

N-Ta (Nitrogen-Tantalum)

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The Ta-N phase diagram in [Massalski2] was redrawn from [1975Gat]. Although this phase diagram was incomplete, it was accepted as the assessed diagram of this system by [1996Gar] because no new data were available.

Figure 1 shows the Ta-N phase diagram obtained by [1998Fri] by thermodynamic analysis based on

[1975Gat] and more recent phase boundary and thermodynamic data.

Ta-N crystal structure data are given in Table 1.

Table 1 Ta-N crystal structure data

| Phase | Composition, at.% N | Pearson symbol | Space group | Strukturbericht designation | Prototype |
|-------------------|---------------------|----------------|-------------------------------------|-----------------------------|-------------------|
| (Ta) | 0-10.5 | <i>cI2</i> | <i>Im</i> $\bar{3}m$ | <i>A2</i> | W |
| Ta ₂ N | 23-33 | <i>hP3</i> | <i>P6</i> ₃ / <i>mmc</i> | <i>L'3</i> | Fe ₂ N |
| δ | 41.5-50 | <i>cF8</i> | <i>Fm</i> $\bar{3}m$ | <i>B1</i> | NaCl |
| TaN | 50 | <i>hP6</i> | <i>P6</i> / <i>mmm</i> | <i>B35</i> | CoSn |

References

- 1975Gat:** J. Gatterer, G. Dufek, P. Ettmayer, and R. Kieffer, The Cubic Tantalum Mononitride (B1) and Its Miscibility with the Isotypic Mononitrides and Monocarbides of the 4a and 5a Group Metals, *Monatsh. Chem.*, 1975, **106**, p 1137-1147, in German
- 1996Gar:** S.P. Garg, M. Venkatraman, and N. Krishnamurthy, N-Ta (Nitrogen-Tantalum), *Phase Diagrams of Binary Tantalum Alloys*, S.P. Garg, M. Venkatraman, N. Krishnamurthy, and R. Krishnan, Eds., Indian Institute of Metals, Calcutta, India, 1996, p 108-114
- 1998Fri:** K. Frisk, Analysis of the Phase Diagram and Thermochemistry in the Ta-N and the Ta-C-N Systems, *J. Alloys Comps.*, 1998, **278**, p 216-226

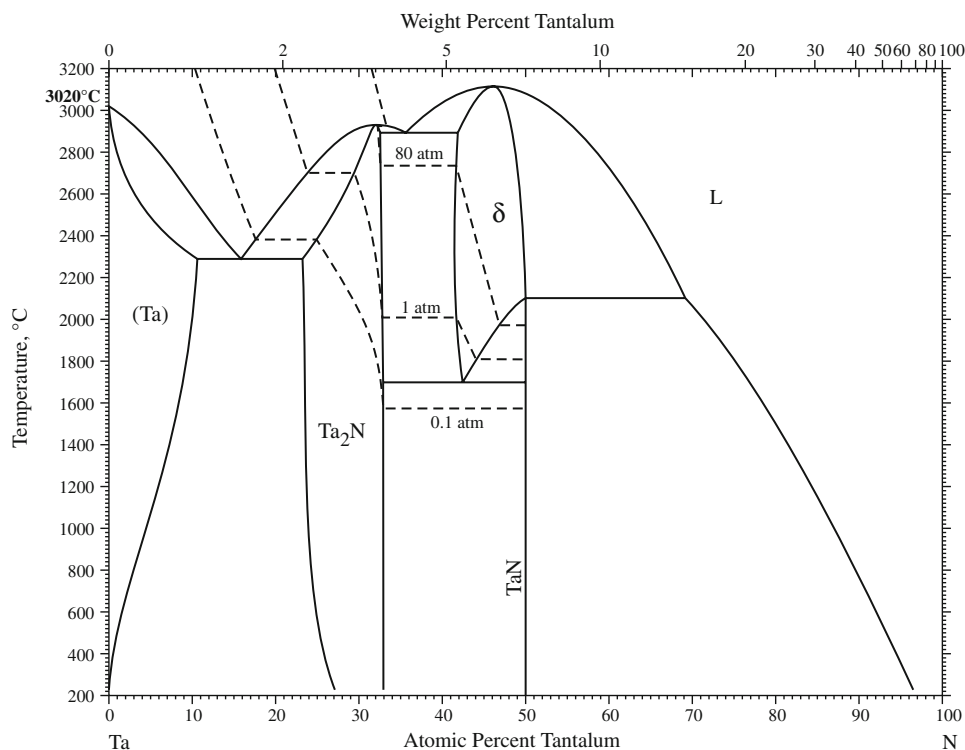


Fig. 1 N-Ta phase diagram