601. (2) Sabelli, C. and R.T. Ferroni (1978) The crystal structure of aluminite. *Acta Cryst.*, 34, 2407–2412. (3) Farkas, L. and Werner, P.-E. (1980) Powder diffraction studies on aluminite and meta-aluminite. *Zeits. Krist.*, 151, 141–152. (4) Hollingworth, S.E. and F.A. Bannister (1950) Basaluminite and hydrobasaluminite, two new minerals from Northamptonshire. *Mineral. Mag.*, 29, 1–17.