

Mg-Sm (Magnesium-Samarium)

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The Mg-Sm phase diagram in [Massalski2] was redrawn from [1989Sac]. The phase relationships among Sm allotropes were uncertain. Figure 1 shows the Mg-Sm phase diagram calculated by [2008Jia] based primarily on the work of [1989Sac]. Possible relationships among Sm allotropes are shown.

Mg-Sm crystal structure data given in Table 1 were adopted from [Massalski2] with the composition ranges modified according to [2008Jia].

References

- 1989Sac:** A. Saccone, S. Delfino, G. Borzone, and R. Ferro, The Samarium-Magnesium System: A Phase Diagram, *J. Less-Common Met.*, 1989, **154**, p 47-60
- 2008Jia:** B.R. Jia, L.B. Liu, D.Q. Yi, Z.P. Jin, and J.F. Nie, Thermodynamic Assessment of the Al-Mg-Sm System, *J. Alloys Comps.*, 2008, **459**, p 267-273

Table 1 Mg-Sm crystal structure data

Phase	Composition, at.% Sm	Pearson symbol	Space group	Strukturbericht designation	Prototype
(Mg)	0	<i>hP2</i>	<i>P6₃/mmc</i>	<i>A3</i>	Mg
Mg ₄₁ Sm ₅	10.9	<i>tI92</i>	<i>I4/m</i>
Mg ₅ Sm	16.7	<i>cF444</i>	<i>F$\bar{4}3m$</i>
Mg ₃ Sm	25	<i>cF16</i>	<i>Fm$\bar{3}m$</i>	<i>D0₃</i>	BiF ₃
Mg ₂ Sm	33.3	<i>cF24</i>	<i>Fd$\bar{3}m$</i>	<i>C15</i>	Cu ₂ Mg
MgSm	50	<i>cP2</i>	<i>Pm$\bar{3}m$</i>	<i>B2</i>	CsCl
(γ Sm)	69.7-100	<i>cI2</i>	<i>Im$\bar{3}m$</i>	<i>A2</i>	W
(β Sm)	94.2-100	<i>hP2</i>	<i>P6₃/mmc</i>	<i>A3</i>	Mg
(α Sm)	97.15-100	<i>hR3</i>	<i>R$\bar{3}m$</i>	...	α Sm

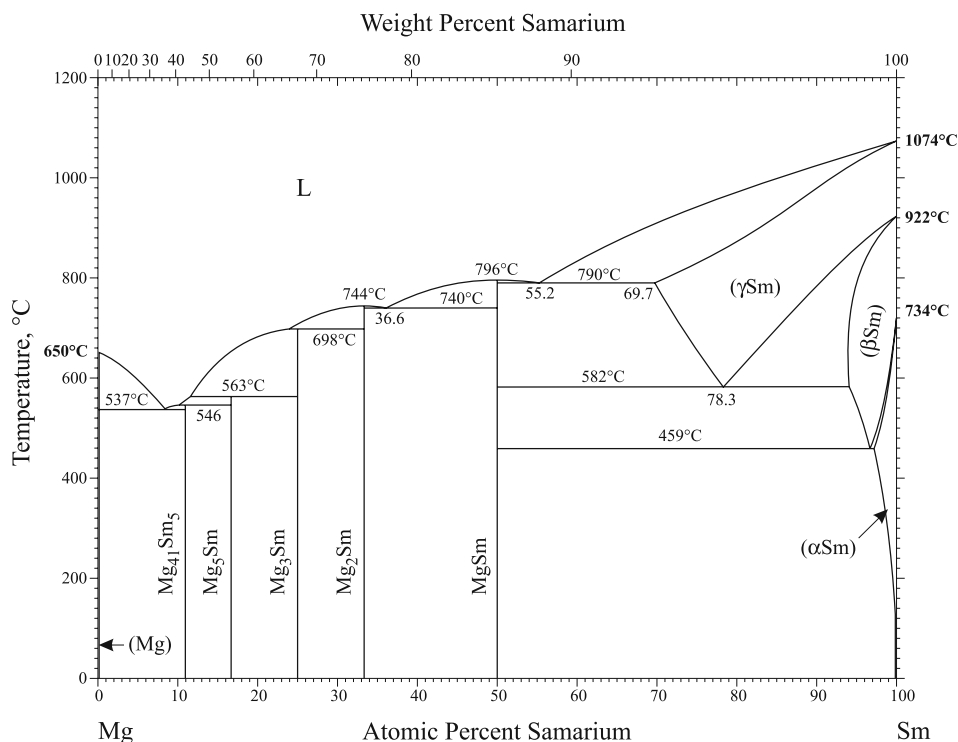


Fig. 1 Mg-Sm phase diagram