

Au-Tb (Gold-Terbium)

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The Au-Tb phase diagram in [Massalski2] was redrawn from [1987Gsc]. This diagram was mostly speculative due to lack of experimental data.

Table 1 Au-Tb crystal structure data

Phase	Composition at.% Tb	Pearson symbol	Space group	Strukturbericht designation	Prototype
(Au)	0	<i>cF4</i>	<i>Fm</i> $\bar{3}$ <i>m</i>	<i>A1</i>	Cu
Au ₆ Tb	14.3	<i>tP56</i>	<i>P4</i> ₂ / <i>ncm</i>	...	Au ₆ Ho
Au ₅₁ Tb ₁₄	21.5	<i>hP65</i>	<i>P6/m</i>	...	Ag ₅₁ Gd ₁₄
Au ₃ Tb	25	<i>oP8</i>	<i>Pmmn</i>	<i>DO</i> _a	βTiCu ₃
Au ₂ Tb	33.3	<i>tI6</i>	<i>I4/mmm</i>	<i>C11</i> _b	MoSi ₂
Au ₁₀ Tb ₇	41.2	<i>tI136</i>	<i>I4</i> ₁ / <i>acd</i>	...	Au ₁₀ Gd ₇
Au ₄ Tb ₃	42.9	<i>hR42</i>	<i>R</i> $\bar{3}$...	Pu ₃ Pd ₄
βAuTb	50	<i>cP2</i>	<i>Pm</i> $\bar{3}$ <i>m</i>	<i>B2</i>	CsCl
αAuTb	50	<i>oC8</i>	<i>Cmcm</i>	<i>B_f</i>	CrB
AuTb ₂	66.7	<i>oP12</i>	<i>Pmma</i>	<i>C23</i>	Co ₂ Si
(βTb)	100	<i>cI2</i>	<i>Im</i> $\bar{3}$ <i>m</i>	<i>A2</i>	W
(αTb)	100	<i>hP2</i>	<i>P6</i> ₃ / <i>mmc</i>	<i>A3</i>	Mg

Figure 1 shows the Au-Tb phase diagram determined by [2000Sac] based on differential thermal analysis, x-ray diffraction, optical microscopy, scanning electron microscopy, and electron probe microanalysis. Two new intermetallic compounds (Au₁₀Tb₇ and Au₄Tb₃) unknown in [Massalski2] were discovered.

Table 1 shows Au-Tb crystal structure data.

References

1987Gsc: K. Gschneidner, Jr., F.W. Calderwood, H. Okamoto, and T.B. Massalski, The Au-Tb (Gold-Terbium) System, *Phase Diagrams of Binary Gold Alloys*, H. Okamoto and T.B. Massalski, Eds., ASM International, Metals Park, OH, 1987, p 294-297

2000Sac: A. Saccone, D. Macciò, S. Delfino, and R. Ferro, The Phase Diagram of the Terbium-Gold System, *Intermetallics*, 2000, **8**, p 229-237

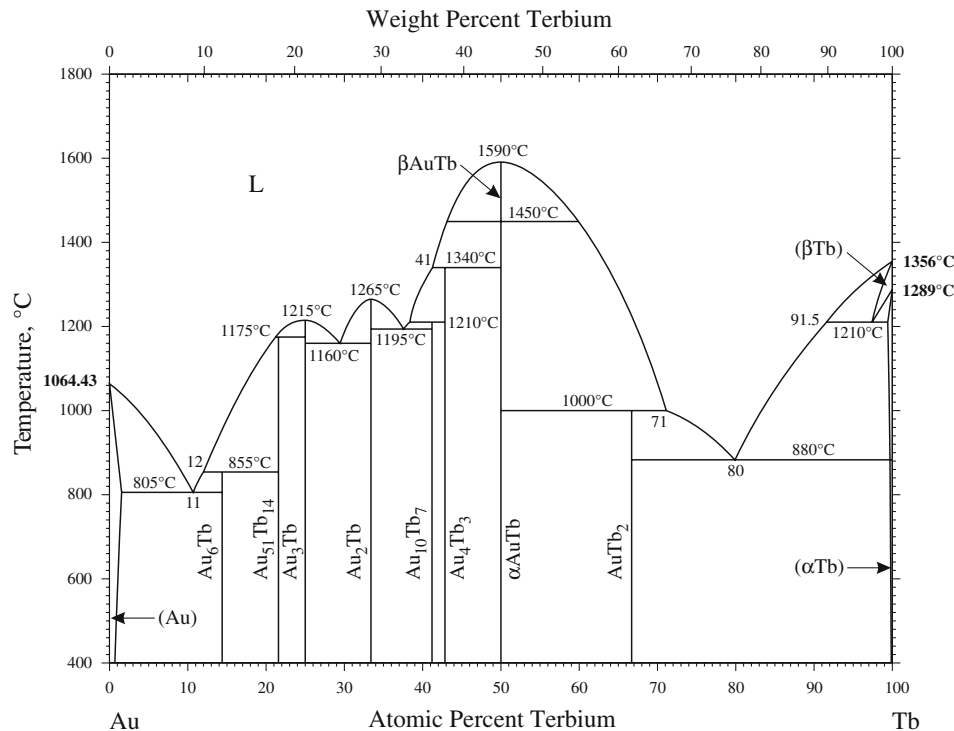


Fig. 1 Au-Tb phase diagram