Survey of Current Literature

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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Literature Survey Editor

Comment on Er-Sn (Erbium-Tin)

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The Er-Sn phase diagram in [Massalski2] was based on [60Lov] for 0 to 33.3 at.% Sn and [85Kul] for 66.7 to 100 at.% Sn. The $ErSn_3$ stoichiometry was suspect because [65Har] found only $ErSn_x$ with $x < 3$, and there was no corresponding $DySn_3$ phase in the Dy-Sn diagram.

[93Pal] investigated the tin-rich side (60 to 100 at.% Sn) of the Re-Sn systems (RE = Gd, Tb, Dy, Ho, Er, Tm, Lu, Y). $ErSn_2$, Er_2Sn_5, and $ErSn_3$ were found in this range (Fig. 1). The work of [93Pal] appears to be more reliable than that of [85Kul] because systematic changes of phase relationships through the Re-Sn systems are observed.

Table 1 shows Er-Sn crystal structure data.

Cited References

60Lov: B. Love, *WADD Tech. Rep.*, 60-74, 226 p (1960).

65Har: I.R. Harris and G.V. Raynor, *J. Less-Common Met., 9,* 7-10 (1965).

66Ian: A. Iandelli and A. Palenzona, *Atti Accad. Naz. Lincei, Rend. Cl. Sci. Fiz. Mat. Nat., 40,* 623-628 (1966) in Italian.

66Pal: A. Palenzona, *Atti Accad. Naz. Lincei, Rend. Cl. Sci. Fiz. Mat. Nat., 40,* 617-622 (1966) in Italian.

71For: M. Fornasini and F. Merlo, *Atti Accad. Naz. Lincei, Rend. Cl. Sci. Fiz. Mat. Nat., 50,* 186-193 (1971) in Italian.

85Kul: I.G. Kulagina, A.P. Bayanov, and N.M. Kulagin, *Izv. Akad. Nauk SSSR, Met.*, (3), 211-216 (1985) in Russian; TR: *Russ. Metall.*, (3), 213-218 (1985).

93Pal: A. Palenzona and P. Manfrinetti, *J. Alloy. Compd., 201,* 43-47 (1993).

Table 1 Er-Sn Crystal Structure Data

Phase	Composition, at.% Sn	Pearson symbol	Space group	Strukturbericht designation	Prototype	Reference
(Er)	0	*hP*2	$P6_3/mmc$	*A*3	Mg	...
Er_2Sn	33.3	...	...	...	...	[60Lov]
Er_5Sn_3	37.5	*hP*16	$P6_3/mcm$	$D8_8$	Mn_5Si_3	[66Pal]
$Er_{11}Sn_{10}$	47.6	*tI*84	*I*4/*mmm*	...	...	[71For]
$ErSn_2$	66.7	*oC*12	*Cmcm*	*C*49	$ZrSi_2$	[66Ian]
Er_2Sn_5	71.4	*o***	...	...	...	[93Pal]
$ErSn_3$	75	*oC*16	*Amm*2	...	...	[93Pal]
(βSn)	100	*tI*4	$I4_1/amd$	*A*5	βSn	...
(αSn)	100	*cF*8	$Fd\bar{3}m$	*A*4	C(diamond)	...