



>>Entry Name: Cobalt sulfides

Synonym(s): Linnaeite

CAS Registry Number: 12015-75-7

Extra CAS Registry Numbers(s): 1308-08-3

Molecular Formula: [CoS]

General Statement: Many phases known

>>Variant: Cobalt(II) sulfide (CoS), 8Cl

CAS Registry Number: 1317-42-6

Molecular Formula: CoS

Molecular Weight: 90.999

Accurate Mass: 90.905268

Percentage Composition: Co 64.76%; S 35.24%

General Statement: Has NiAs struct., gen. deficient in Co ( $\text{Co}_{1-x}\text{S}$ ), but other phases with excess Co also known, e.g.  $\text{Co}_9\text{S}_8$

Physical Description: Reddish solid; metallic

Melting Point: Mp 1116°

Solubility: Insol.  $\text{H}_2\text{O}$ ; sol. acids (when freshly prepd.)

>>Variant: Cobalt sulfide ( $\text{CoS}_2$ )

CAS Registry Number: 12013-10-4

Molecular Formula:  $\text{CoS}_2$

Molecular Weight: 123.065

Accurate Mass: 122.877338

Percentage Composition: Co 47.89%; S 52.11%

General Statement: Pyrite struct.

Physical Description: Metallic

>>Variant: Cobalt sulfide ( $\text{Co}_3\text{S}_4$ )

Molecular Formula:  $\text{Co}_3\text{S}_4$

Molecular Weight: 305.064

Accurate Mass: 304.687874

Percentage Composition: Co 57.95%; S 42.05%

General Statement: Spinel struct.

Physical Description: Metallic

>>Variant: Cobalt sulfide ( $\text{Co}_9\text{S}_8$ )

CAS Registry Number: 12017-76-4

Molecular Formula:  $\text{Co}_9\text{S}_8$

Molecular Weight: 786.927

Accurate Mass: 786.175342

Percentage Composition: Co 67.40%; S 32.60%

General Statement: Isostruct. with pentlandite

Source/Synthesis: Synth. by heating Co + S

References:

Lundquist, D. *et al.*, *Z. Anorg. Allg. Chem.*, 1938, **239**, 85-88, ( $\text{Co}_9\text{S}_8$ )

Sidgwick, N.V., *The Chemical Elements and their Compds.*, Oxford, 1950, 1378

Geller, S., *Acta Cryst.*, 1962, **15**, 1195-1198, ( $\text{Co}_9\text{S}_8$ , *cryst struct*)

Brauer, G., *Handb. Prep. Inorg. Chem.*, 2nd edn., Academic Press, 1965, 1523-1524, ( $\text{Co}_9\text{S}_8$ )

Wells, A.F., *Structural Inorg. Chem.*, 5th Ed., Oxford, 1984, 752; 757, (*struct*)

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