

# Be-Ti (Beryllium-Titanium)

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The Be-Ti phase diagram in [Massalski2] was redrawn from [1987Mur]. Four intermediate phases ( $\text{Be}_{12}\text{Ti}$ ,  $\text{Be}_{17}\text{Ti}_2$ ,  $\text{Be}_3\text{Ti}$ ,  $\text{Be}_2\text{Ti}$ ) were reported.

**Table 1** Be-Ti crystal structure data

Phase	Composition, at.% Ti	Pearson symbol	Space group	Strukturbericht designation	Prototype
( $\beta\text{Be}$ )	0	<i>cI2</i>	$Im\bar{3}m$	A2	W
( $\alpha\text{Be}$ )	0	<i>hP2</i>	$P6_3/mmc$	A3	Mg
$\text{Be}_{12}\text{Ti}$	7.3-7.8	<i>tI26</i>	$I4/mmm$	$D2_b$	$\text{Mn}_{12}\text{Th}$
$\text{Be}_{10}\text{Ti}$	8.8-9.3	...	...	...	...
$\beta\text{Be}_{17}\text{Ti}_2$	10-10.7	<i>hR19</i>	$R\bar{3}m$	...	$\text{Be}_{17}\text{Nb}_2$
$\alpha\text{Be}_{17}\text{Ti}_2$	10-10.7	<i>hP38</i>	$P6_3/mmc$	...	$\text{Ni}_{17}\text{Th}_2$
$\text{Be}_{13}\text{Ti}_2$	13.3	...	...	...	...
$\text{Be}_3\text{Ti}$	24.2-25.2	<i>hR12</i>	$R\bar{3}m$	...	$\text{Be}_3\text{Nb}$
$\text{Be}_2\text{Ti}$	32.6-33.8	<i>cF24</i>	$Fd\bar{3}m$	C15	$\text{Cu}_2\text{Mg}$
$\text{Be}_5\text{Ti}_4$	43-46	...	...	...	...
( $\beta\text{Ti}$ )	92.5-100	<i>cI2</i>	$Im\bar{3}m$	A2	W
( $\alpha\text{Ti}$ )	100	<i>hP2</i>	$P6_3/mmc$	A3	Mg

[2004Ohn] investigated phase equilibria in the Be-rich part of the Be-Ti system primarily by microstructure and electron probe microanalysis observation of composition profiles in diffusion layers. The result (0 to 50 at.% Ti) is shown in Fig. 1. In addition to the four phases reported by [1987Mur],  $\text{Be}_{10}\text{Ti}$ ,  $\text{Be}_{13}\text{Ti}_2$ , and  $\text{Be}_5\text{Ti}_4$  were discovered.

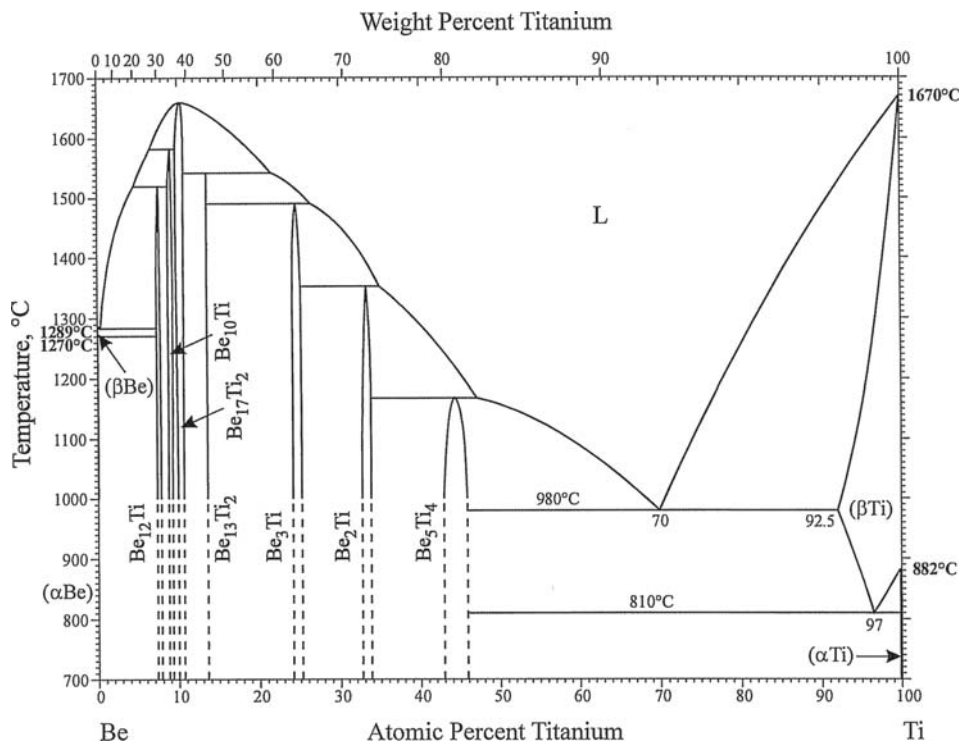
The composition range from 50 to 100 at.% Ti in Fig. 1 was redrawn from [1987Mur].

Table 1 shows Be-Ti crystal structure data given in [Massalski2]. Crystal structures of newly discovered phases are unknown.

## References

**1987Mur:** J.L. Murray, The Be-Ti (Beryllium-Titanium) System, *Phase Diagrams of Binary Titanium Alloys*, J.L. Murray, Ed., ASM International, 1987, p 40-43

**2004Ohn:** I. Ohnuma, R. Kainuma, M. Uda, T. Iwadachi, M. Uchida, H. Kawamura, and K. Ishida, Phase Equilibria in the Be-V and Be-Ti Binary Systems, *Proc. Sixth International Workshop on Beryllium Technology for Fusion, 2003*, Jpn. Atom. Energy Res. Inst., 2004, p 172-183



**Fig. 1** Be-Ti phase diagram