



>>Entry Name: Iron borides

CAS Registry Number: 39383-96-5

Related CAS Registry Numbers(s): 60581-41-1

Molecular Formula: [BFe]

>>Variant: Iron boride (Fe₃B), 9Cl, 8Cl

Synonym(s): Triiron monoboride

CAS Registry Number: 12006-86-9

Molecular Formula: BFe₃

Molecular Weight: 178.352

Accurate Mass: 178.814122

Percentage Composition: B 6.06%; Fe 93.94%

Other Data: T_c 800K. Highly unstable

>>Variant: Iron boride (Fe₂B), 9Cl, 8Cl

Synonym(s): Diiron monoboride

CAS Registry Number: 12006-85-8

Molecular Formula: BFe₂

Molecular Weight: 122.505

Accurate Mass: 122.879183

Percentage Composition: B 8.82%; Fe 91.18%

Melting Point: Mp 1390°

Solubility: Sol. HNO₃, HCl aq. (1:1), H₂SO₄ (1:1) and HClO₄. Reacts with boiling H₂O

Other Data: Ferromagnetic. $\mu_{\text{eff}} = 1.91\mu_B$; T_c 1013K

>>Variant: Iron boride (FeB), 9Cl, 8Cl

Synonym(s): Iron monoboride. Iron(III) boride

CAS Registry Number: 12006-84-7

Molecular Formula: BFe

Molecular Weight: 66.658

Accurate Mass: 66.944244

Percentage Composition: B 16.22%; Fe 83.78%

Source/Synthesis: Synth. from FeS + BCl₃ under H₂ at >500°; or from FeCl₂ aq. + NaBH₄

Use/Importance: Hydrogenation catalyst

Melting Point: Mp 1540°

Solubility: Sol. dil. and conc. HNO₃, conc. and 1:1 HCl aq., H₂SO₄ (1:1) and HClO₄

Other Data: $\mu_{\text{eff}} = 1.11\mu_B$. Exists in low temp. α -form and higher temp. β -form with identical T_c (602K) $\alpha \rightarrow \beta$ with change in magnetic moment. Both forms ferromagnetic. Reacts with boiling H₂O

>>Variant: Iron boride (FeB₂), 9Cl, 8Cl

CAS Registry Number: 12007-18-0

Molecular Formula: B₂Fe

Molecular Weight: 77.469

Accurate Mass: 77.953549

Percentage Composition: B 27.91%; Fe 72.09%

Melting Point: Mp 1410°

References: