



>>Entry Name: Iron sulfide (FeS₂)

Synonym(s): Iron disulfide

CAS Registry Number: 12068-85-8

FeS₂

Molecular Formula: FeS₂

Molecular Weight: 119.979

Accurate Mass: 119.879079

Percentage Composition: Fe 46.55%; S 53.45%

Use/Importance: Used in anti-fouling agents, batteries; cathodes; solar cells and in sulfuric acid manuf. Catalyst in coal liquifactor

>>Variant: Pyrite

Synonym(s): Fool's gold. Iron pyrites. Pyrites

CAS Registry Number: 1309-36-0

coordinated by 6 S atoms; each S is tetrahedrally coordinated by 1S and 3Fe atoms

Source/Synthesis: Occurs widely, often mixed with small amounts Cu, As, Ni, Co, Au and Se

Use/Importance: Most abundant sulfide mineral ore. Used in manuf. of S, H₂SO₄ and SO₂, in imitation jewellery, in metal recovery

Physical Description: Brass yellow metallic cryst.

>>Variant: Marcasite

CAS Registry Number: 1317-66-4

octahedra are rotated to give short S-S distances (221 pm) between S atoms of different chains

Source/Synthesis: Found in clay, shale, chalk limestone; widespread in USA

Use/Importance: Low-temp. mineral formed from highly acid solns.

Physical Description: Pale bronze-yellow or whitish cryst.

Other Data: Transforms to pyrite >=400°

References:

Nouveau Traite de Chimie Minerale, 1967, 776, (bibl)

Morice, J.A. *et al.*, *J. Inorg. Nucl. Chem.*, 1969, **31**, 3797, (Mössbauer)

Limouzin-Maire, Y., *Bull. Soc. Chim. Fr.*, 1981, 340, (esca)

Burdett, J.K. *et al.*, *Inorg. Chem.*, 1982, **21**, 1119, (bonding)

Montano, P.A. *et al.*, *J. Mol. Catal.*, 1983, **20**, 393, (use)

Lutz, H.D. *et al.*, *Phys. Chem. Miner.*, 1983, **9**, 109, (ir)

Garg, R. *et al.*, *Solid State Commun.*, 1984, **50**, 1, (Mössbauer)

Wells, A.F., *Structural Inorg. Chem.*, 5th Ed., OUP, Oxford, 1984, 758, (struct)

Takahashi, H., *J. Magn. Magn. Mater.*, 1986, **54-57**, 1019, (Raman)

Gupta, V.P. *et al.*, *J. Mater. Sci. Lett.*, 1986, **5**, 165, (thin films, Mössbauer)

Ennaoui, A. *et al.*, *Sol. Energy Mater., Sol. Cells*, 1993, **29**, 289, (pyrite, *rev*, use, phase diagram)

Lewis, R.J., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, IGV000