

Ni-Sb (Nickel-Antimony)

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The Ni-Sb phase diagram in [Massalski2] was redrawn from [1991Cha].

Figure 1 shows the Ni-Sb phase diagram calculated by [2008Cao]. The phase diagram data used in their optimization calculation were taken from [1986Leu] and [1989Fes].

In addition to the phases shown in Fig. 1, [1991Cha] showed the existence of Ni₁₅Sb below 460 °C, forming congruently in the (Ni) phase field. However, [2008Cao] concluded that this phase does not exist based on several literature data.

Ni-Sb crystal structure data given in Table 1 was adopted from [1991Cha]. The composition range of each phase has been adjusted according to Fig. 1.

References

1986Leu: R. Leubolt, H. Ipser, and K.L. Komarek, Thermodynamic Properties and Defect Mechanism of Nonstoichiometric Gamma-NiSb, *Z. Metallkd.*, 1986, 77(5), p 284-290

Table 1 Ni-Sb crystal structure data

Phase	Composition, at.% Sb	Pearson symbol	Space group	Strukturbericht designation	Prototype
(Ni)	0-10.4	<i>cF4</i>	<i>Fm$\bar{3}m$</i>	<i>A1</i>	Cu
Ni ₃ Sb	25	<i>oP8</i>	<i>Pmmn</i>	<i>D0_a</i>	β TiCu ₃
Ni ₅ Sb ₂	25.5-27.9	<i>mC28</i>
Ni ₇ Sb ₃	28.3	<i>t**</i>
NiSb	43.7-54	<i>hP4</i>	<i>P6₃/mmc</i>	<i>B8₁</i>	NiAs
NiSb ₂	66.7	<i>oP6</i>	<i>Pnmm</i>	<i>C18</i>	FeS ₂ (marcasite)
(Sb)	100	<i>hR2</i>	<i>R$\bar{3}m$</i>	<i>A7</i>	α As

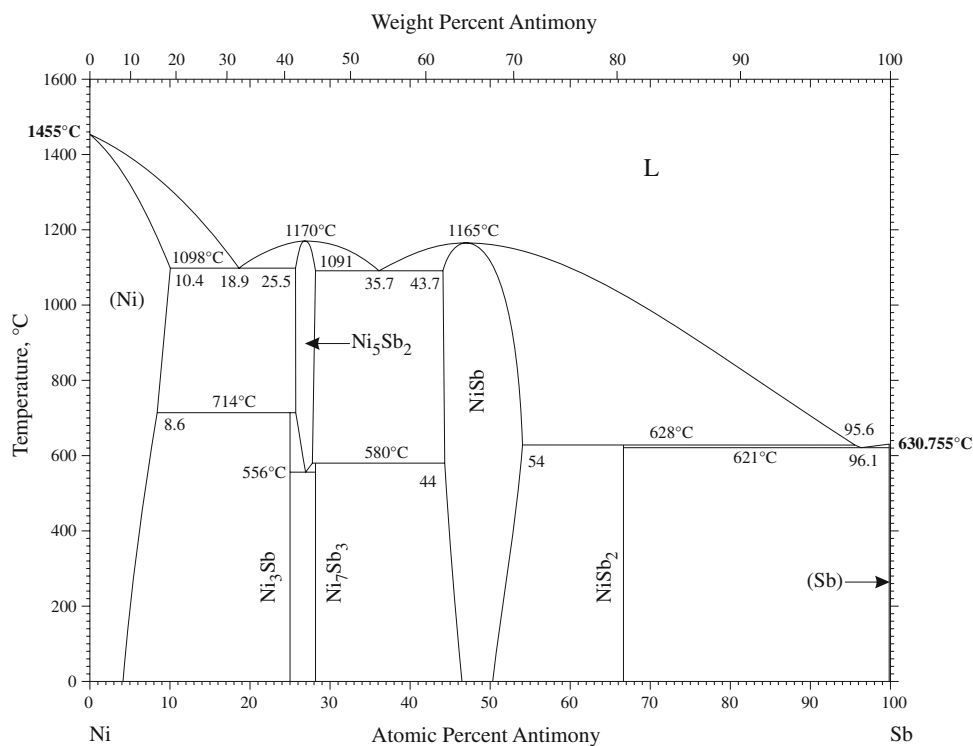


Fig. 1 Ni-Sb phase diagram

Section III: Supplemental Literature Review

1989Fes: P. Feschotte and D. Lorin, The Binary Systems Fe-Sb, Co-Sb, and Ni-Sb, *J. Less Common Met.*, 1989, **155**(2), p 255-269, in French

1991Cha: G.H. Cha, S.Y. Lee, and P. Nash, Ni-Sb (Nickel-Antimony), *Phase Diagrams of Binary Nickel Alloys*,

P. Nash, Ed., ASM International, Materials Park, OH, 1991, p 284-290

2008Cao: Z. Cao, Y. Takaku, I. Ohnuma, R. Kainuma, H. Zhu, and K. Ishida, Thermodynamic Assessment of the Ni-Sb Binary System, *Rare Met.*, 2008, **27**(4), p 384-392