

Mg-Si (Magnesium-Silicon)

H. Okamoto

The Mg-Si phase diagram in [Massalski2] has been well established experimentally according to the evaluation of [1984Nay].

Thermodynamic assessment of this system was attempted by [1997Feu] and [2000Yan]. The calculated phase diagrams of both [1997Feu] and [2000Yan] agreed well with numerous experimental data points. However, [2004Kev] noticed that the thermodynamic models used by [1997Feu] and [2000Yan] generated unrealistic liquid miscibility gaps at high temperatures.

Figure 1 shows the Mg-Si phase diagram calculated by [2004Kev] using a revised thermodynamic model. The problems of [1997Feu] and [2000Yan] were alleviated in this phase diagram. Figure 2 shows the Mg-rich side of Fig. 1 in detail.

References

- 1984Nay:** A.A. Nayeb-Hashemi and J.B. Clark, The Mg-Si (Magnesium-Silicon) System, *Bull. Alloy Phase Diagrams*, 1984, **5**(6), p 584-592
- 1997Feu:** H. Feutel, T. Godecke, H.L. Lukas, and F. Sommer, Investigation of the Al-Mg-Si System by Experiments and Thermodynamic Calculations, *J. Alloys Compd.*, 1997, **247**, p 31-42
- 2000Yan:** X. Yan, F. Zhang, and U.A. Chang, A Thermodynamic Analysis of the Mg-Si System, *J. Phase Equilibria*, 2000, **21**(4), p 379-384
- 2004Kev:** D. Kevorkov, R. Schmid-Fetzer, and F. Zhang, Phase Equilibria and Thermodynamics of the Mg-Si-Li System and Remodeling of the Mg-Si System, *J. Phase Equilibria Diffusion*, 2004, **25**(2), p 140-151

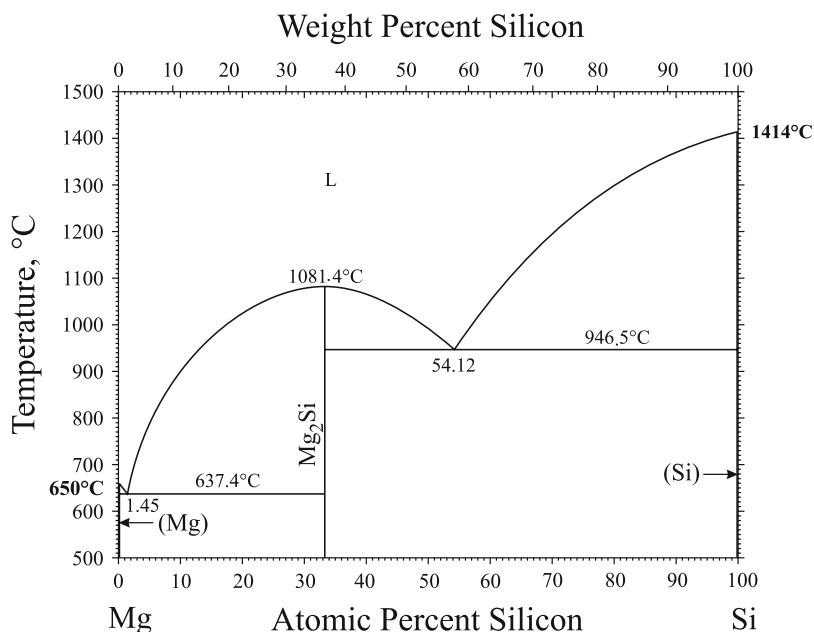


Fig. 1. Mg-Si phase diagram

Section III: Supplemental Literature Review

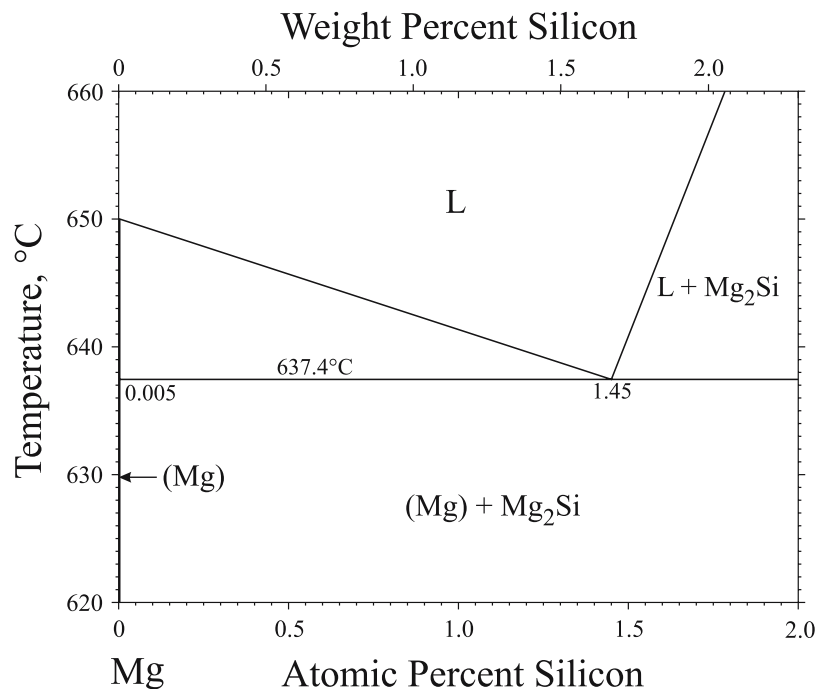


Fig. 2. Detail of Fig. 1 on the Mg-rich side