

Al – Sb (Aluminum – Antimony)

Phase diagram

Up to now the assessed phase diagram proposed by McAlister [84 McA] has been esteemed to be the most reliable one. Okamoto [97 Oka] pointed out, that Zajaczkowski et al. [95 Zaj] have, on the basis of results from their measurements of thermodynamic activities in liquid Al-Sb alloys, calculated a new phase diagram (see Fig. 1), which shows some deviations of the liquidus in respect to the diagram given by [84 McA]. Probably the more recent diagram is, as Okamoto [97 Oka] supposes, the more reliable one.

Thermodynamics

Experimentally obtained enthalpies of mixing of liquid alloys published by Yamaguchi et al. [95 Yam] have been used by Yamaguchi et al. [96 Yam] to produce optimized ΔH^L – values at 1373 K which are given in Fig. 2 (dashed line).

Using the Knudsen method, Zajaczkowski et al. [95 Zaj] have determined thermodynamic activities of Sb in liquid alloys. The results, also a_{Al} -activities obtained by calculation, are plotted in Fig. 3. The deviations from results obtained by earlier works are rather reasonable (see discussion given by [95 Zaj]).

Zajaczkowski et al. [95 Zaj] have obtained integral enthalpies of liquid alloys by optimization of relevant data found in the literature, using an associated solution model incorporating the volume effect with AlSb as the associate. The results are given in Fig. 2 (solid line).

Figures

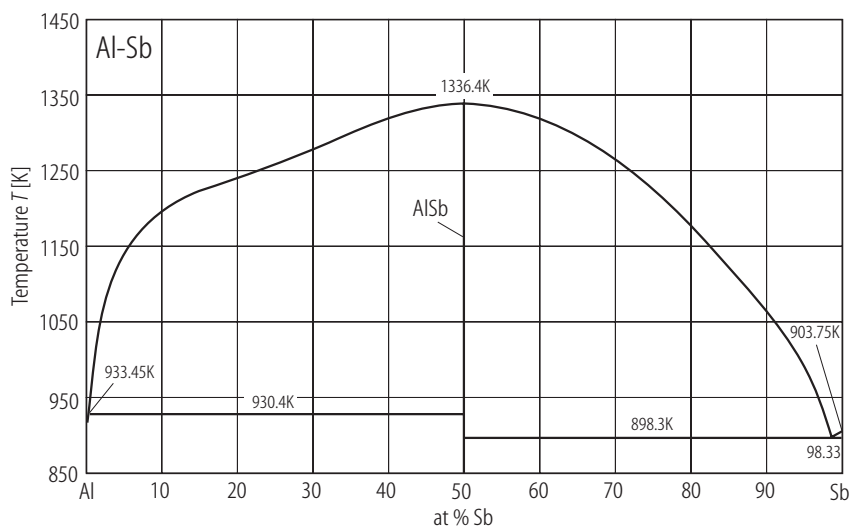


Fig. 1. Al–Sb. Calculated phase diagram [97 Oka].

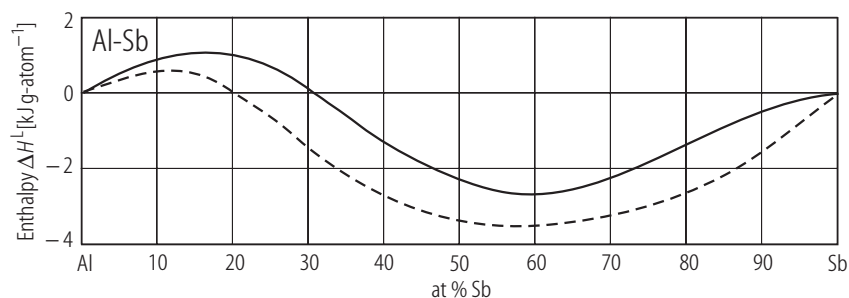


Fig. 2. Al-Sb. Enthalpies of mixing of liquid alloys calculated by [95 Zaj], [96 Yam].

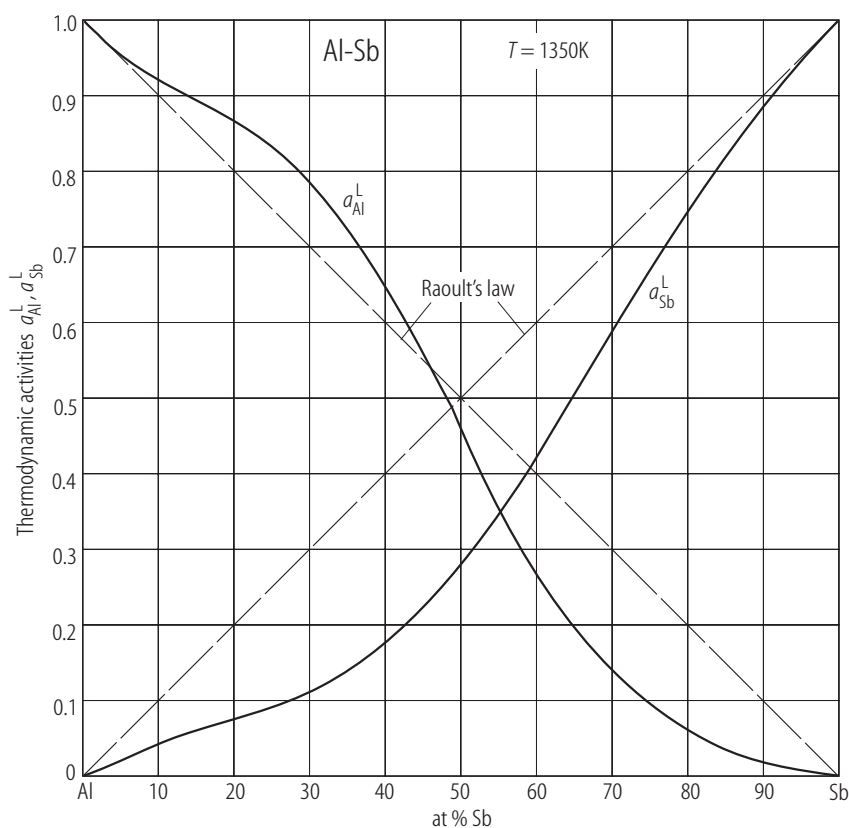


Fig. 3. Al-Sb. Thermodynamic activities in liquid alloys [95 Zaj].

References

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