



>>Entry Name: Nickel sulfides

CAS Registry Number: 11113-75-0

Molecular Formula: [NiS]

Aldrich: 34322-6

>>Variant: Nickel sulfide (Ni₃S₂)

Synonym(s): Nickel sesquisulfide. Nickel subsulfide. Trinickel disulfide

CAS Registry Number: 12035-72-2

Molecular Formula: Ni₃S₂

Molecular Weight: 240.202

Accurate Mass: 237.750178

Percentage Composition: Ni 73.30%; S 26.70%

interconnected by short Ni-S and Ni-Ni distances

Source/Synthesis: Synth. from Nickel(II) sulfate (NiSO₄) JCC03-T + H₂S + H₂. Microcryst. samples synth. by reduction of NiSO₄ with H₂ at 500° for 2h. Single cryst. produced by vapour transport technique using microcryst. material

Use/Importance: Good metallic conductor over range from 4.5-300K

Physical Description: Light bronze solid or brass-yellow prismatic cryst.

Melting Point: Mp 800°

Other Data: Pauli paramagnetic. Structure is low temp. form. Stable up to 570°. At higher temps, cubic phase formed. Resistivity $\rho = 1.8 \times 10^{-5} \Omega \text{ cm}$. Behaves as a Pauli paramagnetic

>>Derivative: Mineral-form

Synonym(s): Heazlewoodite

CAS Registry Number: 12035-71-1

Source/Synthesis: Found as in Canada, Tasmania, USSR and elsewhere

Other Data: Prob. identical to synthetic material

>>Variant: Nickel sulfide (NiS)

CAS Registry Number: 16812-54-7

Molecular Formula: NiS

Molecular Weight: 90.756

Accurate Mass: 89.907416

Percentage Composition: Ni 64.67%; S 35.33%

>>Derivative: α -form

Physical Description: Amorphous

Other Data: Unstable in air

>>Derivative: β -form

Source/Synthesis: Synth. from Hexaaquanickel(II)(2+) JWL44-J + S²⁽⁻⁾

Physical Description: Black solid

Solubility: Insol. H₂O, sol. HNO₃ aqua regia, S²⁽⁻⁾ aq.

Other Data: Most stable form with NiAs struct. Antiferromagnetic

>>Derivative: γ -form

Synonym(s): Millerite

CAS Registry Number: 1314-04-1

Source/Synthesis: Occurs widely as low temp. mineral in limestone

Physical Description: Brass-yellow cryst., tarnishes greenish grey

Other Data: Contains 5-coordinate Ni. Antiferromagnetic