

# Cr-Si (Chromium-Silicon)

H. Okamoto

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.

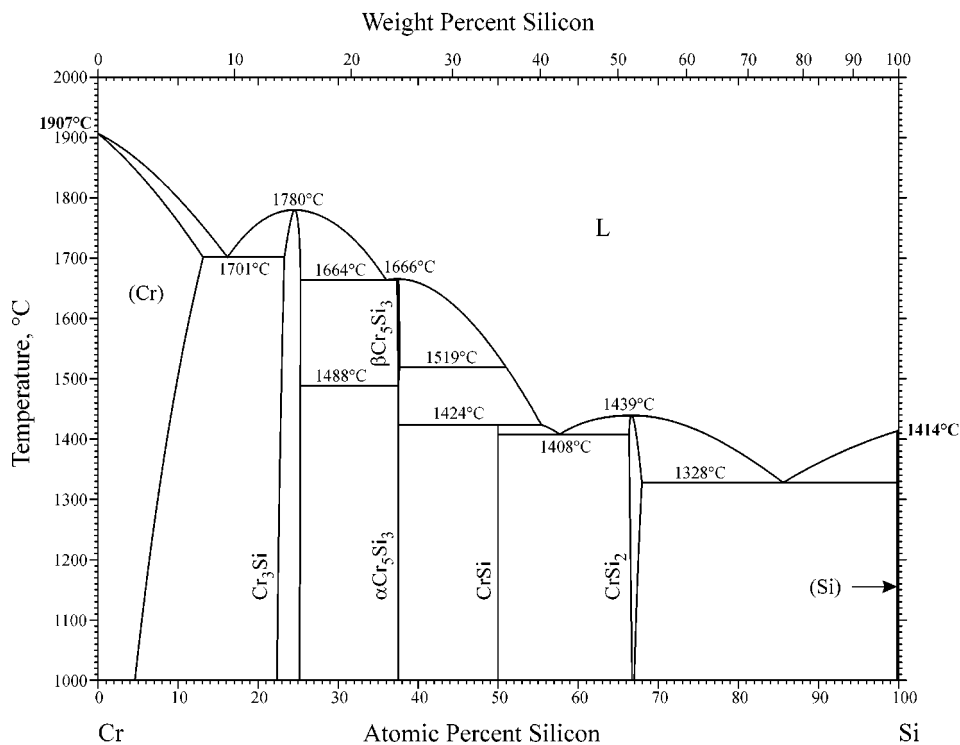
**1994Cou:** C.A. Coughanowr, I. Ansara, and H.L. Lukas: *Calphad*, 1994, vol. 18 (2), pp. 124-40.

**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>	$Im\bar{3}m$	A2	W
Cr <sub>3</sub> Si	22.4–25.3	<i>cP8</i>	$Pm\bar{3}n$	A15	Cr <sub>3</sub> Si
βCr <sub>5</sub> Si <sub>3</sub>	37.5–37.7	...	...	...	...
αCr <sub>5</sub> Si <sub>3</sub>	37.5	<i>tI32</i>	$I4/mcm$	$D8_m$	W <sub>5</sub> Si <sub>3</sub>
CrSi	50	<i>cF8</i>	$P2_13$	B20	FeSi
CrSi <sub>2</sub>	66.3–68	<i>hP9</i>	$P6_322$	C40	CrSi <sub>2</sub>
(Si)	100	<i>cF8</i>	$Fd\bar{3}m$	A4	C (diamond)



**Fig. 1** Cr-Si phase diagram