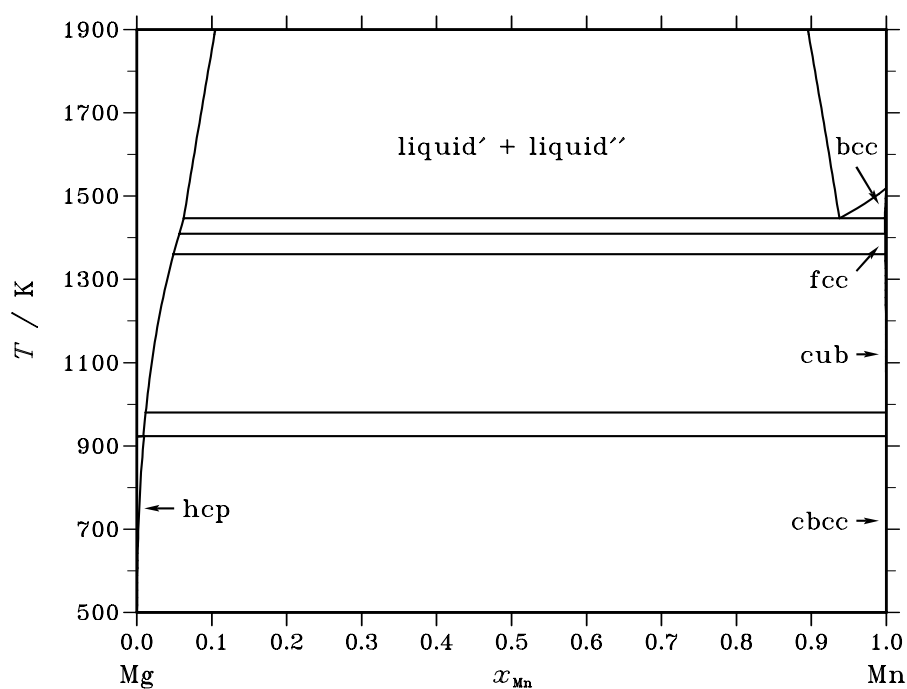


Mg – Mn (Magnesium – Manganese)**Fig. 1.** Calculated phase diagram for the system Mg-Mn.

The phase diagram for the Mg-Mn system is not well defined except in the Mg-rich corner. The experimental data for the system have been reviewed by Naye-Hashemi and Clark [85Nay, 88Nay]. The system is dominated by a wide region of immiscibility in the liquid phase. The solubility of Mn in hcp Mg rises to a maximum of just below 1 at.% close to the melting point of pure Mg although the experimental data show some scatter. There are experimental data for the liquidus up to 1100 K and it now seems to be clear that the liquid solidifies by a peritectic reaction. The phase equilibria for Mn rich compositions are not known. There are no experimental thermodynamic data for the system. The dataset adopted by SGTE was derived by Tibballs [98Tib].

Table I. Phases, structures and models.

Phase	Strukturbericht	Prototype	Pearson symbol	Space group	SGTE name	Model
liquid					LIQUID	(Mg,Mn) ₁
hcp	A3	Mg	<i>hP2</i>	<i>P6₃/mmc</i>	HCP_A3	(Mg,Mn) ₁
fcc	A1	Cu	<i>cF4</i>	<i>Fm$\bar{3}m$</i>	FCC_A1	(Mg,Mn) ₁
bcc	A2	W	<i>cI2</i>	<i>Im$\bar{3}m$</i>	BCC_A2	(Mg,Mn) ₁
cbcc	A12	α Mn	<i>cI58</i>	<i>I$\bar{4}3m$</i>	CBCC_A12	(Mg,Mn) ₁
cub	A13	β Mn	<i>cP20</i>	<i>P4₁32</i>	CUB_A13	(Mg,Mn) ₁

Table II. Invariant reactions.

Reaction	Type	T / K	Compositions / x_{Mn}			$\Delta_r H / (\text{J/mol})$
liquid'' \rightleftharpoons liquid' + bcc	monotectic	1447.0	0.937	0.063	0.998	–12887
bcc \rightleftharpoons liquid + fcc	metatectic	1409.6	0.998	0.057	0.999	–1912
liquid + fcc \rightleftharpoons cub	peritectic	1360.4	0.049	0.999	0.999	–2157
liquid + cub \rightleftharpoons cbcc	degenerate	980.0	0.012	1.000	1.000	–2253
liquid + cbcc \rightleftharpoons hcp	peritectic	923.8	0.009	1.000	0.010	–8362

References

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