

# Gd-Ti (Gadolinium-Titanium)

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The Gd-Ti phase diagram in [Massalski2] was redrawn from [1987Mur], as shown with solid lines in Fig. 1. The miscibility gap in the liquid phase was estimated based on scarce thermodynamic data.

[2010Sch] determined the miscibility gap by means of electromagnetic levitation experiments. The result is shown with a dashed line in Fig. 1. The critical temperature and composition are approximately 1580 °C and 80 at.% Ti, respectively. The location of the miscibility gap is in good agreement with [1987Mur] on the Gd-rich side, but very different on the Ti-rich side. Because it is unlikely that the critical composition of a simple one-peak miscibility gap is displaced to 80 at.% [1993Oka2], it is possible that the peak in this case is one of a two-peak miscibility gap (the other peak is not fully developed due to asymmetry in the interaction parameter) [1993Oka1]. Then a concave segment may appear in the middle section of the miscibility gap

instead of a simple convex form shown in Fig. 1. This is not inconsistent with the experimental data reported by [2010Sch]. A new thermodynamic assessment is required.

## References

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- 2010Sch:** S. Schmitz, H.G. Lindenkreuz, N. Mattern, W. Loser, and B. Buchner, Liquid Phase Separation in Gd-Ti and Gd-Zr Melts, *Intermetallics*, 2010, **18**, p 1941-1945

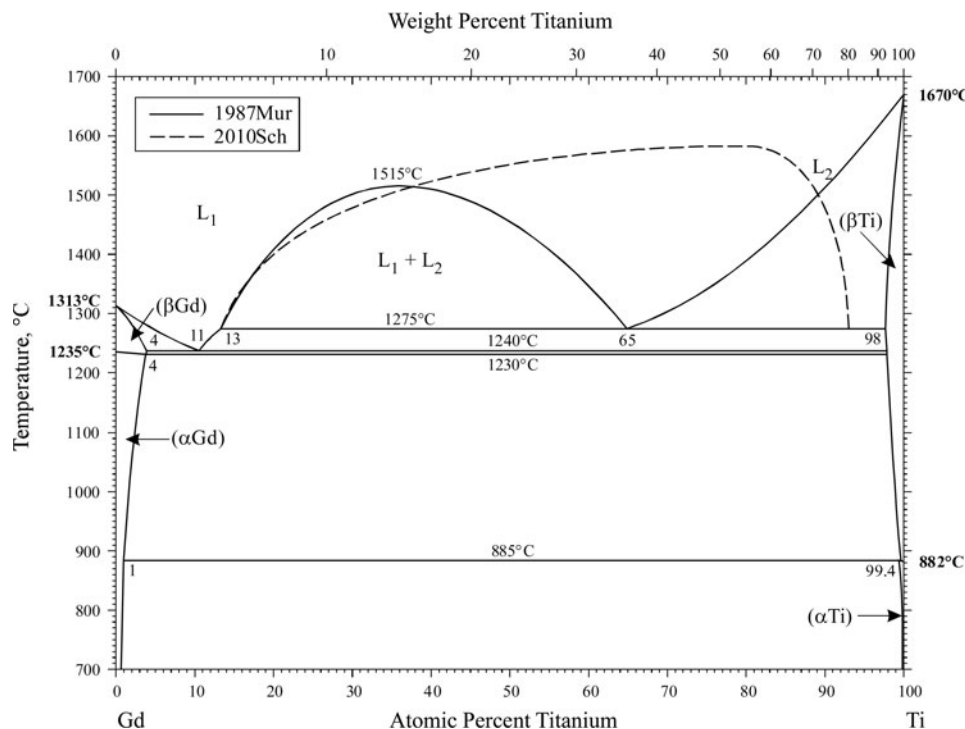


Fig. 1 Gd-Ti phase diagram