



>>Entry Name: Samarium borides

Molecular Formula: [BSm]

Other Data: SmB₁₂ appears not to have been reported

>>Variant: Samarium boride (SmB₄), 9Cl, 8Cl

Synonym(s): Samarium tetraboride

CAS Registry Number: 12007-82-8

Molecular Formula: B₄Sm

Molecular Weight: 193.604

Accurate Mass: 195.956949

Percentage Composition: B 22.34%; Sm 77.66%

Physical Description: Bluish cryst.

Other Data: Antiferromagnetic at low temp. Metallic props. Dissociates *in vacuo* at 1650°

>>Variant: Samarium boride (SmB₆), 9Cl, 8Cl

Synonym(s): Samarium hexaboride

CAS Registry Number: 12008-30-9

Molecular Formula: B₆Sm

Molecular Weight: 215.226

Accurate Mass: 217.975559

Percentage Composition: B 30.14%; Sm 69.86%

Source/Synthesis: Synth. from Sm₂O₃ + B at 1500-1800°

Physical Description: V. thin bluish-black needles or platelets

Melting Point: Mp 2580° (2400°)

Other Data: Semiconductor. Dissoc. completely when heated. Stable to 650-700°, but ignites at 693°

>>Variant: Samarium boride (SmB₆₆), 9Cl

CAS Registry Number: 37322-42-2

Molecular Formula: B₆₆Sm

Molecular Weight: 863.886

Accurate Mass: 878.533859

Percentage Composition: B 82.59%; Sm 17.41%

Source/Synthesis: Synth. from elements

Melting Point: Mp 2150°

Other Data: V. hard and refractory

References:

- Timofeeva, N.I. *et al.*, *Izv. Akad. Nauk SSSR, Neorg. Mater.*, 1968, **4**, 1789; *Inorg. Mater. (Engl. Transl.)*, 1968, **4**, 1559, (synth)
- Mordovin, O.A. *et al.*, *Zh. Neorg. Khim.*, 1968, **13**, 3155; *Russ. J. Inorg. Chem. (Engl. Transl.)*, 1968, **13**, 1627, (synth)
- Niihara, K., *Bull. Chem. Soc. Jpn.*, 1971, **44**, 963, (synth, anal, cryst struct)
- Nickerson, J.C. *et al.*, *Phys. Rev. B*, 1971, **5**, 2030, (electronic struct, rev)
- Timofeeva, E.N. *et al.*, *Zh. Prikl. Khim. (Leningrad)*, 1971, **44**, 1400; *J. Appl. Chem. USSR (Engl. Transl.)*, 1971, **44**, 1414, (props)
- Schwetz, K. *et al.*, *J. Less-Common Met.*, 1972, **26**, 99, (synth)
- Fisk, Z. *et al.*, *Mater. Res. Bull.*, 1972, **7**, 285, (cryst struct)
- Eibschütz, M. *et al.*, *Phys. Rev. B*, 1972, **6**, 18, (Mössbauer)
- Ames, L.L. *et al.*, *High Temp. Sci.*, 1975, **7**, 44, (ms)
- Chazalviel, J.N. *et al.*, *Phys. Rev.*, 1976, **14**, 4586, (pe, electronic struct)
- Ishii, M. *et al.*, *Solid State Commun.*, 1976, **20**, 437, (synth, Raman)
- Boron Refract. Borides*, (Ed. Matkovich, V.I.), Springer-Verlag, Berlin, 1977, (rev, bibl)
- Cannon, J.F. *et al.*, *J. Less-Common Met.*, 1977, **56**, 83, (synth)
- Gurin, V.N. *et al.*, *J. Less-Common Met.*, 1979, **67**, 115, (electrophys props)
- Aono, M. *et al.*, *J. Phys. Chem. Solids*, 1979, **40**, 797, (nqr)
- Tanaka, T. *et al.*, *J. Appl. Phys.*, 1980, **51**, 3877, (synth)
- Golikova, O.A. *et al.*, *J. Less-Common Met.*, 1981, **82**, 169, (synth, electrical props)
- Mörke, I. *et al.*, *Solid State Commun.*, 1981, **40**, 331, (Raman)