Comment on N-V (Nitrogen-Vanadium)

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The partial V-VN phase diagram in [Massalski2] was redrawn from [89Car]. Phase boundaries were mostly schematic.

Figure 1 shows the V-N phase diagram calculated by [92Oht] based on thermodynamic analysis of the system. The congruent melting of VN cannot be reached until the pressure becomes higher than 10 MPa. [89Car] quoted from [78Ono] an ordered VN phase (listed as VN' in Table 1) stable at 43 to 46 at.% N and below 520 °C. This phase was not taken into ac-

count in the thermodynamic model of [91Oht] due to insufficient information on the phase.

V-N crystal structure data are summarized in Table 1.

Cited Reference

78Ono: T. Onozuka, *J. Appl. Crystallogr., 11*, 132-136 (1978).
89Car: O.N. Carlson, J.F. Smith, and R.H. Nafziger, *Phase Diagrams of Binary Vanadium Alloys*, ASM International, Materials Park, OH, 148-158 (1989).
91Oht: H. Ohtani and M. Hillert, *Calphad, 15*(1), 11-24 (1991).

Table 1   V-N Crystal Structure Data

Phase	Composition, at.% N	Pearson symbol	Space group	Strukturbericht designation	Prototype
(V)	0 to 17	cI2	Im3m	A2	W
V₂N(a)	24 to 33	hP9	P31m	...	..
VN(a)	39 to 50	cF8	Fm3m	B1	NaCl
VN'(b)	43 to 46	tP*	P4₂/nmc	...	...

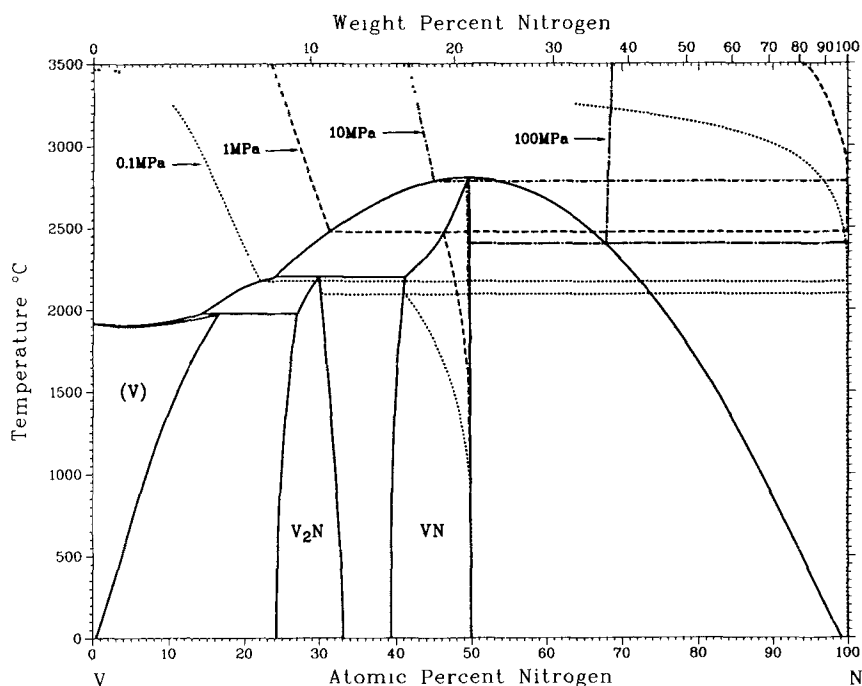(a) From [Pearson4]. (b) Not shown in Fig. 1.

Fig. 1 V-N phase diagram.