



>>Entry Name: Aluminium sulfide (Al₂S₃)

CAS Registry Number: 1302-81-4

Al₂S₃

Molecular Formula: Al₂S₃

Molecular Weight: 150.161

Accurate Mass: 149.879288

Percentage Composition: Al 35.94%; S 64.06%

Use/Importance: Commercially available

Physical Description: Moisture-sensitive white cryst. (melt)

Melting Point: Mp 1100° (1240°)

Other Data: E_g 4.1 eV (300K); ΔH_f -726 kJ mol⁻¹

Aldrich: 33318-2

>>Derivative: Bis-Me₃N complex

Molecular Formula: C₆H₁₈Al₂N₂S₃

Molecular Weight: 268.383

Accurate Mass: 268.026286

Percentage Composition: C 26.85%; H 6.76%; Al 20.11%; N 10.44%; S 35.84%

Source/Synthesis: Synth. from Me₃N.AIH₃ + (Me₃Si)₂S in toluene at 110-115°

Physical Description: Clear blocks

Other Data: Mp >315°; attempted subl. at low pressure and *ca.* 250°→NMe₃ + amorph. Al₂S₃. Dimeric in solid, with an adamantyl Al₄S₆ framework

>>Variant: Monoclinic-form

Synonym(s): α-form

Molecular Formula: Al₂S₃

Molecular Weight: 150.161

Accurate Mass: 149.879288

Percentage Composition: Al 35.94%; S 64.06%

General Statement: Distorted wurtzite struct.

Source/Synthesis: Synth. from the elements at 700-1000°

Physical Description: Moisture-sensitive colourless cryst.

>>Variant: Cubic-form

Molecular Formula: Al₂S₃

Molecular Weight: 150.161

Accurate Mass: 149.879288

Percentage Composition: Al 35.94%; S 64.06%

General Statement: Cation deficient spinel struct. which is stabilised at ambient pressure by inclusion of *ca.* 2% As

Source/Synthesis: Synth. from elements at 400° and 4 x 10⁴ atm.

Physical Description: Colourless moisture-sensitive cryst.

>>Variant: Tetragonal-form

Molecular Formula: Al₂S₃

Molecular Weight: 150.161

Accurate Mass: 149.879288

Percentage Composition: Al 35.94%; S 64.06%

General Statement: Spinel struct. similar to β-form of Indium(III) sulfide (In₂S₃) [HSS32-P](#)

Source/Synthesis: Obt. from elements at 1000° and 2-65 x 10³ atm.

Physical Description: V. moisture-sensitive yellow/orange cryst.

Other Data: Semiconductor, E_g 0.3 eV; conductivity 10⁻⁷ Ω⁻¹ m⁻¹ at 25°