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>>Entry Name: Molybdenum borides

CAS Registry Number: 12626-91-4

Molecular Formula: [BMo]

>>Variant: Molybdenum boride (Mo<sub>2</sub>B), 9Cl, 8Cl

CAS Registry Number: 12006-99-4

Molecular Formula: BMo<sub>2</sub>

Molecular Weight: 202.691

Accurate Mass: 206.820117

Percentage Composition: B 5.33%; Mo 94.67%

Source/Synthesis: Synth. from BBr<sub>3</sub> + MoCl<sub>5</sub>

Use/Importance: Refractory. Important uses as a braze and in cutting tools

Physical Description: Oxidises in air on heating

Melting Point: Mp 2280°. Mp 2000 dec.°

Solubility: Insol. H<sub>2</sub>O

>>Variant: Molybdenum boride (MoB), 9Cl, 8Cl

CAS Registry Number: 12006-98-3

Molecular Formula: BMo

Molecular Weight: 106.751

Accurate Mass: 108.914711

Percentage Composition: B 10.13%; Mo 89.87%

Source/Synthesis: Synth. from BN + Mo at 1400-1600° or MoCl<sub>5</sub> + BBr<sub>3</sub>

Use/Importance: Refractory, used as braze and in cutting tools

Melting Point: Mp 2550-2600° (β-form). Mp 2180°

Solubility: Sol. H<sub>2</sub>SO<sub>4</sub> (1:2) + HNO<sub>3</sub> at 150°; insol. H<sub>2</sub>O

Other Data: When finely divided, begins to oxidise in air at *ca.* 650°

>>Variant: Molybdenum boride (MoB<sub>2</sub>), 9Cl, 8Cl

Synonym(s): Molybdenum diboride

CAS Registry Number: 12007-27-1

Molecular Formula: B<sub>2</sub>Mo

Molecular Weight: 117.562

Accurate Mass: 119.924016

Percentage Composition: B 18.39%; Mo 81.61%

Source/Synthesis: Synth. from Mo<sub>2</sub>B<sub>5</sub> at >1600° or elements

Use/Importance: Refractory, used in braze and in cutting tools

Physical Description: Oxidises in air on heating

Melting Point: Mp 2350°. Mp 2300 (2100°) dec.°

>>Variant: Molybdenum boride (Mo<sub>2</sub>B<sub>5</sub>), 9Cl, 8Cl

CAS Registry Number: 12007-97-5

Molecular Formula: B<sub>5</sub>Mo<sub>2</sub>

Molecular Weight: 245.935

Accurate Mass: 250.857337

Percentage Composition: B 21.98%; Mo 78.02%

Source/Synthesis: Synth. from Mo<sub>2</sub>O<sub>3</sub> + B<sub>2</sub>O<sub>3</sub> + Mg at 1200°, MnO<sub>2</sub> + B<sub>4</sub>C + C, or elements at 1200-1500°

Melting Point: Mp 2335° (2100°)

Other Data: At >1600°→MoB<sub>2</sub>. Stable to HCl (1:1), H<sub>2</sub>SO<sub>4</sub> (1:1), 5-20% aq. NaOH. Attacked by fused NaOH. Dec. by 30% H<sub>2</sub>O<sub>2</sub> and acids containing H<sub>2</sub>O<sub>2</sub>

>>Variant: Molybdenum boride (MoB<sub>4</sub>), 9Cl, 8Cl