Cr-Si (Chromium-Silicon)

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The Cr-Si phase diagram in [Massalski2] was adopted from [1987Gok]. As pointed out by [1997Oka], many thermodynamically unlikely features in this phase diagram were eliminated in the diagram calculated by [1994Cou]. Figure 1 shows the Cr-Si phase diagram as further updated by [2000Du] based on thermal analysis measurements of the CrSi-Si partial system and thermodynamic modeling of the entire system.

Table 1 shows the Cr-Si crystal structure data given by [1987Gok].

References

1987Gok: A.B. Gokhale and G.J. Abbaschian: *Bull. Alloy Phase Diagrams*, 1987, vol. 8 (5), pp. 474-84.

1994Cou: C.A. Coughanowr, I. Ansara, and H.L. Lukas: *Calphad*, 1994, vol. 18 (2), pp. 124-40.

1997Oka: H. Okamoto: *J. Phase Equilibria*, 1997, vol. 18 (2), p. 222.

2000Du: Y. Du and J.C. Schuster: *J. Phase Equilibria*, 2000, vol. 21 (3), pp. 281-86.

Table 1 Cr-Si crystal structure data

Phase	Composition at.% Si	Pearson symbol	Space group	Strukturbericht designation	Prototype
(Cr)	0–13	<i>cI2</i>	$Im\bar{3}m$	<i>A2</i>	W
Cr ₃ Si	22.4–25.3	<i>cP8</i>	$Pm\bar{3}n$	<i>A15</i>	Cr ₃ Si
βCr ₅ Si ₃	37.5–37.7	...	...	...	...
αCr ₅ Si ₃	37.5	<i>tI32</i>	$I4/mcm$	<i>D8_m</i>	W ₅ Si ₃
CrSi	50	<i>cF8</i>	$P2_13$	<i>B20</i>	FeSi
CrSi ₂	66.3–68	<i>hP9</i>	$P6_322$	<i>C40</i>	CrSi ₂
(Si)	100	<i>cF8</i>	$Fd\bar{3}m$	<i>A4</i>	C (diamond)

Fig. 1 Cr-Si phase diagram