



>>Entry Name: Gadolinium borides

CAS Registry Number: 60861-13-4

Molecular Formula: [BGd]

>>Variant: Gadolinium boride (GdB₂), 9Cl, 8Cl

CAS Registry Number: 60304-77-0

Molecular Formula: B₂Gd

Molecular Weight: 178.872

Accurate Mass: 179.942709

Percentage Composition: B 12.09%; Gd 87.91%

General Statement: Has the AlB₂-type struct.

Source/Synthesis: Synth. from Gd + B at 1240° and high pressure

>>Variant: Gadolinium boride (GdB₄), 9Cl, 8Cl

Synonym(s): Gadolinium tetraboride

CAS Registry Number: 12007-54-4

Molecular Formula: B₄Gd

Molecular Weight: 200.494

Accurate Mass: 201.961319

Percentage Composition: B 21.57%; Gd 78.43%

General Statement: Has the tetragonal UB₄-type struct.

Source/Synthesis: Synth. from Gd₂O₃ + B at 1800°; or by melting GdB₆

Physical Description: Golden lustrous cryst.

Melting Point: Mp 3000°

Other Data: $\mu_{\text{eff}} = 8.07$ (7.4) μ_{B} . Antiferromagnetic at low temp.

>>Variant: Gadolinium boride (GdB₆), 9Cl, 8Cl

Synonym(s): Gadolinium hexaboride

CAS Registry Number: 12008-06-9

Molecular Formula: B₆Gd

Molecular Weight: 222.116

Accurate Mass: 223.979929

Percentage Composition: B 29.20%; Gd 70.80%

Source/Synthesis: Synth. from Gd₂O₃ + B at 1500-1850°, or from Gd₂O₃ + H₃BO₃ + Mg at 1200°

Use/Importance: Employed in hard metal coatings

Physical Description: Violet cryst.

Melting Point: Mp 2510 dec.°

Other Data: At 1925° dissociates into elements via GdB₄ (at 1550°)

>>Variant: Gadolinium boride (GdB₁₂), 9Cl, 8Cl

Synonym(s): Gadolinium dodecaboride

CAS Registry Number: 37342-51-1

Molecular Formula: B₁₂Gd

Molecular Weight: 286.982

Accurate Mass: 290.035759

Percentage Composition: B 45.21%; Gd 54.79%

General Statement: Cubic UB₁₂-type struct.

Source/Synthesis: Synth. from elements at high pressure