

# H-Na (Hydrogen-Sodium)

H. Okamoto

The Na-H phase diagram in [Massalski2] was redrawn from [1990San].

The only intermediate phase NaH existing in this system was shown to be stable up to at least 900 °C.

Figure 1 shows the H-Na phase diagram thermodynamically calculated by [2006Qiu] based on first principles. NaH decomposes into L and G at a much lower temperature.

Crystal structure data in Table 1 are as given by [1990San].

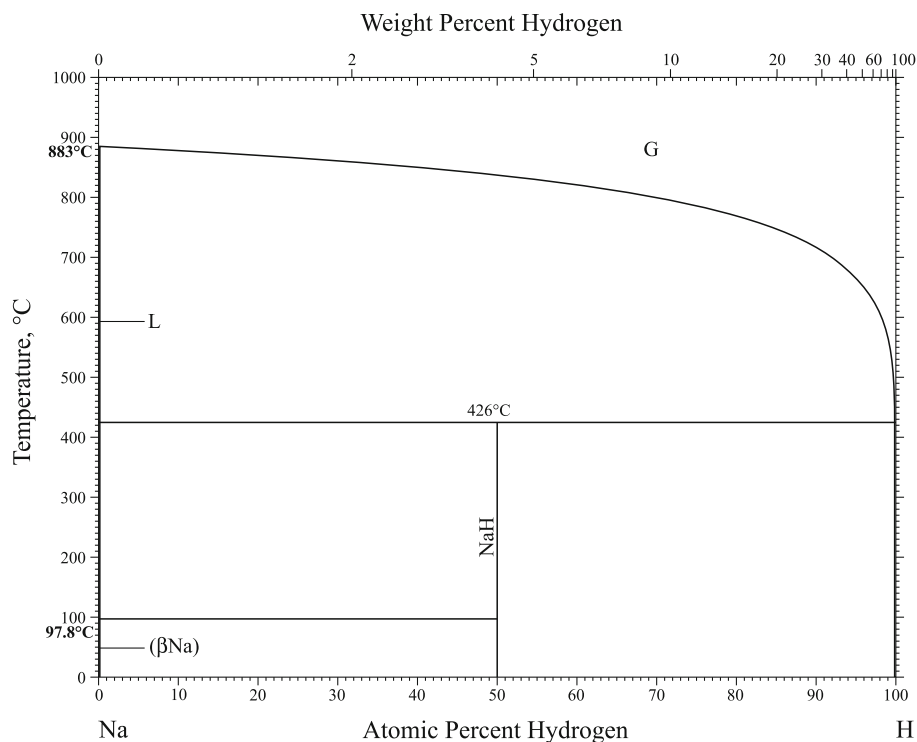
## References

- 1990San:** A. San-Martin and F.D. Manchester, The H-Na (Hydrogen-Sodium) System, *Bull. Alloy Phase Diag.*, 1990, **11**(3), p 287-294
- 2006Qiu:** C. Qiu, S.M. Opalka, G.B. Olson, and D.L. Anton, The Na-H System: From First-Principles Calculations to Thermodynamic Modeling, *Int. J. Mater. Res.*, 2006, **97**(6), p 845-853

**Table 1 Na-H crystal structure data**

Phase	Composition, at.% H	Pearson symbol	Space group	Strukturbericht designation	Prototype
(βNa)	0	<i>cI2</i>	<i>Im</i> $\bar{3}m$	<i>A2</i>	W
(αNa) (a)	0	<i>hP2</i>	<i>P6</i> $_3/mmc$	<i>A3</i>	Mg
NaH	50	<i>cF8</i>	<i>Fm</i> $\bar{3}m$	<i>B1</i>	NaCl

(a) Stable below -233 °C



**Fig. 1** Na-H phase diagram