

Cr-Ge (Chromium-Germanium)

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The Cr-Ge phase diagram in [Massalski2] was redrawn from [1986Gok], which was based on experimental phase boundary data reported before 1980.

[2009Li] and [2010Liu] independently proposed the Cr-Ge phase diagram by thermodynamic optimization. Both results well reproduced the experimental phase boundary data used in the [1986Gok] phase diagram and the magnetic

effect of Cr on the form of the phase boundaries reported later by [1983Boo]. Also, both works have taken into account more recent thermodynamic data. Figure 1 shows the result reported by [2010Liu]. Table 1 shows Cr-Ge crystal structure data according to [1986Gok]. The composition range column was modified to agree with [2010Liu].

Table 1 Cr-Ge crystal structure data

Phase	Composition, at.% Ge	Pearson symbol	Space group	Strukturbericht designation	Prototype
(Cr)	0-11.8	<i>cI2</i>	<i>Im</i> $\bar{3}m$	<i>A2</i>	W
Cr ₃ Ge	20.3-25.3	<i>cP8</i>	<i>Pm</i> $\bar{3}n$	<i>A15</i>	Cr ₃ Si
βCr ₅ Ge ₃	37.2-38.4
αCr ₅ Ge ₃	37.2-38	<i>tI32</i>	<i>I4/mcm</i>	<i>D8_m</i>	W ₅ Si ₃
Cr ₁₁ Ge ₈	42.1	<i>oP76</i>	<i>Pnam</i>
CrGe	50	<i>cF8</i>	<i>P2</i> ₁ <i>3</i>	<i>B20</i>	FeSi
Cr ₁₁ Ge ₁₉	63.3	<i>tP120</i>	<i>P</i> $\bar{4}$ <i>n2</i>	...	Mn ₁₁ Si ₁₉
(Ge)	100	<i>cF8</i>	<i>Fd</i> $\bar{3}m$	<i>A4</i>	C (diamond)

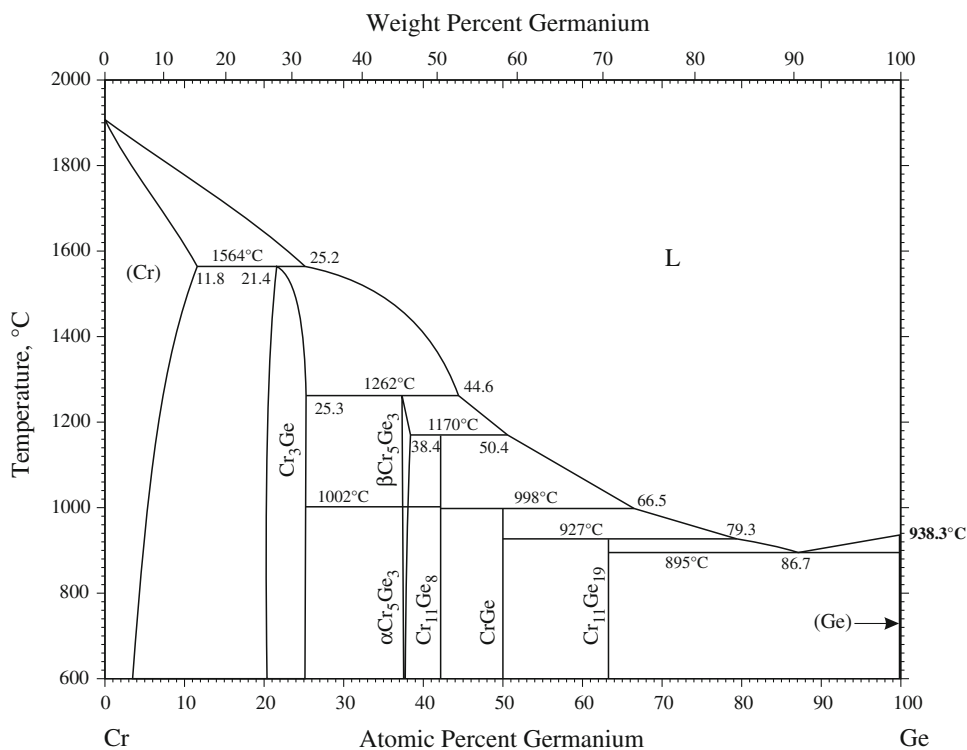


Fig. 1 Cr-Ge phase diagram

Section III: Supplemental Literature Review

References

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- 2009Li:** M. Li, C. Guo, C. Li, and Z. Du, A Thermodynamic Description of the Cr-Ge System, *J. Alloys Compd.*, 2009, **481**, p 283-290
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