

Bi-Ti (Bismuth-Titanium)

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The Bi-Ti phase diagram in [Massalski2] was redrawn from [1994Mur]. Only two phases, BiTi_2 and BiTi_3 , were known to exist in this system.

[1997Ric] found a new compound Bi_9Ti_8 and determined its crystal structure. [2006Vas] discovered three new phases Bi_2Ti , Bi_3Ti_2 , and BiTi by means of diffusion couple experiments. [2006Vas] thinks that this

BiTi is associated with Bi_9Ti_8 found by [1997Ric]. Figure 1 shows the Bi-Ti phase diagram proposed by [2006Vas] with modification from BiTi to Bi_9Ti_8 . The liquidus curve is tentative in the entire composition range.

Table 1 shows Bi-Ti crystal structure data according to [1994Mur] and [1997Ric].

Table 1 Bi-Ti crystal structure data

Phase	Composition, at.% Ti	Pearson symbol	Space group	Strukturbericht designation	Prototype
(Bi)	0	<i>hR2</i>	$R\bar{3}m$	<i>A7</i>	αAs
Bi_2Ti	33.3	...	...	...	...
Bi_3Ti_2	40	...	...	...	...
Bi_9Ti_8	47.1	<i>tP34</i>	<i>P4/mmm</i>	...	...
BiTi_2	66.7	<i>tP12</i>	<i>PA_2/mmc</i>	...	...
BiTi_3	75	<i>t**</i>
(βTi)	90-100	<i>cI2</i>	$Im\bar{3}m$	<i>A2</i>	W
(αTi)	98.5-100	<i>hP2</i>	<i>P6_3/mmc</i>	<i>A3</i>	Mg

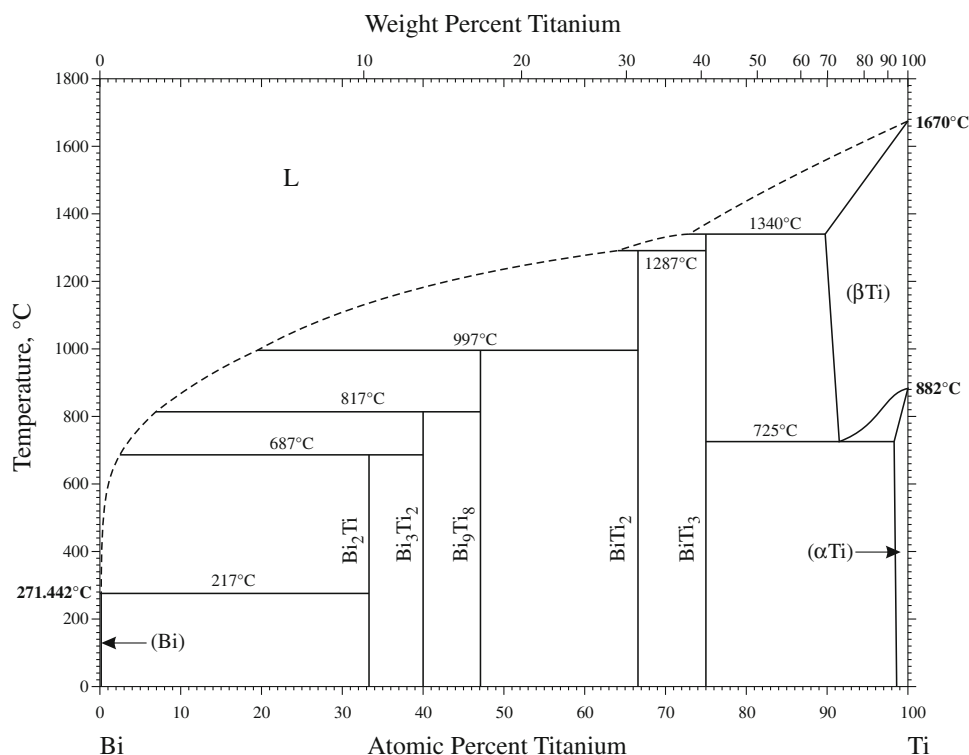


Fig. 1 Bi-Ti phase diagram

References

- 1994Mur:** J.L. Murray, The Bi-Ti (Bismuth-Titanium) System, *Bull. Alloy Phase Diagrams.*, 1994, **5**(6), p 610-613
- 1997Ric:** C.G. Richter and W. Jeitschko, Preparation and Crystal Structure of the Titanium and Hafnium Bismuthides Ti_8Bi_9 and Hf_8Bi_9 , *J. Solid State Chem.*, 1997, **134**, p 26-30
- 2006Vas:** G.P. Vassilev, Contribution to the Ti-Bi Phase Diagram, *Cryst. Res. Technol.*, 2006, **41**(4), p 349-357