



>>Entry Name: Aluminium sodium sulfate (AlNa(SO₄)₂)

ENTRY UNDER REVIEW

Synonym(s): Sulfuric acid, aluminium sodium salt (2:1:1), 8Cl

CAS Registry Number: 10102-71-3

NaAl(SO₄)₂

Molecular Formula: AlNaO₈S₂

Molecular Weight: 242.098

Accurate Mass: 241.874766

Percentage Composition: Al 11.14%; Na 9.50%; O 52.87%; S 26.49%

Source/Synthesis: Synth. by pptn. from aq. solns. of Na and Al sulphates with conc. sulfuric acid

Physical Description: Orthorhombic cryst.

Solubility: V. sol. H₂O (40.9 g per 100 cm³ at 20°)

>>Derivative: Dodecahydrate

Synonym(s): Sodium alum. γ-Alum. Hexaaquaaluminium hexaaquasodium sulfate (1:1:2). Sodium aluminium sulfate (NaAl(SO₄)₂)

CAS Registry Number: 7784-28-3

Molecular Formula: AlH₂₄NaO₂₀S₂

Molecular Weight: 458.281

Accurate Mass: 458.001546

Percentage Composition: Al 5.89%; H 5.28%; Na 5.02%; O 69.82%; S 13.99%

Source/Synthesis: Obt. by evap. or pptn. from aq. solns. containing Na and Al sulfates. Occurs as *Mendozite*

Use/Importance: Food additive (baking powder); flame retardant

Physical Description: Cubic white cryst.

Melting Point: Mp 61°

Other Data: ΔH_f^o -2353 kJ mol⁻¹. Formulated as [Na(OH₂)₆][Al(OH₂)₆](SO₄)₂

References:

- Steele, F.A., *Science (Washington, D.C.)*, 1928, **68**, 156, (dodecahydrate, synth)
Lipson, H., *Proc. R. Soc. London, A*, 1935, **151**, 347, (dodecahydrate, cryst struct)
Cola, M., *Gazz. Chim. Ital.*, 1960, **90**, 220, (cryst struct, synth)
Cromer, D.T. *et al.*, *Acta Cryst.*, 1967, **22**, 182, (dodecahydrate, cryst struct, nd)
Petrov, K.I. *et al.*, *Zh. Neorg. Khim.*, 1970, **15**, 2938, (dodecahydrate, ir)
Perret, R. *et al.*, *C. R. Hebd. Seances Acad. Sci. Ser. C*, 1972, **274**, 366, (synth)
Weiden, N. *et al.*, *J. Magn. Reson.*, 1975, **20**, 279, (dodecahydrate, Na-23, Al-27 nmr)
Hurlburt, H.Z., *Encycl. Chem. Process. Des.*, 1977, **3**, 120; *CA*, 1978, **88**, 193727, (rev, synth)
W.H.O. Tech. Rep. Ser., 1978, **631**, 7; *CA*, 1979, **90**, 136443, (uses)
Kirk-Othmer Encycl. Chem. Technol., 3rd edn., Wiley, 1978, **2**, 244, (dodecahydrate, rev)