

As – Zn (Arsenic – Zinc)

Phase diagram

The phase diagram of the As-Zn system has been improved by Okamoto [92 Oka]. This assessed diagram has been taken as a source of information for drawing Fig. 1.

Important seems to be the improvement of the width of the field of homogeneity of As_2Zn . Up to now the region was assumed to have a width of about 7 at% [Landolt-Börnstein]. Okamoto [92 Oka], however, reduced it to about maximal 1%.

Crystal structure

The intermediate phases are given in Table 1.

Table 1. As–Zn. Crystallographic data of intermediate phases.

Phase	Structure	Prototype	Lattice parameters [nm]			Reference
			<i>a</i>	<i>b</i>	<i>c</i>	
AsZn	ort	CdSb	0.5679	0.7277	0.7559	[76 Cla]
As_2Zn_3	tet	P_2Zn_3	0.8316		1.176	[35 Sta]
As_2Zn_3	ort					
As_2Zn_3	hex		0.727		1.208	[69 Ban]
Other phases						
As_2Zn	ort					
As_2Zn_3	cub	Mn_2O_3	0.5891			[71 Ole]
As_2Zn_3	tet	As_2Cd_3	1.1778		2.3643	[76 Pie]
As_2Zn	mon	P_2Zn	0.9287	0.7691	0.8010	[74 Fle]
				$\beta = 102.47^\circ$		

Thermodynamics

Yamaguchi et al. [91 Yam] have determined the heat content in the temperature range between 800 K and 1450 K of liquid alloys with concentrations between 4 and 48 at% As using high-temperature calorimetry. An evaluation of the primary results yield thermodynamic activities (Fig. 2), enthalpies of mixing (Fig. 3) as well as the entropies of mixing (Fig. 4) of the liquid alloys.

Figures

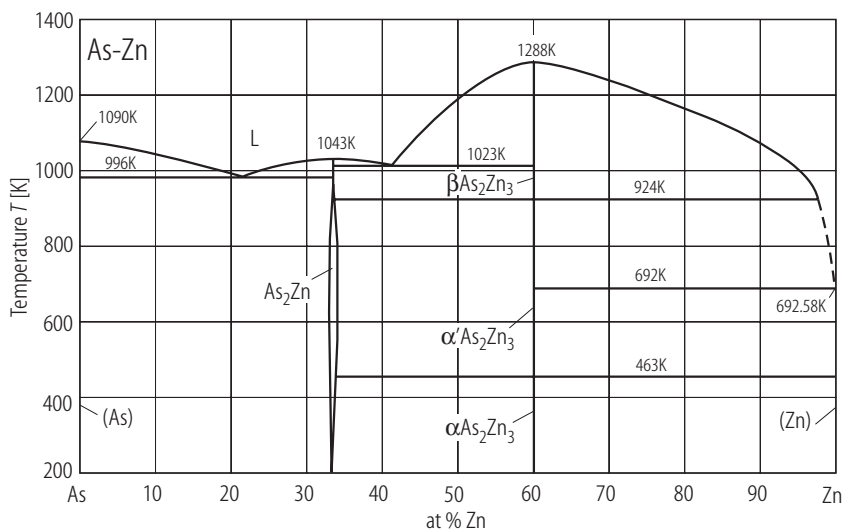


Fig. 1. As-Zn. Phase diagram improved by [92 Oka].

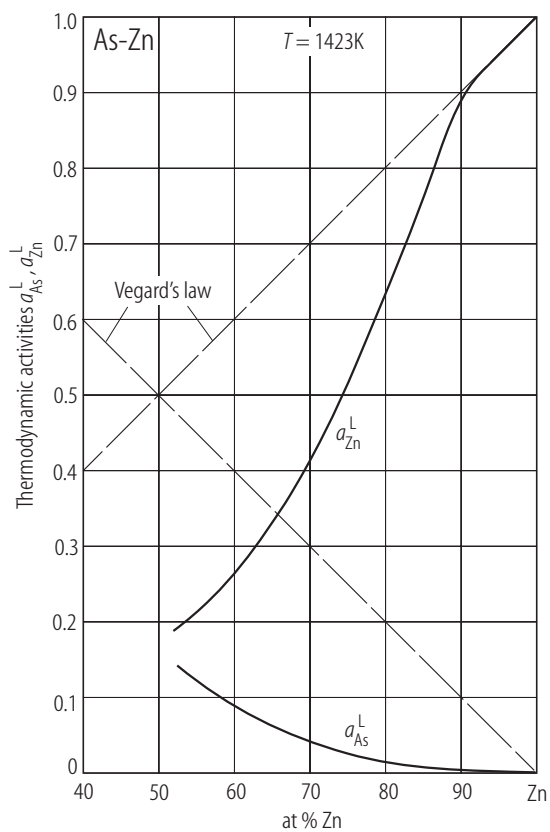


Fig. 2. As-Zn. Thermodynamic activities in liquid As-Zn alloys [91 Yam].

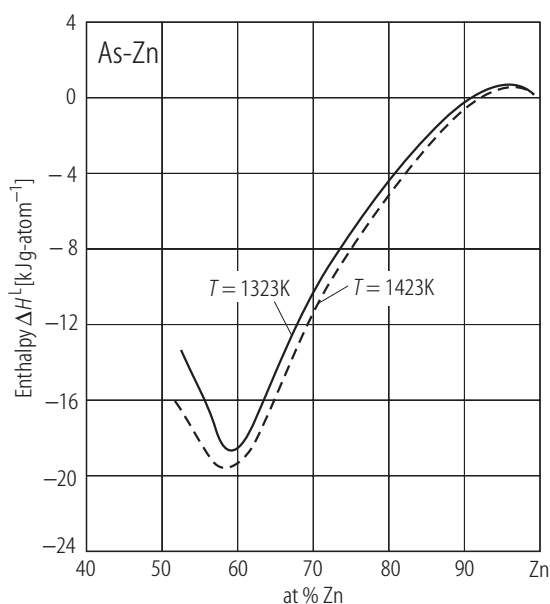


Fig. 3. As–Zn. Enthalpies of mixing of liquid As-Zn alloys [91 Yam].

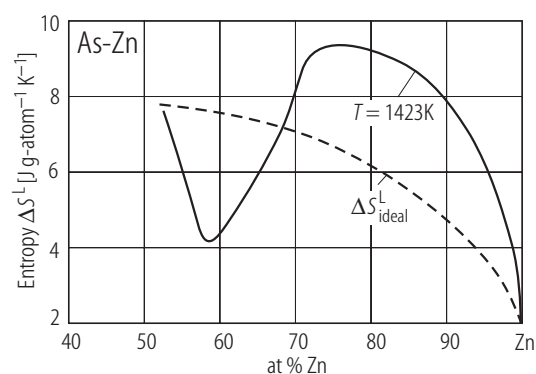


Fig. 4. As–Zn. Entropies of mixing of liquid As-Zn alloys [91 Yam].

References

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