

# B-Nb (Boron-Niobium)

H. Okamoto

The B-Nb phase diagram was updated most recently by [2008Oka] based on the thermodynamic modeling reported by [2007Pec].

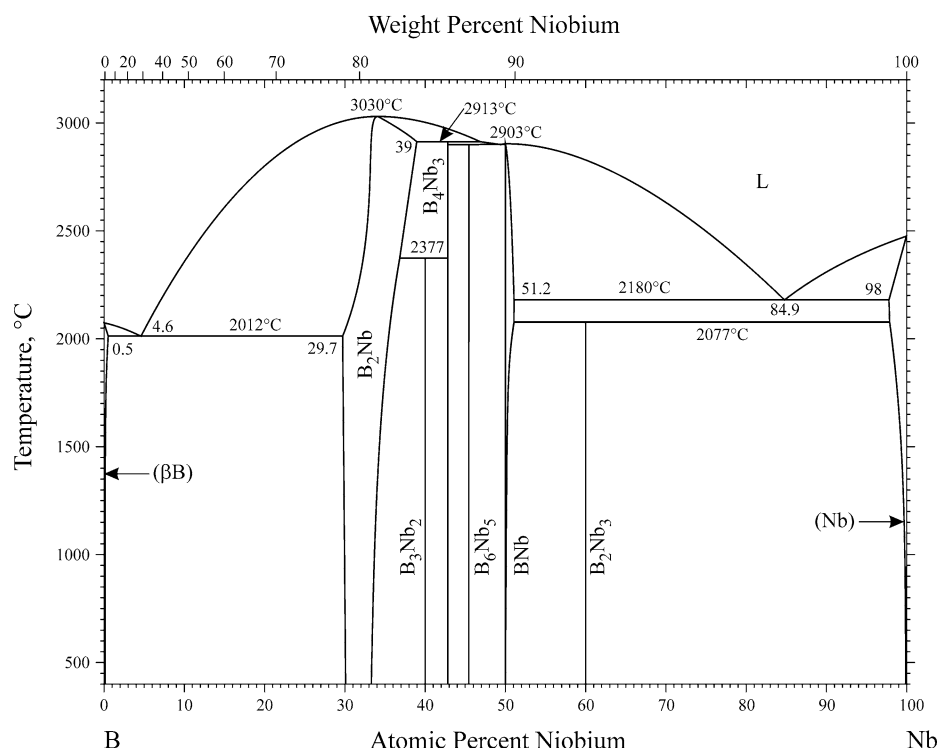
This system was studied further by [2008Tan] by using metallographic analysis, DTA, and x-ray diffraction and by

[2008Wit] by means of thermodynamic modeling. Figure 1 shows the B-Nb phase diagram calculated by [2008Wit]. A new phase  $B_3Nb_2$  was found in this system.

B-Nb crystal structure data in [Massalski2] were modified in Table 1 based on [2008Wit].

**Table 1** B-Nb crystal structure data

Phase	Composition, at.% Nb	Pearson symbol	Space group	Strukturbericht designation	Prototype
( $\beta$ B)	0-0.5	<i>hR108</i>	$R\bar{3}m$	...	...
$B_2Nb$	29.7-39	<i>hP3</i>	$P6/mmm$	C32	$AlB_2$
$B_3Nb_2$	40	<i>oC20</i>	$Cmcm$	...	$B_3V_2$
$B_4Nb_3$	42.9	<i>oI14</i>	$Immm$	$D7_b$	$Ta_3B_4$
$B_6Nb_5$	45.5	<i>oC*</i>	$Cmmm$	...	...
BNb	50-51.2	<i>oC8</i>	$Cmcm$	$B_f$	CrB
$B_2Nb_3$	60	<i>tP10</i>	$P4/mbm$	$D5_a$	$Si_2U_3$
(Nb)	98-100	<i>cI2</i>	$Im\bar{3}m$	A2	W



**Fig. 1** B-Nb phase diagram

**References**

- 2007Pec:** R.M. Peçanha, F. Ferreira, G.C. Coelho, C.A. Nunes, and B. Sundman, Thermodynamic Modeling of the Nb-B System, *Intermetallics*, 2007, **15**, p 999-1005
- 2008Oka:** H. Okamoto, B-Nb (Boron-Niobium), *J. Phase Equilib. Diffus.*, 2008, **29**(6), p 539
- 2008Tan:** Z. Tang, M.J. Kramer, and M. Akinc, Evaluation of Phase Equilibria in the Nb-Rich Portion of Nb-B System, *Intermetallics*, 2008, **16**, p 255-261
- 2008Wit:** V.T. Witusiewicz, A.A. Bondar, U. Hecht, S. Rex, and T.Ya. Velikanova, The Al-V-Nb-Ti System, I. Re-assessment of the Constituent Binary Systems B-Nb and B-Ti on the Basis of New Experimental Data, *J. Alloys Compd.*, 2008, **448**, p 185-194