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Co-V (Cobalt-Vanadium)

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The Co-V phase diagram in [Massalski2] was redrawn from [1991Smi]. Three intermediate phases (Co_3V (21 to 31 at.% V), σ (45 to 70 at.% V), and CoV_3) were reported to exist. Co_3V was shown to have the $L1_2$ structure above ~1000 °C. However, [1997Nag] showed by neutron diffraction that this is not a stable phase.

The shapes of the Co_3V and phase fields as drawn in [Massalski2] were unusual because they had nearly a constant width in the entire temperature range from 0 to >1000 °C. This unlikely situation was dissolved in the Co-V phase diagram thermodynamically assessed by [2003Bra]. This calculated phase diagram is consistent with existing experimental data. However, further corroboration is needed particularly at low temperatures where experimental phase boundary data are not available (for example, eutectoidal decomposition temperature of σ).

References

1991Smi: J.F. Smith, The Co-V (Cobalt-Vanadium) System, *J. Phase Equilibria*, 1991, **12**(3), p 324-331

1997Nag: L.J. Nagel, B. Fultz, and J.L. Robertson, Phase Equilibria of Co_3V, *J. Phase Equilibria*, 1997, **18**(1), p 21-23

2003Bra: J. Bratberg and B. Sundman, A Thermodynamic Assessment of the Co-V System, *J. Phase Equilibria*, 2003, **24**(6), p 495-503

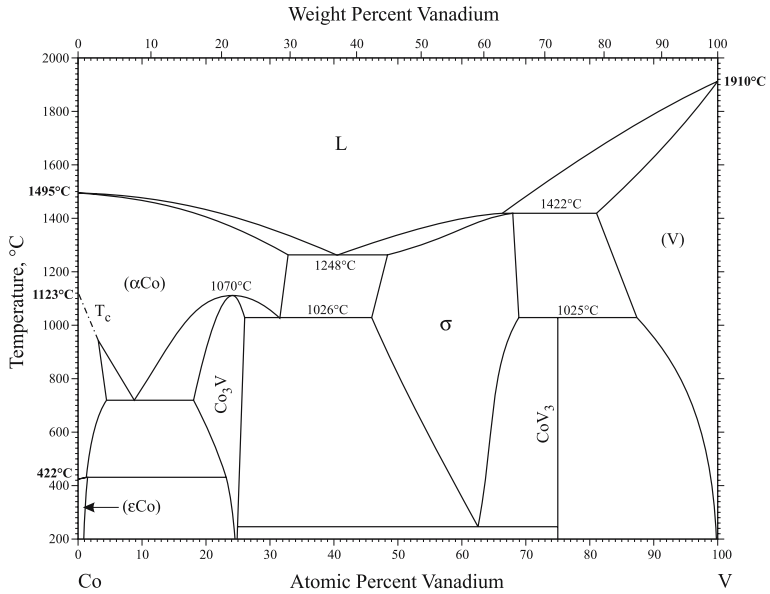

Fig. 1 Co-V phase diagram