

Phase Diagram Updates

This section is intended to provide the most current phase diagram data. Guidelines for the inclusion of new information in this section are: (1) systems for which no phase diagrams are given in *Binary Alloy Phase Diagrams*, second edition; (2) complete diagrams that are substantially different from earlier versions published in *Binary Alloy Phase Diagrams*, second edition, the *Bulletin of Alloy Phase Diagrams*, or single-topic monographs; (3) partial diagrams that alter or clarify earlier versions in the above-mentioned publications; and (4) relevant new literature of interest.

Thermodynamic consistency of the new phase diagrams was checked based on phase rules, and the diagrams were modified if necessary. However, the diagrams and texts have not gone through the ordinary reviewing process, and the final evaluations may be carried out by relevant category editors of the Alloy Phase Diagram Program. For convenience, reaction tables and crystal structure data are added when new information is available.

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Ag-B (Silver-Boron)

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The Ag-B system was reviewed by [90Kar], but no phase diagram was given.

[70Wal] drew the Ag-B phase diagram (>900 °C in Fig. 1) based on the observation that Ag and B are immiscible in both liquid and solid states [65Wal]. [15Gie] reported insolubility of B in liquid Ag even at 1600 °C. [61Obr] claimed that AgB₂ formed by direct synthesis of the elements. An X-ray study [65Wal] could not confirm its existence in a 66.7 at.% B Ag-B mixture annealed for two months at 900 °C. Figure 1 tentatively includes AgB₂, which may form peritectoidally at <900 °C.

Table 1 lists Ag-B crystal structures; Table 2 shows Ag-B lattice parameter data.

Cited References

- 15Gie:** H. Giebelhausen, *Z. Anorg. Chem.*, **91**, 261-262 (1915) in German.
61Obr: W. Obrowski, *Naturwissenschaften*, **48**, 428 (1961) in German.
65Wal: F. Wald and R.W. Stormont, *J. Less-Common Met.*, **9**, 423-433 (1965).
70Wal: F. Wald, *Electron Technol.*, **3**(1/2), 103-108 (1970).
90Kar: I. Karakaya and W.T. Thompson, *Bull. Alloy Phase Diagrams*, **11** (6), 547 (1990).

Table 1 Ag-B Crystal Structure Data

Phase	Composition, at.% B	Pearson symbol	Space group	Strukturbericht designation	Prototype	Reference
(Ag)	0	<i>cF4</i>	<i>Fm$\bar{3}m$</i>	A1	Cu	[Massalski2]
AgB ₂	66.7	<i>hP3</i>	<i>P6/mmm</i>	C32	AlB ₂	[61Obr]
(βB)	100	<i>hR105</i>	<i>R$\bar{3}m$</i>	[Massalski2]